

WELL DEVELOPMENT

Project GROUNDWATER QUALITY ASSESSMENT

Well Number T26

Project Number 40875135

Date 7-8-88 Page 3 of 3

Well Inside Diameter: 4.026 inches

Depth of bottom: 70.0 feet

Length of gravel pack: 12.1 feet

Diameter of gravel pack: 10.25 inches

Measured by Gregg Olbert

Recorded by Gregg Olbert

Air Temperature (°F) LOW 90's

Weather Condition SUNNY

WITHDRAWAL OF WELL VOLUMES

FLUSHING

Well Volume Well Volume Well Volume

Water Level Before	<u>28.19</u>
Water Level After	<u>DRY</u>
Time Begin Flushing *	<u>10:15AM</u>
Time End Flushing *	<u>12:45PM</u>
Time Water Level After	<u>12:45P</u>
Estimated Volume Flushed (gal)	<u>35</u>

FIELD ANALYSIS

	<u>@ 10:20A</u>	<u>@ 11:00A</u>	<u>@ 11:55A</u>	<u>@ 12:45P</u>
Water Temperature (°C)	<u>15.5</u>	<u>15.7</u>	<u>16.8</u>	<u>17.3</u>
Sample pH	<u>8.35</u>	<u>6.80</u>	<u>7.66</u>	<u>7.80</u>
Sample Conductivity (mhos/cm)	<u>781</u>	<u>875</u>	<u>825</u>	<u>798</u>
Buffer Before				
Buffer After				
Odor				
Color				
Other				

COMMENTS

* TIME OF SURGING

WELL DEVELOPMENT

Project GROUNDWATER QUALITY ASSESSMENT

Well Number T27

Project Number 40875135

Date 6-13-88 Page 1 of 2

Well Inside Diameter: 2.057 inches

Depth of bottom: 140.0 feet

Length of gravel pack: 12.3 feet

Diameter of gravel pack: 5.875 inches

Measured by Gregg Alberts

Recorded by Gregg Alberts

Air Temperature (°F) 70's / 90's

Weather Condition SUNNY

WITHDRAWAL OF WELL VOLUMES

FLUSHING

	<u>Well Volume</u>	<u>Well Volume</u>	<u>Well Volume</u>
Water Level Before	<u>57.67</u>	<u>133.13</u>	
Water Level After	<u>133.38</u>	<u>140.75</u>	
Time Begin Flushing	<u>12:45 P</u>	<u>3:07 P</u>	
Time End Flushing	<u>1:37 P</u>	<u>3:26 P</u>	
Time Water Level After	<u>1:37 P</u>	<u>6:16 P</u>	
Estimated Volume Flushed (gal)	<u>11</u>	<u>4</u>	

FIELD ANALYSIS

Water Temperature (°C)	<u>15.6</u>	<u>19.7 *</u>
Sample pH	<u>7.30</u>	<u>7.32</u>
Sample Conductivity (mhos/cm)	<u>1039</u>	<u>988</u>
Buffer Before		
Buffer After		
Odor		
Color		
Other		

COMMENTS

* NOT ENOUGH WATER IN WELL TO GET ACCURATE TEMPERATURE READING

WELL DEVELOPMENT

Project GROUNDWATER QUALITY ASSESSMENT

Well Number T27

Project Number 40875135

Date 7-8-88 Page 2 of 2

Well Inside Diameter: 2.067 inches

Depth of bottom: 140.0 feet

Length of gravel pack: 12.3 feet

Diameter of gravel pack: 5.875 inches

Measured by Gregg Alberts

Recorded by Gregg Alberts

Air Temperature (°F) MID 90's

Weather Condition SUNNY

WITHDRAWAL OF WELL VOLUMES

FLUSHING

	<u>Well Volume</u>	<u>Well Volume</u>	<u>Well Volume</u>
Water Level Before	<u>83.65</u>	<u>123.31</u>	<u>131.13</u>
Water Level After	<u>123.31</u>	<u>131.13</u>	<u>134.58</u>
Time Begin Flushing	<u>1:35 PM</u>	<u>1:55 P</u>	<u>2:20 P</u>
Time End Flushing	<u>1:55 P</u>	<u>2:20 P</u>	<u>4:30 P</u>
Time Water Level After	<u>1:55 P</u>	<u>2:20 P</u>	<u>4:30 P</u>
Estimated Volume Flushed (gal)	<u>5</u>	<u>3</u>	<u>7</u>

FIELD ANALYSIS

Water Temperature (°C)	<u>18.1</u>	<u>17.4</u>	<u>17.9</u>
Sample pH	<u>8.10</u>	<u>7.56</u>	<u>8.12</u>
Sample Conductivity (mhos/cm)	<u>811</u>	<u>712</u>	<u>984</u>
Buffer Before			
Buffer After			
Odor			
Color			
Other			

COMMENTS

WELL DEVELOPMENT

Project GROUNDWATER QUALITY
ASSESSMENT

Well Number T28

Project Number 40875135

Date 6-10-88 Page 1 of 3

Well Inside Diameter: 4.026 inches

Depth of bottom: 20.0 feet

Length of gravel pack: 12.0 feet

Diameter of gravel pack: 10.25 inches

Measured by Gregg Olbert

Recorded by Gregg Olbert

Air Temperature (°F) 70's

Weather Condition SUNNY

WITHDRAWAL OF WELL VOLUMES

FLUSHING

Well Volume Well Volume Well Volume

Water Level Before	<u>8.11</u>	<u>13.90</u>
Water Level After	<u>19.26</u>	<u>19.30</u>
Time Begin Flushing	<u>2:15 P</u>	<u>3:10 P</u>
Time End Flushing	<u>2:25 P</u>	<u>3:20 P</u>
Time Water Level After	<u>2:25 P</u>	<u>3:20 P</u>
Estimated Volume Flushed (gal)	<u>15</u>	<u>7.5</u>

FIELD ANALYSIS

Water Temperature (°C)	<u>12.6</u>	<u>11.9</u>
Sample pH	<u>7.80</u>	<u>7.29</u>
Sample Conductivity (mhos/cm)	<u>504</u>	<u>487</u>
Buffer Before		
Buffer After		
Odor		
Color		
Other		

COMMENTS

WELL DEVELOPMENT

Project GROUNDWATER QUALITY ASSESSMENT

Well Number T28

Project Number 40875135

Date 6-13-88 Page 2 of 3

Well Inside Diameter: 4.026 inches

Depth of bottom: 20.0 feet

Length of gravel pack: 12.0 feet

Diameter of gravel pack: 10.25 inches

Measured by Gregg Albert

Recorded by Gregg Albert

Air Temperature (°F) 70's

Weather Condition SUNNY

WITHDRAWAL OF WELL VOLUMES

FLUSHING

	<u>Well Volume</u>	<u>Well Volume</u>	<u>Well Volume</u>
Water Level Before	<u>8.19</u>	<u>19.06</u>	
Water Level After	<u>22.67</u>	<u>18.58</u>	
Time Begin Flushing	<u>4:58 P</u>	<u>5:39 P</u>	
Time End Flushing	<u>5:13 P</u>	<u>6:10 P</u>	
Time Water Level After	<u>5:13 P</u>	<u>6:10 P</u>	
Estimated Volume Flushed (gal)	<u>18</u>	<u>4</u>	

FIELD ANALYSIS

Water Temperature (°C)	<u>14.3</u>
Sample pH	<u>7.30</u>
Sample Conductivity (mhos/cm)	<u>495</u>
Buffer Before	
Buffer After	
Odor	
Color	
Other	

COMMENTS

WELL DEVELOPMENT

Project GROUNDWATER QUALITY ASSESSMENT

Well Number T28

Project Number 40875135

Date 7-9-88 Page 3 of 3

Well Inside Diameter: 4.026 inches

Depth of bottom: 20.0 feet

Length of gravel pack: 12.0 feet

Diameter of gravel pack: 10.25 inches

Measured by Gregg Alberts

Recorded by Gregg Alberts

Air Temperature (°F) LOW 90'S

Weather Condition SUNNY

WITHDRAWAL OF WELL VOLUMES

FLUSHING

Well Volume Well Volume Well Volume

Water Level Before	<u>9.75</u>		
Water Level After	<u>DRY</u>		
Time Begin Flushing *	<u>11:50AM</u>		
Time End Flushing *	<u>3:05P</u>		
Time Water Level After	<u>3:05P</u>		
Estimated Volume Flushed (gal)	<u>20</u>		

FIELD ANALYSIS

	<u>@ 11:50 A</u>	<u>@ 12:45P</u>	<u>@ 2:30P</u>
Water Temperature (°C)	<u>14.7</u>	<u>18.1</u>	<u>24.2</u>
Sample pH	<u>8.48</u>	<u>8.47</u>	<u>8.45</u>
Sample Conductivity (mhos/cm)	<u>654</u>	<u>499</u>	<u>485</u>
Buffer Before			
Buffer After			
Odor			
Color			
Other			

COMMENTS

* TIME OF SURGING

WELL DEVELOPMENT

Project GROUNDWATER QUALITY
ASSESSMENT

Well Number T 29

Project Number 40875135

Date 6-10-88 Page 1 of 3

Well Inside Diameter: 4.026 inches

Depth of bottom: 70.0 feet

Length of gravel pack: 12.1 feet

Diameter of gravel pack: 10.25 inches

Measured by Gregg Alberts

Recorded by Gregg Alberts

Air Temperature (°F) 70's/90's

Weather Condition SUNNY

WITHDRAWAL OF WELL VOLUMES

FLUSHING

Well Volume Well Volume Well Volume

Water Level Before	<u>33.20</u>		
Water Level After	<u>69.45</u>		
Time Begin Flushing	<u>1:50 P</u>		
Time End Flushing	<u>2:20 P</u>		
Time Water Level After	<u>2:20 P</u>		
Estimated Volume Flushed (gal)	<u>35</u>		

FIELD ANALYSIS

Water Temperature (°C)	<u>14.2</u>		
Sample pH	<u>7.75</u>		
Sample Conductivity (mhos/cm)	<u>487</u>		
Buffer Before			
Buffer After			
Odor			
Color			
Other			

COMMENTS

WELL DEVELOPMENT

Project GROUNDWATER QUALITY ASSESSMENT

Well Number T29

Project Number 40875135

Date 6-13-88 Page 2 of 3

Well Inside Diameter: 4.026 inches

Depth of bottom: 70.0 feet

Length of gravel pack: 12.1 feet

Diameter of gravel pack: 10.25 inches

Measured by Gregg Albert

Recorded by Gregg Albert

Air Temperature (°F) 70's/90's

Weather Condition SUNNY

WITHDRAWAL OF WELL VOLUMES

FLUSHING

	<u>Well Volume</u>	<u>Well Volume</u>	<u>Well Volume</u>
Water Level Before	<u>33.56</u>	<u>60.27</u>	
Water Level After	<u>69.29</u>	<u>67.08</u>	
Time Begin Flushing	<u>3:32 P</u>	<u>5:23 P</u>	
Time End Flushing	<u>4:07 P</u>	<u>5:35 P</u>	
Time Water Level After	<u>4:07 P</u>	<u>5:35 P</u>	
Estimated Volume Flushed (gal)	<u>37.5</u>	<u>8</u>	

FIELD ANALYSIS

Water Temperature (°C)	<u>15.7</u>	<u>15.3</u>	
Sample pH	<u>7.31</u>	<u>7.35</u>	
Sample Conductivity (mhos/cm)	<u>722</u>	<u>806</u>	
Buffer Before			
Buffer After			
Odor			
Color			
Other			

COMMENTS

WELL DEVELOPMENT

Project GROUNDWATER QUALITY ASSESSMENT

Well Number 729

Project Number 40875135

Date 7-9-88 Page 3 of 3

Well Inside Diameter: 4.026 inches

Depth of bottom: 70.0 feet

Length of gravel pack: 12.1 feet

Diameter of gravel pack: 10.25 inches

Measured by Gregg Albert

Recorded by Gregg Albert

Air Temperature (°F) MID 80's

Weather Condition SUNNY

WITHDRAWAL OF WELL VOLUMES

FLUSHING

Well Volume Well Volume Well Volume

Water Level Before	<u>33.63</u>		
Water Level After	<u>DRY</u>		
Time Begin Flushing *	<u>8:40 AM</u>		
Time End Flushing *	<u>11:35 A</u>		
Time Water Level After	<u>11:35 A</u>		
Estimated Volume Flushed (gal)	<u>40</u>		

FIELD ANALYSIS

@ 8:40 A @ 9:50 A @ 10:50

Water Temperature (°C)	<u>14.6</u>	<u>15.7</u>	<u>17.8</u>
Sample pH	<u>8.72</u>	<u>8.52</u>	<u>8.44</u>
Sample Conductivity (mhos/cm)	<u>690</u>	<u>622</u>	<u>715</u>
Buffer Before			
Buffer After			
Odor			
Color			
Other			

COMMENTS

* TIME OF SURGING

WELL DEVELOPMENT

Project GROUNDWATER QUALITY
ASSESSMENT

Well Number T30

Project Number 40875135

Date 6-9-88 Page 1 of 2

Well Inside Diameter: 2.067 inches

Depth of bottom: 149.0 feet

Length of gravel pack: 12.4 feet

Diameter of gravel pack: 5.875 inches

Measured by Gregg Alberty

Recorded by Gregg Alberty

Air Temperature (°F) 70's

Weather Condition SUNNY

WITHDRAWAL OF WELL VOLUMES

FLUSHING

	<u>Well Volume</u>	<u>Well Volume</u>	<u>Well Volume</u>
Water Level Before	<u>64.54</u>	<u>136.92</u>	<u>143.50</u>
Water Level After	<u>145.00</u>	<u>143.92</u>	<u>144.25</u>
Time Begin Flushing	<u>9:18A</u>	<u>12:54P</u>	<u>2:19P</u>
Time End Flushing	<u>10:32A</u>	<u>1:09P</u>	<u>2:46P</u>
Time Water Level After	<u>10:32A</u>	<u>1:09P</u>	<u>2:46P</u>
Estimated Volume Flushed (gal)	<u>10</u>	<u>2.5</u>	<u>1.0</u>

FIELD ANALYSIS

Water Temperature (°C)	<u>16.3</u>	<u>15.2</u>	<u>15.6</u>
Sample pH	<u>7.43</u>	<u>7.49</u>	<u>7.64</u>
Sample Conductivity (mhos/cm)	<u>998</u>	<u>957</u>	<u>938</u>
Buffer Before			
Buffer After			
Odor			
Color			
Other			

COMMENTS

WELL DEVELOPMENT

Project GROUNDWATER QUALITY ASSESSMENT

Well Number T30

Project Number 40875135

Date 7-8-88 Page 2 of 2

Well Inside Diameter: 2.067 inches

Depth of bottom: 149.0 feet

Length of gravel pack: 12.4 feet

Diameter of gravel pack: 5.875 inches

Measured by Gregg Albert

Recorded by Gregg Albert

Air Temperature (°F) HIGH 80's

Weather Condition SUNNY

WITHDRAWAL OF WELL VOLUMES

FLUSHING

	<u>Well Volume</u>	<u>Well Volume</u>	<u>Well Volume</u>
Water Level Before	<u>70.02</u>	<u>129.50</u>	<u>144.94</u>
Water Level After	<u>129.50</u>	<u>144.94</u>	<u>*</u>
Time Begin Flushing	<u>10:00AM</u>	<u>10:25A</u>	<u>10:55A</u>
Time End Flushing	<u>10:25A</u>	<u>10:55A</u>	<u>12:20PM</u>
Time Water Level After	<u>10:25A</u>	<u>10:55A</u>	<u>12:20P</u>
Estimated Volume Flushed (gal)	<u>7</u>	<u>4</u>	<u>5</u>

FIELD ANALYSIS

Water Temperature (°C)	<u>16.7</u>	<u>16.6</u>	<u>16.7</u>
Sample pH	<u>8.02</u>	<u>6.25</u>	<u>6.98</u>
Sample Conductivity (mhos/cm)	<u>795</u>	<u>815</u>	<u>8.52</u>
Buffer Before			
Buffer After			
Odor			
Color			
Other			

COMMENTS

* W.L. BELOW TOP OF PUMP

WELL DEVELOPMENT

Project GROUNDWATER QUALITY
ASSESSMENT

Well Number T31

Project Number 40875135

Date 6-14-88 Page 1 of 2

Well Inside Diameter: 4.026 inches

Depth of bottom: 20.0 feet

Length of gravel pack: 12.0 feet

Diameter of gravel pack: 10.25 inches

Measured by Gregg Alberts

Recorded by Gregg Alberts

Air Temperature (°F) 70's / 90's

Weather Condition SUNNY

WITHDRAWAL OF WELL VOLUMES

FLUSHING

	<u>Well Volume</u>	<u>Well Volume</u>	<u>Well Volume</u>
Water Level Before	<u>8.78</u>	<u>10.15</u>	<u>11.06</u>
Water Level After	<u>19.33</u>	<u>19.40</u>	<u>19.50</u>
Time Begin Flushing	<u>12:03 P</u>	<u>2:23 P</u>	<u>3:33 P</u>
Time End Flushing	<u>1:24 P</u>	<u>2:32 P</u>	<u>3:50 P</u>
Time Water Level After	<u>1:24 P</u>	<u>2:32 P</u>	<u>3:50 P</u>
Estimated Volume Flushed (gal)	<u>17</u>	<u>12</u>	<u>10</u>

FIELD ANALYSIS

Water Temperature (°C)	<u>14.1</u>	<u>14.2</u>	<u>14.5</u>
Sample pH	<u>7.67</u>	<u>7.17</u>	<u>7.14</u>
Sample Conductivity (mhos/cm)	<u>590</u>	<u>553</u>	<u>552</u>
Buffer Before			
Buffer After			
Odor			
Color			
Other			

COMMENTS

WELL DEVELOPMENT

Project GROUNDWATER QUALITY ASSESSMENT

Well Number T31

Project Number 40875135

Date 7-10-88 Page 2 of 2

Well Inside Diameter: 4.026 inches

Depth of bottom: 20.0 feet

Length of gravel pack: 12.0 feet

Diameter of gravel pack: 10.25 inches

Measured by Gregg Albert

Recorded by Gregg Albert

Air Temperature (°F) MID 70's

Weather Condition OVERCAST / RAINING

WITHDRAWAL OF WELL VOLUMES

FLUSHING

Well Volume Well Volume Well Volume

Water Level Before	<u>9.75</u>		
Water Level After	<u>DRY</u>		
Time Begin Flushing *	<u>12:55 PM</u>		
Time End Flushing *	<u>3:15 P</u>		
Time Water Level After	<u>3:15 P</u>		
Estimated Volume Flushed (gal)	<u>20</u>		

FIELD ANALYSIS

@ 12:55P @ 2:00P @ 2:40P

Water Temperature (°C)	<u>14.9</u>	<u>18.1</u>	<u>16.9</u>
Sample pH	<u>7.80</u>	<u>7.75</u>	<u>7.74</u>
Sample Conductivity (mhos/cm)	<u>323</u>	<u>352</u>	<u>339</u>
Buffer Before			
Buffer After			
Odor			
Color			
Other			

COMMENTS

* TIME OF SURGING

WELL DEVELOPMENT

Project GROUNDWATER QUALITY
ASSESSMENT

Well Number T32

Project Number 40875135

Date 6-14-88 Page 1 of 2

Well Inside Diameter: 4.026 inches

Depth of bottom: 70.0 feet

Length of gravel pack: 12.2 feet

Diameter of gravel pack: 10.25 inches

Measured by Gregg Olberts

Recorded by Gregg Olberts

Air Temperature (°F) 70's/90's

Weather Condition SUNNY

WITHDRAWAL OF WELL VOLUMES

FLUSHING

	<u>Well Volume</u>	<u>Well Volume</u>	<u>Well Volume</u>
Water Level Before	<u>34.75</u>	<u>64.56</u>	<u>66.02</u>
Water Level After	<u>68.06</u>	<u>68.94</u>	<u>67.88</u>
Time Begin Flushing	<u>12:06 P</u>	<u>2:36 P</u>	<u>4:00 P</u>
Time End Flushing	<u>1:10 P</u>	<u>2:43 P</u>	<u>4:08 P</u>
Time Water Level After	<u>1:10 P</u>	<u>2:43 P</u>	<u>4:08 P</u>
Estimated Volume Flushed (gal)	<u>30</u>	<u>6</u>	<u>2</u>

FIELD ANALYSIS

Water Temperature (°C)	<u>15.6</u>	<u>14.0</u>	<u>13.9</u>
Sample pH	<u>7.63</u>	<u>7.72</u>	<u>7.82</u>
Sample Conductivity (mhos/cm)	<u>771</u>	<u>790</u>	<u>767</u>
Buffer Before			
Buffer After			
Odor			
Color			
Other			

COMMENTS

WELL DEVELOPMENT

Project GROUNDWATER QUALITY ASSESSMENT

Well Number T32

Project Number 40875135

Date 7-10-88 Page 2 of 2

Well Inside Diameter: 4.026 inches

Depth of bottom: 70.0 feet

Length of gravel pack: 12.2 feet

Diameter of gravel pack: 10.25 inches

Measured by Gregg Alberts

Recorded by Gregg Alberts

Air Temperature (°F) MID 70'S

Weather Condition RAINING

WITHDRAWAL OF WELL VOLUMES

FLUSHING

Well Volume Well Volume Well Volume

Water Level Before	<u>36.75</u>		
Water Level After	<u>DRY</u>		
Time Begin Flushing *	<u>9:30AM</u>		
Time End Flushing *	<u>12:15 P</u>		
Time Water Level After	<u>12:15P</u>		
Estimated Volume Flushed (gal)	<u>38</u>		

FIELD ANALYSIS

@ 9:30A @ 10:40A @ 11:20A @ 12:15

Water Temperature (°C)	<u>14.2</u>	<u>14.8</u>	<u>14.7</u>	<u>14.8</u>
Sample pH	<u>8.42</u>	<u>6.63</u>	<u>7.09</u>	<u>7.48</u>
Sample Conductivity (mhos/cm)	<u>619</u>	<u>580</u>	<u>555</u>	<u>559</u>
Buffer Before				
Buffer After				
Odor				
Color				
Other				

COMMENTS

* TIME OF SURGING

WELL DEVELOPMENT

Project GROUNDWATER QUALITY ASSESSMENT

Well Number T33

Project Number 40875135

Date 8-12-88 Page 1 of 3

Well Inside Diameter: 2.067 inches

Depth of bottom: 138.5 feet

Length of gravel pack: 12.4 feet

Diameter of gravel pack: 5.875 inches

Measured by Gregg Albert

Recorded by Gregg Albert

Air Temperature (°F) 90's

Weather Condition SUNNY, HUMID, CALM

WITHDRAWAL OF WELL VOLUMES

FLUSHING

	<u>Well Volume</u>	<u>Well Volume</u>	<u>Well Volume</u>
Water Level Before	<u>45.83</u>	<u>50.00</u>	<u>66.50</u>
Water Level After	<u>50.00</u>	<u>66.50</u>	<u>93.08</u>
Time Begin Flushing	<u>7:30A</u>	<u>7:45A</u>	<u>8:00A</u>
Time End Flushing	<u>7:45A</u>	<u>8:00A</u>	<u>8:50A</u>
Time Water Level After	<u>7:45A</u>	<u>8:00A</u>	<u>8:50A</u>
Estimated Volume Flushed (gal)	<u>2</u>	<u>5</u>	<u>8</u>

FIELD ANALYSIS

Water Temperature (°C)	<u>13.6</u>	<u>14.4</u>	<u>14.3</u>
Sample pH	<u>11.66</u>	<u>12.13</u>	<u>12.31</u>
Sample Conductivity (mhos/cm)	<u>3010</u>	<u>4350</u>	<u>4920</u>
Buffer Before			
Buffer After			
Odor			
Color			
Other			

COMMENTS

WELL DEVELOPMENT

Project GROUNDWATER QUALITY ASSESSMENT

Well Number T33

Project Number 40875135

Date 8-12-88 Page 2 of 3

Well Inside Diameter: 2.067 inches

Depth of bottom: 138.5 feet

Length of gravel pack: 12.4 feet

Diameter of gravel pack: 5.875 inches

Measured by Gregg Albett

Recorded by Gregg Albett

Air Temperature (°F) 90's

Weather Condition SUNNY, HUMID, CALM

WITHDRAWAL OF WELL VOLUMES

FLUSHING

	<u>Well Volume</u>	<u>Well Volume</u>	<u>Well Volume</u>
Water Level Before	<u>93.08</u>	<u>105.08</u>	<u>119.75</u>
Water Level After	<u>105.08</u>	<u>119.75</u>	<u>133.54</u>
Time Begin Flushing	<u>8:50A</u>	<u>9:57A</u>	<u>11:00A</u>
Time End Flushing	<u>9:57A</u>	<u>11:00A</u>	<u>11:45A</u>
Time Water Level After	<u>9:57A</u>	<u>11:00A</u>	<u>11:45A</u>
Estimated Volume Flushed (gal)	<u>11</u>	<u>14</u>	<u>19</u>

FIELD ANALYSIS

Water Temperature (°C)	<u>15.0</u>	<u>15.3</u>	<u>14.9</u>
Sample pH	<u>12.45</u>	<u>12.64</u>	<u>9.33</u>
Sample Conductivity (mhos/cm)	<u>6100</u>	<u>6780</u>	<u>888</u>
Buffer Before			
Buffer After			
Odor			
Color			
Other			

COMMENTS

WELL DEVELOPMENT

Project GROUNDWATER QUALITY ASSESSMENT

Well Number 733

Project Number 40875135

Date 8-12-88 Page 3 of 3

Well Inside Diameter: 2.067 inches

Depth of bottom: 138.5 feet

Length of gravel pack: 12.4 feet

Diameter of gravel pack: 5.875 inches

Measured by Gregg Albert

Recorded by Gregg Albert

Air Temperature (°F) 90's

Weather Condition SUNNY, HUMID, CALM

WITHDRAWAL OF WELL VOLUMES

FLUSHING

Well Volume Well Volume Well Volume

Water Level Before	<u>133.54</u>		
Water Level After	<u>DRY</u>		
Time Begin Flushing	<u>11:45A</u>		
Time End Flushing	<u>12:00NOON</u>		
Time Water Level After	<u>12:00NOON</u>		
Estimated Volume Flushed (gal)	<u>22</u>		

FIELD ANALYSIS

Water Temperature (°C)	<u>14.7</u>	<u>13.2*</u>	<u>18.7*</u>
Sample pH	<u>10.88</u>	<u>9.59*</u>	<u>9.45*</u>
Sample Conductivity (mhos/cm)	<u>1430</u>	<u>936*</u>	<u>815*</u>
Buffer Before			
Buffer After			
Odor			
Color			
Other			

COMMENTS

* READINGS DURING PURGING
PRIOR TO SAMPLING

WELL DEVELOPMENT

Project GROUNDWATER QUALITY
ASSESSMENT

Well Number T34

Project Number 40875135

Date 6-16-88 Page 1 of 3

Well Inside Diameter: 4.026 inches

Depth of bottom: 20.0 feet

Length of gravel pack: 12.3 feet

Diameter of gravel pack: 10.25 inches

Measured by Gregg Albert

Recorded by Gregg Albert

Air Temperature (°F) 70's / 80's

Weather Condition CLOUDY

WITHDRAWAL OF WELL VOLUMES

FLUSHING

	<u>Well Volume</u>	<u>Well Volume</u>	<u>Well Volume</u>
Water Level Before	<u>7.71</u>	<u>7.79</u>	<u>7.79</u>
Water Level After	<u>18.63</u>	<u>19.25</u>	<u>19.17</u>
Time Begin Flushing	<u>10:11 A</u>	<u>12:44 P</u>	<u>3:20 P</u>
Time End Flushing	<u>10:25 A</u>	<u>12:53 P</u>	<u>3:38 P</u>
Time Water Level After	<u>10:25 A</u>	<u>12:53 P</u>	<u>3:38 P</u>
Estimated Volume Flushed (gal)	<u>20</u>	<u>19</u>	<u>21</u>

FIELD ANALYSIS

Water Temperature (°C)	<u>12.9</u>	<u>12.2</u>	<u>12.8</u>
Sample pH	<u>7.86</u>	<u>7.29</u>	<u>7.30</u>
Sample Conductivity (mhos/cm)	<u>600</u>	<u>588</u>	<u>599</u>
Buffer Before			
Buffer After			
Odor			
Color			
Other			

COMMENTS

WELL DEVELOPMENT

Project GROUNDWATER QUALITY ASSESSMENT

Well Number T34

Project Number 40875135

Date 7-11-88 Page 2 of 3

Well Inside Diameter: 4.026 inches

Depth of bottom: 20.0 feet

Length of gravel pack: 12.3 feet

Diameter of gravel pack: 10.25 inches

Measured by Gregg Albert

Recorded by Gregg Albert

Air Temperature (°F) LOW 90's

Weather Condition SUNNY

WITHDRAWAL OF WELL VOLUMES

FLUSHING

Well Volume Well Volume Well Volume

Water Level Before	<u>8.10</u>
Water Level After	<u>DRY</u>
Time Begin Flushing *	<u>11:25A</u>
Time End Flushing *	<u>2:15 PM</u>
Time Water Level After	<u>2:15 P</u>
Estimated Volume Flushed (gal)	<u>31</u>

FIELD ANALYSIS

	<u>@ 11:25A</u>	<u>@ 12:30P</u>	<u>@ 1:45P</u>	<u>@ 2:15P</u>
Water Temperature (°C)	<u>16.8</u>	<u>18.9</u>	<u>18.8</u>	<u>19.6</u>
Sample pH	<u>8.18</u>	<u>8.09</u>	<u>8.62</u>	<u>8.61</u>
Sample Conductivity (mhos/cm)	<u>565</u>	<u>6:53</u>	<u>576</u>	<u>588</u>
Buffer Before				
Buffer After				
Odor				
Color				
Other				

COMMENTS

* TIME OF SURGING

WELL DEVELOPMENT

Project GROUNDWATER QUALITY ASSESSMENT Well Number 734

Project Number 40875135 Date 7-19-88 Page 3 of 3

Well Inside Diameter: 4.026 inches

Depth of bottom: 20.0 feet

Length of gravel pack: 12.3 feet

Diameter of gravel pack: 10.25 inches

Measured by Gregg Albert

Recorded by Gregg Albert

Air Temperature (°F) LOW 80's

Weather Condition SUNNY

WITHDRAWAL OF WELL VOLUMES

FLUSHING

	<u>Well Volume</u>	<u>Well Volume</u>	<u>Well Volume</u>
Water Level Before	<u>9.22</u>		
Water Level After	<u>DRY</u>		
Time Begin Flushing *	<u>10:50 A</u>		
Time End Flushing *	<u>11:30 A</u>		
Time Water Level After	<u>11:30 A</u>		
Estimated Volume Flushed (gal)	<u>20</u>		

FIELD ANALYSIS

Water Temperature (°C)	<u>16.6</u>		
Sample pH	<u>7.92</u>		
Sample Conductivity (mhos/cm)	<u>537</u>		
Buffer Before			
Buffer After			
Odor			
Color			
Other			

COMMENTS

* TIME OF SURGING

WELL DEVELOPMENT

Project GROUNDWATER QUALITY ASSESSMENT

Well Number T35

Project Number 40875135

Date 6-16-88 Page 1 of 2

Well Inside Diameter: 4.026 inches

Depth of bottom: 70.0 feet

Length of gravel pack: 12.0 feet

Diameter of gravel pack: 10.25 inches

Measured by Gregg Alberts

Recorded by Gregg Alberts

Air Temperature (°F) 70's/80's

Weather Condition CLOUDY

WITHDRAWAL OF WELL VOLUMES

FLUSHING

Well Volume Well Volume Well Volume

Water Level Before	<u>32.35</u>	<u>41.15</u>	<u>50.63</u>
Water Level After	<u>49.00</u>	<u>66.83</u>	<u>66.88</u>
Time Begin Flushing	<u>9:33A</u>	<u>12:13P</u>	<u>3:02P</u>
Time End Flushing	<u>10:11A</u>	<u>12:40P</u>	<u>3:16P</u>
Time Water Level After	<u>10:11A</u>	<u>12:40P</u>	<u>3:16P</u>
Estimated Volume Flushed (gal)	<u>17</u>	<u>24</u>	<u>18</u>

FIELD ANALYSIS

Water Temperature (°C)	<u>14.4</u>	<u>14.8</u>	<u>14.8</u>
Sample pH	<u>7.56</u>	<u>7.45</u>	<u>7.26</u>
Sample Conductivity (mhos/cm)	<u>947</u>	<u>930</u>	<u>952</u>
Buffer Before			
Buffer After			
Odor			
Color			
Other			

COMMENTS

WELL DEVELOPMENT

Project GROUNDWATER QUALITY
ASSESSMENT

Well Number T35

Project Number 40875135

Date 7-11-88 Page 2 of 2

Well Inside Diameter: 4.026 inches

Depth of bottom: 70.0 feet

Length of gravel pack: 12.0 feet

Diameter of gravel pack: 10.25 inches

Measured by Gregg Olberts

Recorded by Gregg Olberts

Air Temperature (°F) HIGH 80's

Weather Condition SUNNY

WITHDRAWAL OF WELL VOLUMES

FLUSHING

	<u>Well Volume</u>	<u>Well Volume</u>	<u>Well Volume</u>
Water Level Before	<u>34.67</u>		
Water Level After	<u>DRY</u>		
Time Begin Flushing *	<u>8:15A</u>		
Time End Flushing *	<u>11:00A</u>		
Time Water Level After	<u>11:00A</u>		
Estimated Volume Flushed (gal)	<u>41</u>		

FIELD ANALYSIS

	<u>@ 8:15A</u>	<u>@ 9:00A</u>	<u>@ 9:45A</u>	<u>@ 11:00A</u>
Water Temperature (°C)	<u>14.3</u>	<u>14.8</u>	<u>16.4</u>	<u>16.4</u>
Sample pH	<u>8.21</u>	<u>7.14</u>	<u>7.64</u>	<u>7.69</u>
Sample Conductivity (mhos/cm)	<u>874</u>	<u>879</u>	<u>889</u>	<u>890</u>
Buffer Before				
Buffer After				
Odor				
Color				
Other				

COMMENTS

* TIME OF SURGING

WELL DEVELOPMENT

Project GROUNDWATER QUALITY
ASSESSMENT

Well Number T 36

Project Number 40875135

Date 6-16-88 Page 1 of 2

Well Inside Diameter: 2.067 inches

Depth of bottom: 159.5 feet

Length of gravel pack: 12.3 feet

Diameter of gravel pack: 5.875 inches

Measured by Gregg Albert

Recorded by Gregg Albert

Air Temperature (°F) 70's / 80's

Weather Condition CLOUDY

WITHDRAWAL OF WELL VOLUMES

FLUSHING

	<u>Well Volume</u>	<u>Well Volume</u>	<u>Well Volume</u>
Water Level Before	<u>72.23</u>	<u>117.06</u>	<u>115.58</u>
Water Level After	<u>134.75</u>	<u>152.40</u>	<u>154.58</u>
Time Begin Flushing	<u>8:20 A</u>	<u>10:29 A</u>	<u>2:48 P</u>
Time End Flushing	<u>8:45 A</u>	<u>10:51 A</u>	<u>3:34 P</u>
Time Water Level After	<u>8:45 A</u>	<u>10:51 A</u>	<u>3:34 P</u>
Estimated Volume Flushed (gal)	<u>10</u>	<u>6</u>	<u>11</u>

FIELD ANALYSIS

Water Temperature (°C)	<u>13.8</u>	<u>15.1</u>	<u>15.5</u>
Sample pH	<u>7.89</u>	<u>7.73</u>	<u>7.31</u>
Sample Conductivity (mhos/cm)	<u>763</u>	<u>936</u>	<u>895</u>
Buffer Before			
Buffer After			
Odor			
Color			
Other			

COMMENTS

WELL DEVELOPMENT

Project GROUNDWATER QUALITY ASSESSMENT

Well Number T36

Project Number 40875135

Date 7-7-88 Page 2 of 2

Well Inside Diameter: 2.067 inches

Depth of bottom: 159.5 feet

Length of gravel pack: 12.3 feet

Diameter of gravel pack: 5.875 inches

Measured by Gregg Albert

Recorded by Gregg Albert

Air Temperature (°F) HIGH 80'S

Weather Condition PARTLY CLOUDY

WITHDRAWAL OF WELL VOLUMES

FLUSHING

	<u>Well Volume</u>	<u>Well Volume</u>	<u>Well Volume</u>
Water Level Before	<u>72.54</u>	<u>81.67</u>	<u>142.69</u>
Water Level After	<u>81.67</u>	<u>142.69</u>	<u>*</u>
Time Begin Flushing	<u>10:35AM</u>	<u>10:47A</u>	<u>12:52P</u>
Time End Flushing	<u>10:47A</u>	<u>12:52PM</u>	<u>2:10P</u>
Time Water Level After	<u>10:47A</u>	<u>12:52P</u>	<u>2:10P</u>
Estimated Volume Flushed (gal)	<u>8</u>	<u>10</u>	<u>2</u>

FIELD ANALYSIS

Water Temperature (°C)	<u>16.3</u>	<u>16.2</u>
Sample pH	<u>9.74</u>	<u>8.40</u>
Sample Conductivity (mhos/cm)	<u>917</u>	<u>801</u>
Buffer Before		
Buffer After		
Odor		
Color		
Other		

COMMENTS

* W.L. BELOW TOP OF PUMP

APPENDIX E
AQUIFER TEST DATA

GROUNDWATER QUALITY ASSESSMENT
IOWA ARMY AMMUNITION PLANT (IAAP)
MIDDLETOWN, IOWA
CONTRACT NO. DACA63-87-C-0139

SLUG-IN TEST REPORT

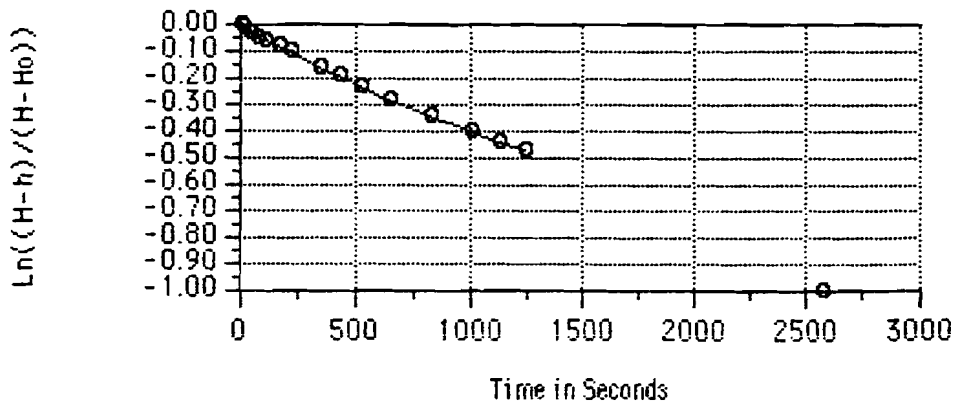
Monitoring Well T01

Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
0.3	0.0	14.82	22.68	1.00
0.5	12.0	14.87	22.63	0.99
1	42.0	14.92	22.58	0.97
1.5	72.0	14.98	22.52	0.95
2	102.0	15.02	22.48	0.94
3	162.0	15.1	22.40	0.92
4	222.0	15.17	22.33	0.90
6	342.0	15.33	22.17	0.86
7.5	432.0	15.44	22.06	0.82
9	522.0	15.54	21.96	0.80
11	642.0	15.67	21.83	0.76
14	822.0	15.83	21.67	0.71
17	1002.0	15.99	21.51	0.67
19	1122.0	16.08	21.42	0.64
21	1242.0	16.14	21.36	0.62

r = 2.00 in. K = 1.7E-6 ft/sec or 5.2E-5 cm/sec
 L = 10 ft 1.5E-1 ft/day or 5.4E1 ft/yr
 R = 5.12 in. To = 2575 sec. Least Squares Fit r = -0.998
 Coef of Determination = 0.996

Note: K is calculated based on Hvorslev Method (1951)



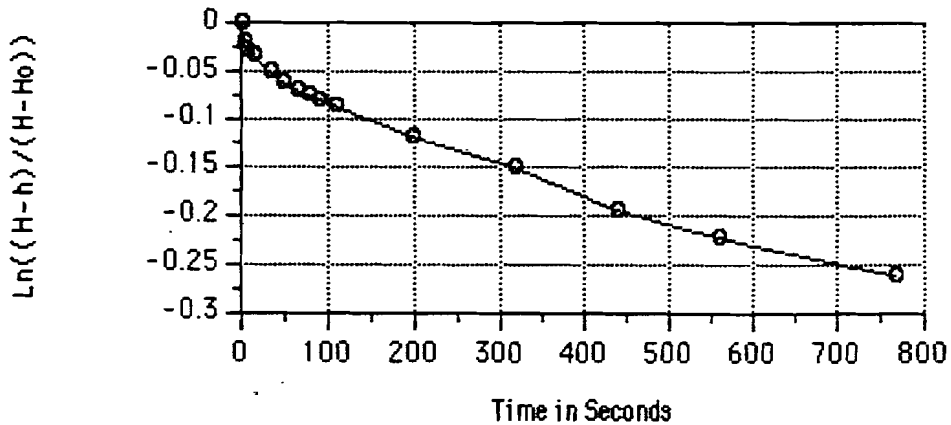
SLUG-OUT TEST REPORT

Monitoring Well T01
 Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
0.2	0.0	19.43	18.07	1.00
0.25	3.0	19.37	18.13	0.98
0.3	6.0	19.35	18.15	0.97
0.4167	13.0	19.33	18.17	0.97
0.75	33.0	19.26	18.22	0.95
1	48.0	19.25	18.25	0.94
1.25	63.0	19.23	18.27	0.93
1.5	78.0	19.21	18.29	0.93
1.67	88.2	19.2	18.30	0.92
2	108.0	19.18	18.32	0.92
3.5	198.0	19.09	18.41	0.89
5.5	318.0	19.01	18.49	0.86
7.5	438.0	18.9	18.60	0.82
9.5	558.0	18.83	18.67	0.80
13	768.0	18.74	18.76	0.77

r = 2.00 in. K = 1.5E-6 ft/sec or 4.5E-5 cm/sec
 L = 10 ft 1.3E-1 ft/day or 4.6E1 ft/yr
 R = 5.12 in. To = 2984 sec. Least Squares Fit r = -0.976
 Coef of Determination = 0.952

Note: K is calculated based on Hvorslev Method (1951)



SLUG-OUT TEST REPORT
 Monitoring Well T02
 Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
0.2666	0.0	20.62	16.88	1.00
0.3166	3.0	20.61	16.89	0.93
0.3333	4.0	20.6	16.90	0.87
0.4167	9.0	20.58	16.92	0.73
0.5	14.0	20.57	16.93	0.67
0.833	34.0	20.56	16.94	0.60
1.4166	69.0	20.55	16.95	0.53
2.5	134.0	20.54	16.96	0.47
3	164.0	20.53	16.97	0.40
9	524.0	20.52	16.98	0.33
9.5	554.0	20.51	16.99	0.27
14	824.0	20.51	16.99	0.27
15	884.0	20.5	17.00	0.20
20	1184.0	20.49	17.01	0.13
21	1244.0	20.48	17.02	0.07

$r = 2.00$ in. $K = 1.0E-5$ ft/sec or $3.1E-4$ cm/sec
 $L = 10$ ft $8.9E-1$ ft/day or $3.2E2$ ft/yr
 $R = 5.12$ in. $T_0 = 425$ sec. Least Squares Fit $r = -0.953$
 Coef of Determination = 0.909

Note: K is calculated based on Hvorslev Method (1951)

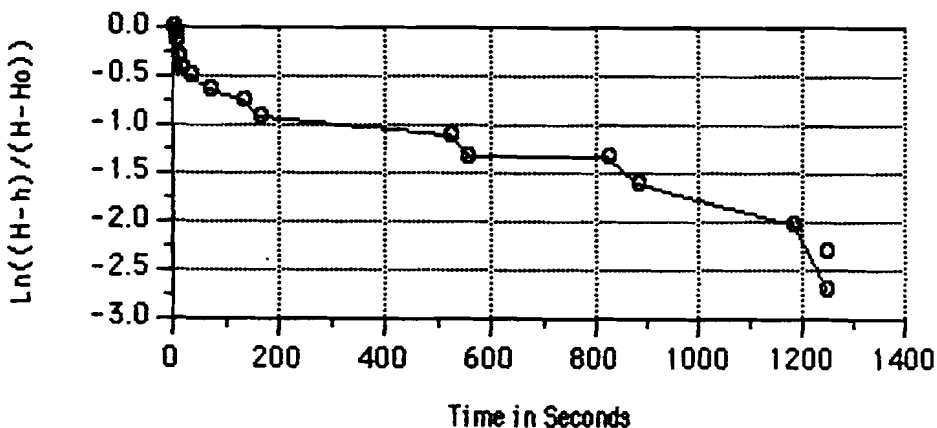


Table
Project No. 40875134

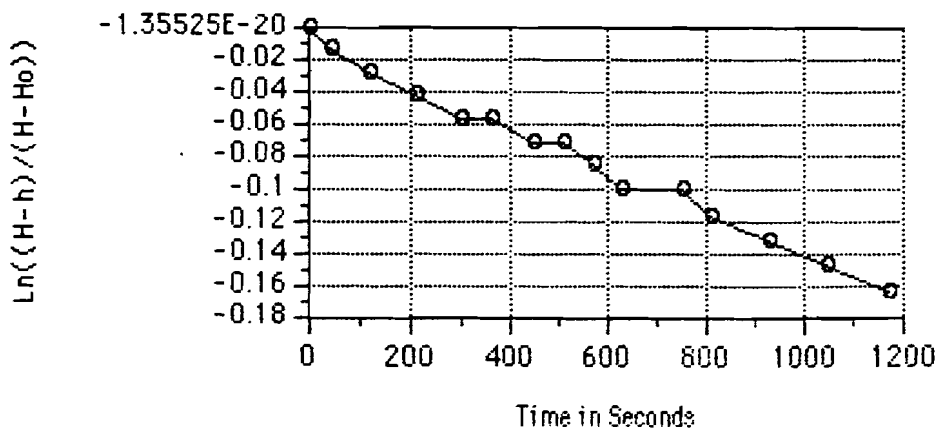
SLUG-OUT TEST REPORT

Monitoring Well T03
Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	$(H-h)/(H-H_0)$
0.5	0.0	21.79	13.21	1.00
1.25	45.0	21.78	13.22	0.99
2.5	120.0	21.77	13.23	0.97
4	210.0	21.76	13.24	0.96
5.5	300.0	21.75	13.25	0.95
6.5	360.0	21.75	13.25	0.95
8	450.0	21.74	13.26	0.93
9	510.0	21.74	13.26	0.93
10	570.0	21.73	13.27	0.92
11	630.0	21.72	13.28	0.90
13	750.0	21.72	13.28	0.90
14	810.0	21.71	13.29	0.89
16	930.0	21.7	13.30	0.88
18	1050.0	21.69	13.31	0.86
20	1170.0	21.68	13.32	0.85

r = 2.00 in. K = 5.8E-7 ft/sec or 1.8E-5 cm/sec
 L = 10 ft 5.0E-2 ft/day or 1.8E1 ft/yr
 R = 5.12 in. To = 7513 sec. Least Squares Fit r=-0.995
 Coef of Determination = 0.990

Note: K is calculated based on Hvorslev Method (1951)



SLUG-IN TEST REPORT

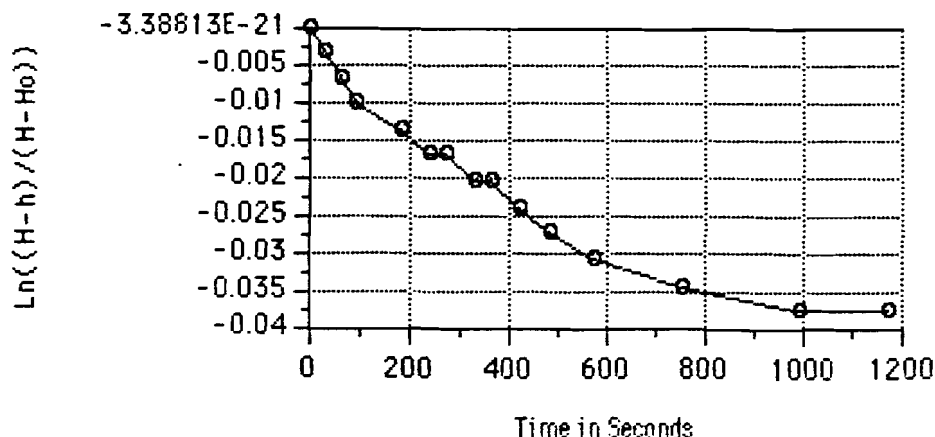
Monitoring Well T04

Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
0.5	0.0	26.85	13.15	1.00
1	30.0	26.86	13.14	1.00
1.5	60.0	26.87	13.13	0.99
2	90.0	26.88	13.12	0.99
3.5	180.0	26.89	13.11	0.99
4.5	240.0	26.9	13.10	0.98
5	270.0	26.9	13.10	0.98
6	330.0	26.91	13.09	0.98
6.5	360.0	26.91	13.09	0.98
7.5	420.0	26.92	13.08	0.98
8.5	480.0	26.93	13.07	0.97
10	570.0	26.94	13.06	0.97
13	750.0	26.95	13.05	0.97
17	990.0	26.96	13.04	0.96
20	1170.0	26.96	13.04	0.96

r = 2.00 in. K = 1.4E-7 ft/sec or 4.4E-6 cm/sec
 L = 10 ft 1.2E-2 ft/day or 4.5E0 ft/yr
 R = 5.12 in. To = 30572 sec. Least Squares Fit r = -0.945
 Coef of Determination = 0.894

Note: K is calculated based on Hvorslev Method (1951)



SLUG-OUT TEST REPORT

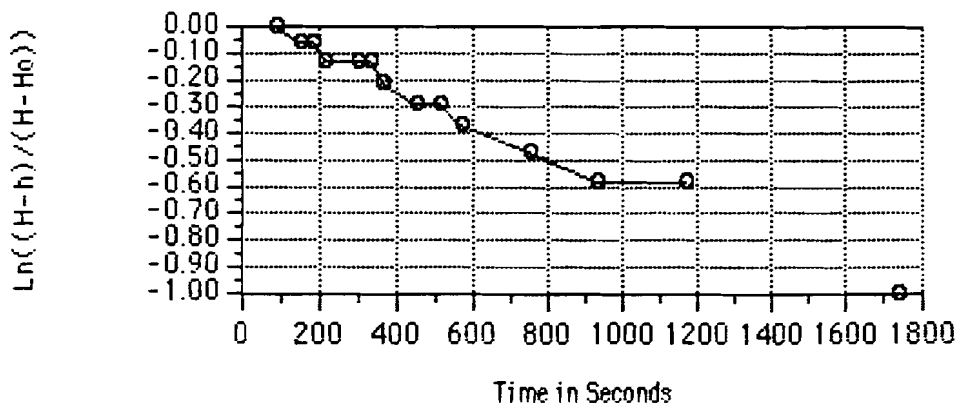
Monitoring Well T04

Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
2	90.0	29.99	10.01	1.00
3	150.0	29.98	10.02	0.94
3.5	180.0	29.98	10.02	0.94
4	210.0	29.97	10.03	0.87
5.5	300.0	29.97	10.03	0.87
6	330.0	29.97	10.03	0.87
6.5	360.0	29.96	10.04	0.81
8	450.0	29.95	10.05	0.75
9	510.0	29.95	10.05	0.75
10	570.0	29.94	10.06	0.69
13	750.0	29.93	10.07	0.62
16	930.0	29.92	10.08	0.56
20	1170.0	29.92	10.08	0.56

r = 2.00 in. K = 2.5E-6 ft/sec or **7.7E-5 cm/sec**
 L = 10 ft 2.2E-1 ft/day or 8.0E1 ft/yr
 R = 5.12 in. To = 1735 sec. Least Squares Fit r = -0.974
 Coef of Determination = 0.948

Note: K is calculated based on Hvorslev Method (1951)



SLUG-IN TEST REPORT
Monitoring Well T05
Test No. 1A

Elapsed time	Elapsed Time	Water	h	(H-h)/(H-H ₀)
Raw	Seconds	Depth		
Min		Ft		
0.5	0.0	22.45	17.55	1.00
1	30.0	22.45	17.55	1.00
1.5	60.0	22.46	17.54	1.00
2	90.0	22.47	17.53	0.99
3	150.0	22.48	17.52	0.99
4	210.0	22.49	17.51	0.99
5.5	300.0	22.5	17.50	0.98
7	390.0	22.51	17.49	0.98
8	450.0	22.51	17.49	0.98
8.5	480.0	22.52	17.48	0.98
9.5	540.0	22.52	17.48	0.98
11	630.0	22.53	17.47	0.97
13	750.0	22.53	17.47	0.97
15	870.0	22.54	17.46	0.97
16	930.0	22.54	17.46	0.97

r = 2.00 in. K = 1.4E-7 ft/sec or 4.2E-6 cm/sec
L = 10 ft 1.2E-2 ft/day or 4.4E0 ft/yr
R = 5.12 in. T₀ = 31616 sec. Least Squares Fit r = -0.960
 Coef of Determination = 0.922

Note: K is calculated based on Hvorslev Method (1951)

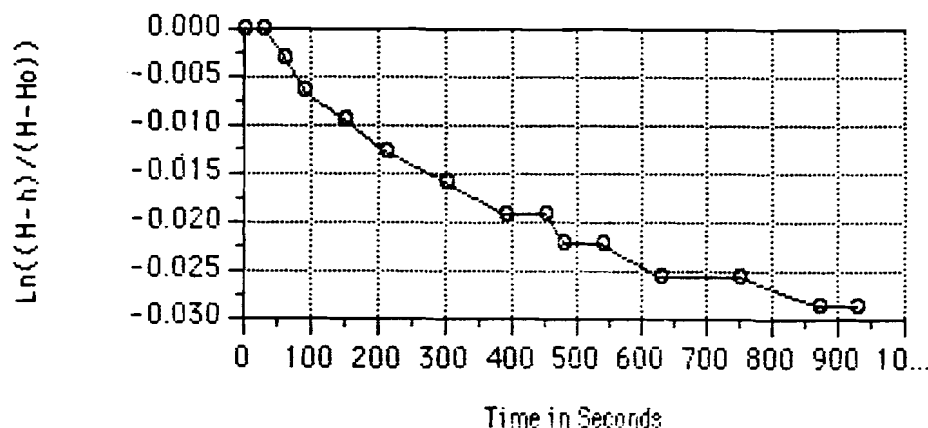


Table
Project No. 40875134

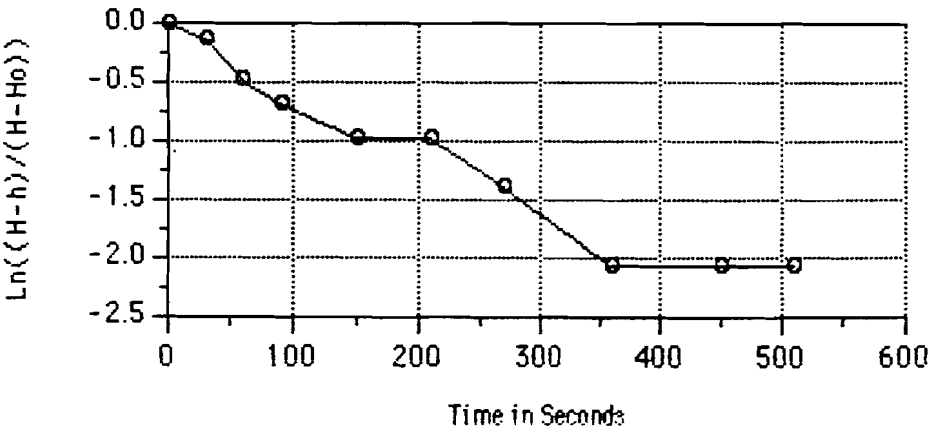
SLUG-OUT TEST REPORT

Monitoring Well T05
Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
0.5	0.0	25.71	16.79	1.00
1	30.0	25.7	16.80	0.87
1.5	60.0	25.68	16.82	0.62
2	90.0	25.67	16.83	0.50
3	150.0	25.66	16.84	0.38
4	210.0	25.66	16.84	0.38
5	270.0	25.65	16.85	0.25
6.5	360.0	25.64	16.86	0.13
8	450.0	25.64	16.86	0.13
9	510.0	25.64	16.86	0.13

r = 2.00 in. K = 2.3E-5 ft/sec or 6.9E-4 cm/sec
L = 10 ft 2.0E0 ft/day or 7.2E2 ft/yr
R = 5.12 in. To = 192 sec. Least Squares Fit r = -0.971
Coef of Determination = 0.943

Note: K is calculated based on Hvorslev Method (1951)



SLUG-IN TEST REPORT

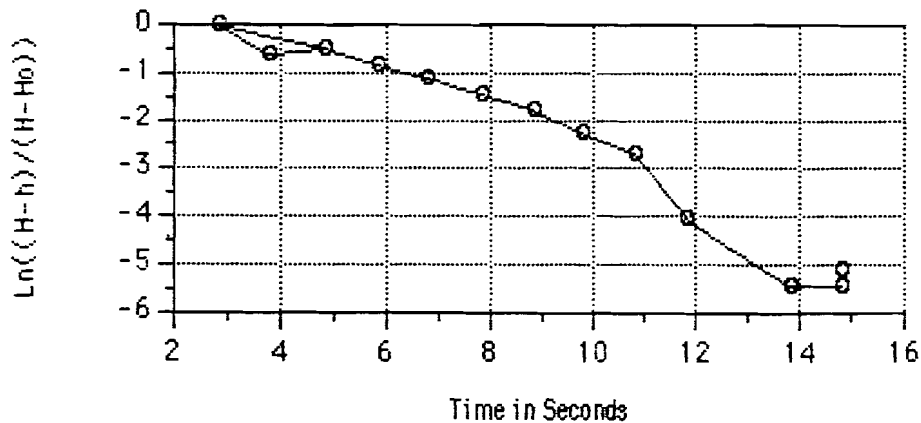
Monitoring Well T06

Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
0.05	2.8	60	71.00	1.00
0.066	3.8	61.09	69.91	0.54
0.083	4.8	60.97	70.03	0.59
0.05	2.8	60	71.00	1.00
0.066	3.8	61.09	69.91	0.54
0.083	4.8	60.97	70.03	0.59
0.1	5.8	61.33	69.67	0.44
0.116	6.8	61.57	69.43	0.34
0.133	7.8	61.81	69.19	0.24
0.15	8.8	61.97	69.03	0.17
0.166	9.8	62.13	68.87	0.10
0.183	10.8	62.21	68.79	0.07
0.2	11.8	62.33	68.67	0.02
0.233	13.8	62.36	68.64	0.00
0.25	14.8	62.36	68.64	0.00

$r = 1.00 \text{ in.}$ $K = 2.3E-4 \text{ ft/sec}$ or $6.9E-3 \text{ cm/sec}$
 $L = 10 \text{ ft}$ $1.9E1 \text{ ft/day}$ or $7.1E3 \text{ ft/yr}$
 $R = 3 \text{ in.}$ $T_0 = 6 \text{ sec.}$ Least Squares Fit $r = -0.967$
Coef of Determination = 0.935

Note: K is calculated based on Hvorslev Method (1951)

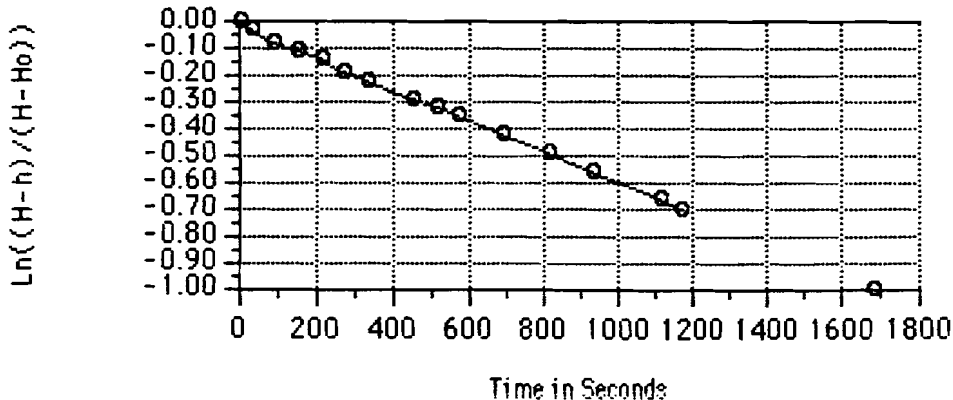


SLUG-IN TEST REPORT
Monitoring Well T08
Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
0.5	0.0	54.38	75.62	1.00
1	30.0	54.46	75.54	0.97
2	90.0	54.6	75.40	0.92
3	150.0	54.67	75.33	0.90
4	210.0	54.77	75.23	0.87
5	270.0	54.87	75.13	0.83
6	330.0	54.94	75.06	0.81
8	450.0	55.1	74.90	0.75
9	510.0	55.17	74.83	0.73
10	570.0	55.24	74.76	0.70
12	690.0	55.37	74.63	0.66
14	810.0	55.5	74.50	0.61
16	930.0	55.62	74.38	0.57
19	1110.0	55.78	74.22	0.52
20	1170.0	55.83	74.17	0.50

$r = 1.00 \text{ in.}$ $K = 7.6E-7 \text{ ft/sec}$ or $2.3E-5 \text{ cm/sec}$
 $L = 10 \text{ ft}$ $6.6E-2 \text{ ft/day}$ or $2.4E1 \text{ ft/yr}$
 $R = 3 \text{ in.}$ $T_o = 1683 \text{ sec.}$ Least Squares Fit $r = -1.000$
 Coef of Determination = 0.999

Note: K is calculated based on Hvorslev Method (1951)

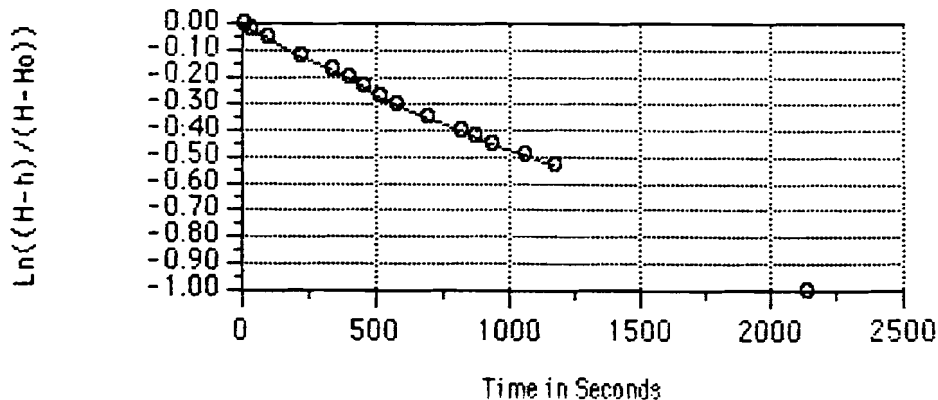


SLUG-OUT TEST REPORT
Monitoring Well T08
Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
0.5	0.0	59.35	70.65	1.00
1	30.0	59.31	70.69	0.98
2	90.0	59.24	70.76	0.95
4	210.0	59.12	70.88	0.89
6	330.0	59.02	70.98	0.84
7	390.0	58.97	71.03	0.82
8	450.0	58.92	71.08	0.79
9	510.0	58.85	71.15	0.76
10	570.0	58.81	71.19	0.74
12	690.0	58.74	71.26	0.71
14	810.0	58.67	71.33	0.67
15	870.0	58.64	71.36	0.66
16	930.0	58.6	71.40	0.64
18	1050.0	58.54	71.46	0.61
20	1170.0	58.49	71.51	0.59

r = 1.00 in. K = 6.0E-7 ft/sec or 1.8E-5 cm/sec
 L = 10 ft 5.2E-2 ft/day or 1.9E1 ft/yr
 R = 3 in. To = 2132 sec. Least Squares Fit r = -0.997
 Coef of Determination = 0.995

Note: K is calculated based on Hvorslev Method (1951)



SLUG-OUT TEST REPORT
Monitoring Well T09
Test No. 1A

Elapsed time Rov Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
1	30.0	54.16	82.84	1.00
1.5	60.0	54.15	82.85	0.98
2	90.0	54.14	82.86	0.97
3	150.0	54.13	82.87	0.95
3.5	180.0	54.12	82.88	0.94
4	210.0	54.11	82.89	0.92
4.5	240.0	54.1	82.90	0.91
5	270.0	54.09	82.91	0.89
5.5	300.0	54.08	82.92	0.87
6.5	360.0	54.07	82.93	0.86
7	390.0	54.06	82.94	0.84
7.5	420.0	54.05	82.95	0.83
8	450.0	54.04	82.96	0.81
8.5	480.0	54.03	82.97	0.80
9.5	540.0	54.02	82.98	0.78

r = 1.00 in. K = 6.2E-7 ft/sec or 1.9E-5 cm/sec
 L = 10 ft 5.4E-2 ft/day or 2.0E1 ft/yr
 R = 3 in. To = 2064 sec. Least Squares Fit r = -0.998
 Coef of Determination = 0.996

Note: K is calculated based on Hvorslev Method (1951)

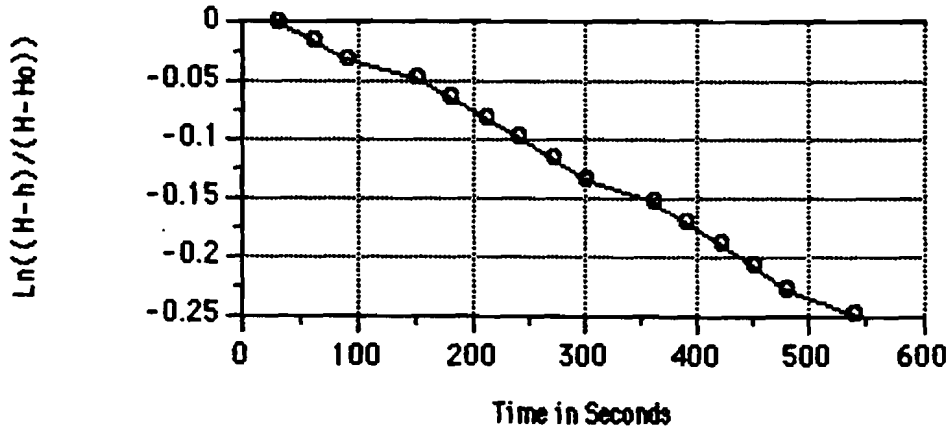


Table 3
Project No. 40875134

SLUG-out TEST REPORT

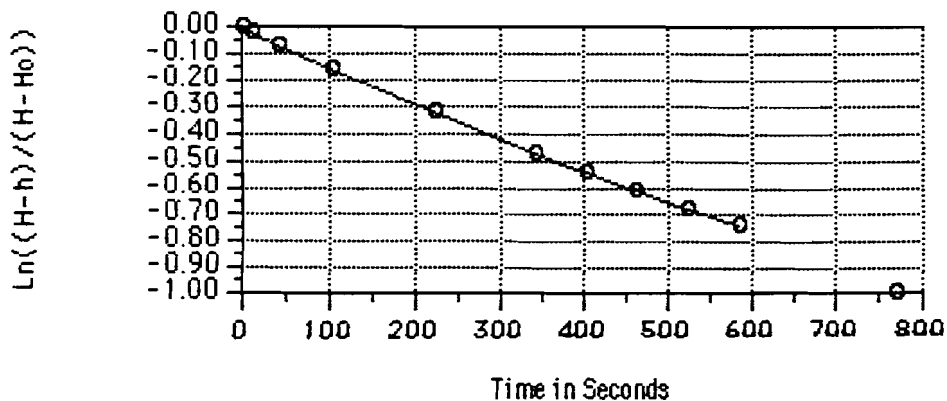
Monitoring Well t10

Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
0.3	0.0	15.3	12.20	1.00
0.5	12.0	15.23	12.27	0.98
1	42.0	15.08	12.42	0.93
2	102.0	14.81	12.69	0.85
4	222.0	14.38	13.12	0.72
6	342.0	14.04	13.46	0.62
7	402.0	13.9	13.60	0.58
8	462.0	13.77	13.73	0.54
9	522.0	13.66	13.84	0.51
10	582.0	13.56	13.94	0.48

r = 2.00 in. K = 5.0E-6 ft/sec or 1.5E-4 cm/sec
 L = 12.1 ft 4.3E-1 ft/day or 1.6E2 ft/yr
 R = 5.12 in. To = 769 sec. Least Squares Fit r = -0.998
 Coef of Determination = 0.997

Note: K is calculated based on Hvorslev Method (1951)



Table

Project No. 40875134

SLUG-IN TEST REPORT

Monitoring Well T13

Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
0.5	0.0	7.03	15.47	1.00
1	30.0	7.2	15.30	0.95
2	90.0	7.48	15.02	0.86
3	150.0	7.7	14.80	0.79
4	210.0	7.9	14.60	0.73
6	330.0	8.22	14.28	0.63
7	390.0	8.35	14.15	0.59
8	450.0	8.49	14.01	0.55
9	510.0	8.6	13.90	0.52
10	570.0	8.7	13.80	0.48
12	690.0	8.9	13.60	0.42
14	810.0	9.06	13.44	0.37
16	930.0	9.2	13.30	0.33
18	1050.0	9.31	13.19	0.30
20	1170.0	9.41	13.09	0.27

r = 2.00 in.

K = 5.2E-6 ft/sec or **1.6E-4 cm/sec**

L = 10 ft

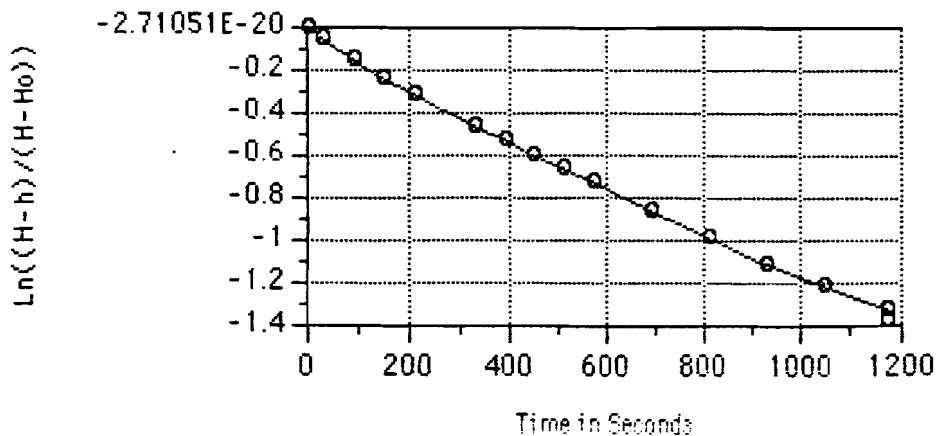
4.5E-1 ft/day or 1.7E2 ft/yr

R = 5.12 in.

To = 834 sec. Least Squares Fit r = -0.997

Coef of Determination = 0.995

Note: K is calculated based on Hvorslev Method (1951)



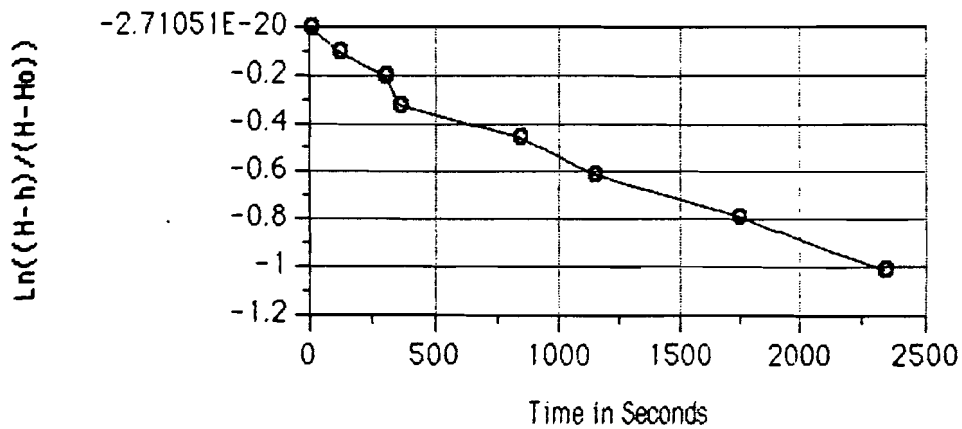
SLUG-OUT TEST REPORT

Monitoring Well T14
Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
1	0.0	38.66	33.84	1.00
3	120.0	38.65	33.85	0.91
6	300.0	38.64	33.86	0.82
7	360.0	38.63	33.87	0.73
15	840.0	38.62	33.88	0.64
20	1140.0	38.61	33.89	0.55
30	1740.0	38.6	33.90	0.45
40	2340.0	38.59	33.91	0.36

r = 2.00 in. K = 2.0E-6 ft/sec or 6.0E-5 cm/sec
 L = 10 ft 1.7E-1 ft/day or 6.2E1 ft/yr
 R = 5.12 in. To = 2221 sec. Least Squares Fit r = -0.988
 Coef of Determination = 0.976

Note: K is calculated based on Hvorslev Method (1951)

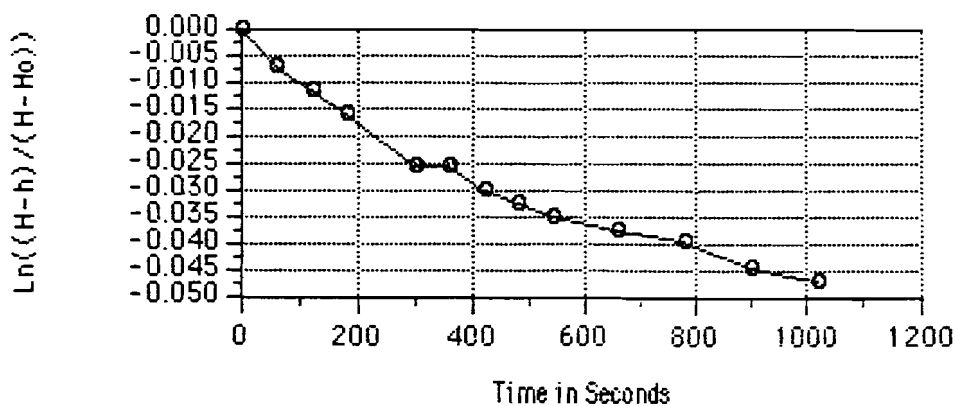


SLUG-IN TEST REPORT

Monitoring Well T18
Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
	0.0	48.42	64.08	1.00
	60.0	48.45	64.05	0.99
	120.0	48.47	64.03	0.99
	180.0	48.49	64.01	0.98
	300.0	48.53	63.97	0.97
	360.0	48.53	63.97	0.97
	420.0	48.55	63.95	0.97
	480.0	48.56	63.94	0.97
	540.0	48.57	63.93	0.97
	660.0	48.58	63.92	0.96
	780.0	48.59	63.91	0.96
	900.0	48.61	63.89	0.96
	1020.0	48.62	63.88	0.95

$r = 1.00$ in. $K = 5.6E-8$ ft/sec or $1.7E-6$ cm/sec
 $L = 10$ ft $4.9E-3$ ft/day or $1.8E0$ ft/yr
 $R = 3$ in. $T_0 = 22812$ sec. Least Squares Fit $r = -0.963$
 Coef of Determination = 0.928
 Note: K is calculated based on Hvorslev Method (1951)

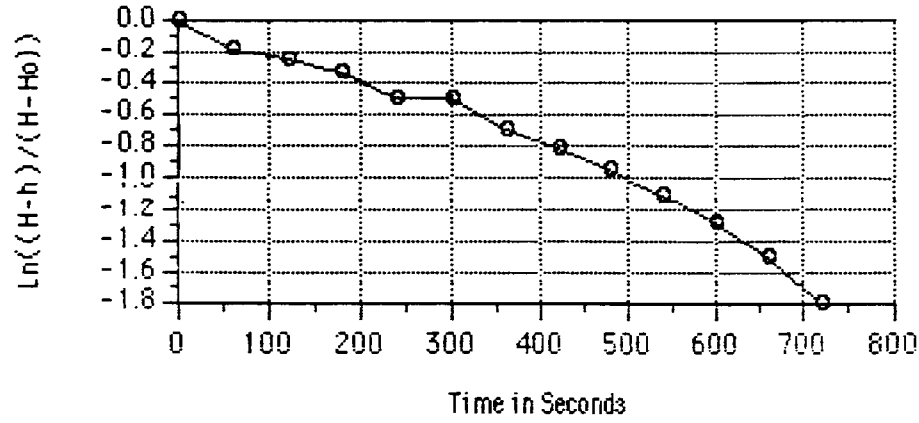


SLUG-OUT TEST REPORT
Monitoring Well T18
Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	$(H-h)/(H-H_0)$
1	0.0	52.97	59.53	1.00
2	60.0	52.94	59.56	0.83
3	120.0	52.93	59.57	0.78
4	180.0	52.92	59.58	0.72
5	240.0	52.9	59.60	0.61
6	300.0	52.9	59.60	0.61
7	360.0	52.88	59.62	0.50
8	420.0	52.87	59.63	0.44
9	480.0	52.86	59.64	0.39
10	540.0	52.85	59.65	0.33
11	600.0	52.84	59.66	0.28
12	660.0	52.83	59.67	0.22
13	720.0	52.82	59.68	0.17

$r = 1.00$ in. $K = 2.8E-6$ ft/sec or **$8.4E-5$ cm/sec**
 $L = 10$ ft $2.4E-1$ ft/day or $8.7E1$ ft/yr
 $R = 3$ in. $T_0 = 465$ sec. Least Squares Fit $r = -0.985$
 Coef of Determination = 0.970

Note: K is calculated based on Hvorslev Method (1951)



SLUG-IN TEST REPORT

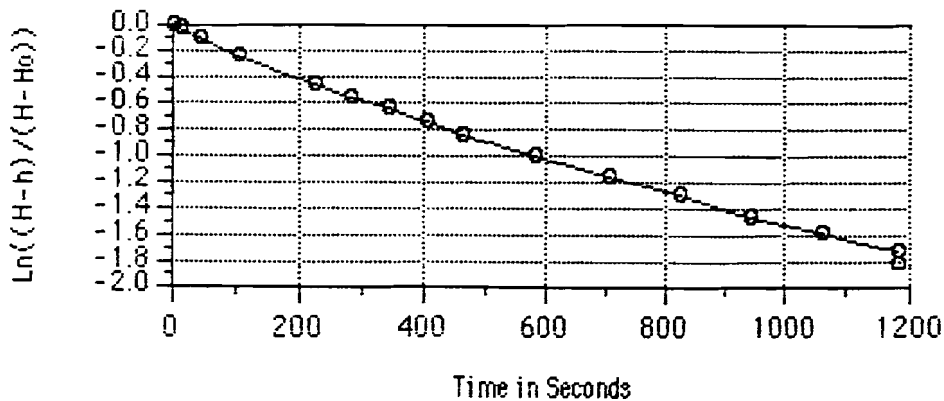
Monitoring Well T19

Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
0.3	0.0	6.88	15.62	1.00
0.5	12.0	6.96	15.54	0.97
1	42.0	7.18	15.32	0.90
2	102.0	7.52	14.98	0.79
4	222.0	7.99	14.51	0.63
5	282.0	8.17	14.33	0.57
6	342.0	8.32	14.18	0.52
7	402.0	8.46	14.04	0.48
8	462.0	8.59	13.91	0.44
10	582.0	8.8	13.70	0.37
12	702.0	8.96	13.54	0.31
14	822.0	9.09	13.41	0.27
16	942.0	9.2	13.30	0.23
18	1062.0	9.29	13.21	0.20
20	1182.0	9.37	13.13	0.18

r = 2.00 in. K = 7.0E-6 ft/sec or **2.1E-4 cm/sec**
 L = 10 ft 6.1E-1 ft/day or 2.2E2 ft/yr
 R = 5.12 in. To = 623 sec. Least Squares Fit r = -0.994
 Coef of Determination = 0.989

Note: K is calculated based on Hvorslev Method (1951)

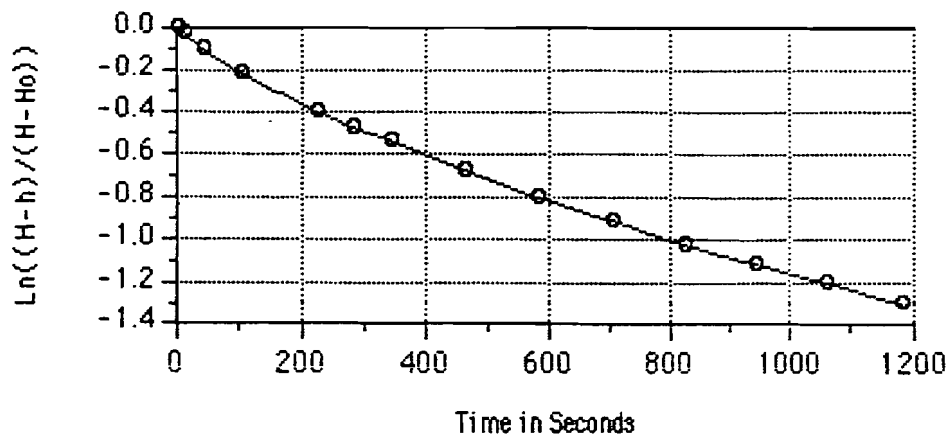


SLUG-OUT TEST REPORT
Monitoring Well T19
Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	$(H-h)/(H-H_0)$
0.3	0.0	12.45	10.05	1.00
0.5	12.0	12.36	10.14	0.97
1	42.0	12.17	10.33	0.91
2	102.0	11.88	10.62	0.81
4	222.0	11.46	11.04	0.67
5	282.0	11.31	11.19	0.62
6	342.0	11.18	11.32	0.58
8	462.0	10.96	11.54	0.51
10	582.0	10.78	11.72	0.45
12	702.0	10.63	11.87	0.40
14	822.0	10.51	11.99	0.36
16	942.0	10.42	12.08	0.33
18	1062.0	10.33	12.17	0.30
20	1182.0	10.25	12.25	0.27

r = 2.00 in. K = 5.3E-6 ft/sec or 1.6E-4 cm/sec
 L = 10 ft 4.6E-1 ft/day or 1.7E2 ft/yr
 R = 5.12 in. T₀ = 826 sec. Least Squares Fit r = -0.989
 Coef of Determination = 0.978

Note: K is calculated based on Hvorslev Method (1951)



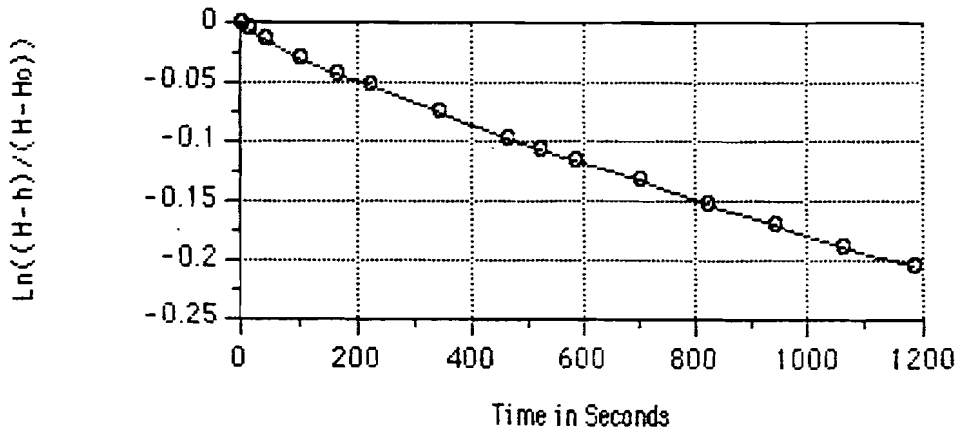
SLUG-IN TEST REPORT

Monitoring Well T20
 Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	$(H-h)/(H-H_0)$
0.3	0.0	20.36	52.14	1.00
0.5	12.0	20.38	52.12	0.99
1	42.0	20.41	52.09	0.99
2	102.0	20.46	52.04	0.97
3	162.0	20.51	51.99	0.96
4	222.0	20.54	51.96	0.95
6	342.0	20.62	51.88	0.93
8	462.0	20.69	51.81	0.91
9	522.0	20.72	51.78	0.90
10	582.0	20.75	51.75	0.89
12	702.0	20.8	51.70	0.88
14	822.0	20.86	51.64	0.86
16	942.0	20.92	51.58	0.84
18	1062.0	20.97	51.53	0.83
20	1182.0	21.02	51.48	0.81

$r = 2.00$ in. $K = 7.6E-7$ ft/sec or $2.3E-5$ cm/sec
 $L = 10$ ft $6.5E-2$ ft/day or $2.4E1$ ft/yr
 $R = 5.12$ in. $T_0 = 5792$ sec. Least Squares Fit $r = -0.996$
 Coef of Determination = 0.993

Note: K is calculated based on Hvorslev Method (1951)



SLUG-OUT TEST REPORT

Monitoring Well T20

Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
0.3	0.0	24.68	47.82	1.00
0.5	12.0	24.66	47.84	0.97
1	42.0	24.65	47.85	0.96
2	102.0	24.63	47.87	0.93
3	162.0	24.61	47.89	0.91
4	222.0	24.61	47.89	0.91
5	282.0	24.6	47.90	0.89
6	342.0	24.6	47.90	0.89
8	462.0	24.57	47.93	0.86
10	582.0	24.55	47.95	0.83
12	702.0	24.54	47.96	0.82
14	822.0	24.52	47.98	0.79
16	942.0	24.51	47.99	0.78
18	1062.0	24.49	48.01	0.75
20	1182.0	24.48	48.02	0.74

r = 2.00 in.

K = 1.1E-6 ft/sec or 3.3E-5 cm/sec

L = 10 ft

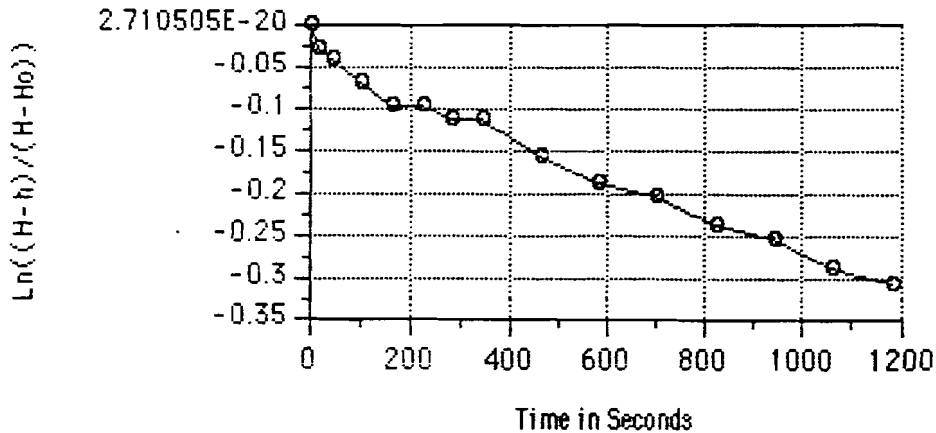
9.4E-2 ft/day or 3.4E1 ft/yr

R = 5.12 in.

To = 4030 sec. Least Squares Fit r = -0.990

Coef of Determination = 0.979

Note: K is calculated based on Hvorslev Method (1951)



SLUG-IN TEST REPORT

Monitoring Well T21

Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
0.3	0.0	40.4	83.10	1.00
1	42.0	40.42	83.08	1.00
2	102.0	40.49	83.01	0.98
3	162.0	40.53	82.97	0.97
4	222.0	40.57	82.93	0.96
6	342.0	40.63	82.87	0.95
7	402.0	40.66	82.84	0.94
8	462.0	40.68	82.82	0.94
9	522.0	40.71	82.79	0.93
10	582.0	40.74	82.76	0.92
12	702.0	40.78	82.72	0.91
14	822.0	40.83	82.67	0.90
16	942.0	40.85	82.65	0.90
18	1062.0	40.91	82.59	0.88
20	1182.0	40.95	82.55	0.87

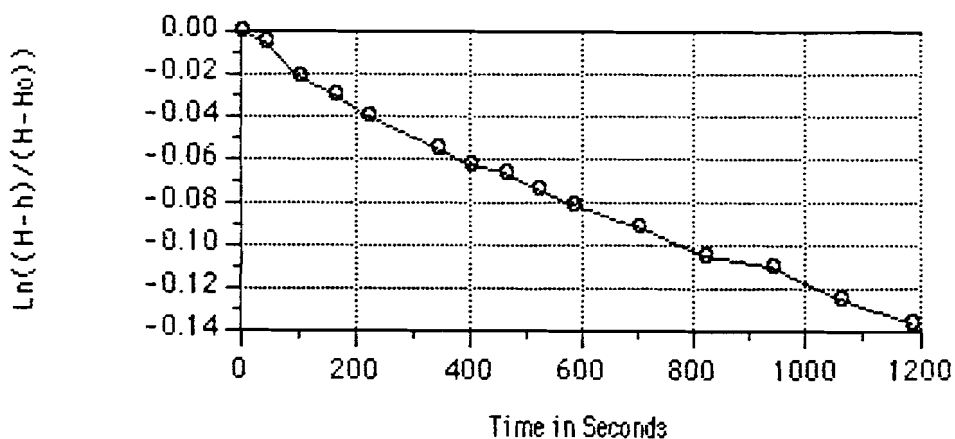
r = 1.00 in. K = 1.4E-7 ft/sec or 4.4E-6 cm/sec

L = 10 ft 1.2E-2 ft/day or 4.5E0 ft/yr

R = 3 in. To = 8882 sec. Least Squares Fit r = -0.989

Coef of Determination = 0.979

Note: K is calculated based on Hvorslev Method (1951)



SLUG-IN TEST REPORT

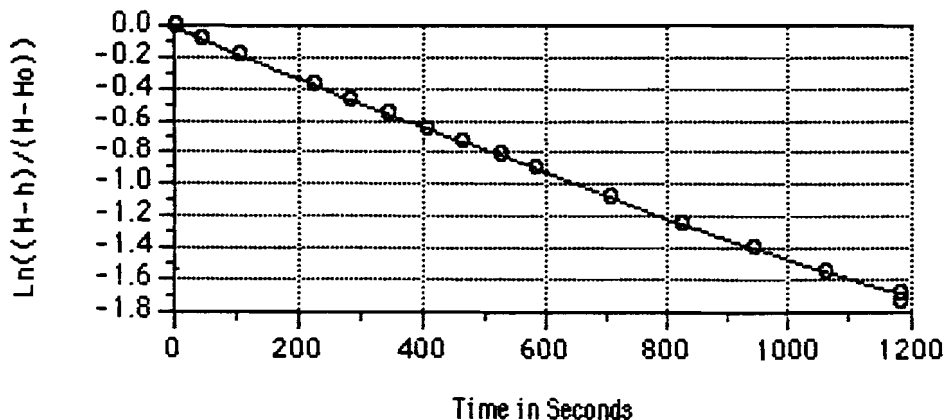
Monitoring Well T22

Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-H ₀)
0.3	0.0	5.17	22.33	1.00
1	42.0	5.42	22.08	0.93
2	102.0	5.72	21.78	0.84
4	222.0	6.21	21.29	0.69
5	282.0	6.41	21.09	0.63
6	342.0	6.6	20.90	0.57
7	402.0	6.76	20.74	0.53
8	462.0	6.91	20.59	0.48
9	522.0	7.04	20.46	0.44
10	582.0	7.16	20.34	0.41
12	702.0	7.38	20.12	0.34
14	822.0	7.56	19.94	0.29
16	942.0	7.69	19.81	0.25
18	1062.0	7.81	19.69	0.21
20	1182.0	7.9	19.60	0.19

r = 2.00 in. K = 6.6E-6 ft/sec or 2.0E-4 cm/sec
L = 10 ft 5.7E-1 ft/day or 2.1E2 ft/yr
R = 5.12 in. T₀ = 665 sec. Least Squares Fit r = -0.999
 Coef of Determination = 0.997

Note: K is calculated based on Hvorslev Method (1951)



SLUG-OUT TEST REPORT

Monitoring Well T22

Test No. 1A

Elapsed time Row Min	Elapsed Time Seconds	Water Depth Ft	h	$(H-h)/(H-H_0)$
0.5	0.0	11.35	16.15	1.00
1	30.0	11.21	16.29	0.95
2	90.0	10.97	16.53	0.87
3	150.0	10.75	16.75	0.79
4	210.0	10.56	16.94	0.72
5	270.0	10.39	17.11	0.66
6	330.0	10.23	17.27	0.60
7	390.0	10.08	17.42	0.55
9	510.0	9.83	17.67	0.46
10	570.0	9.73	17.77	0.43
12	690.0	9.53	17.97	0.36
14	810.0	9.35	18.15	0.29
16	930.0	9.21	18.29	0.24
18	1050.0	9.1	18.40	0.20
20	1170.0	9.01	18.49	0.17

$r = 2.00$ in.

$K = 6.6E-6$ ft/sec or $2.0E-4$ cm/sec

$L = 10$ ft

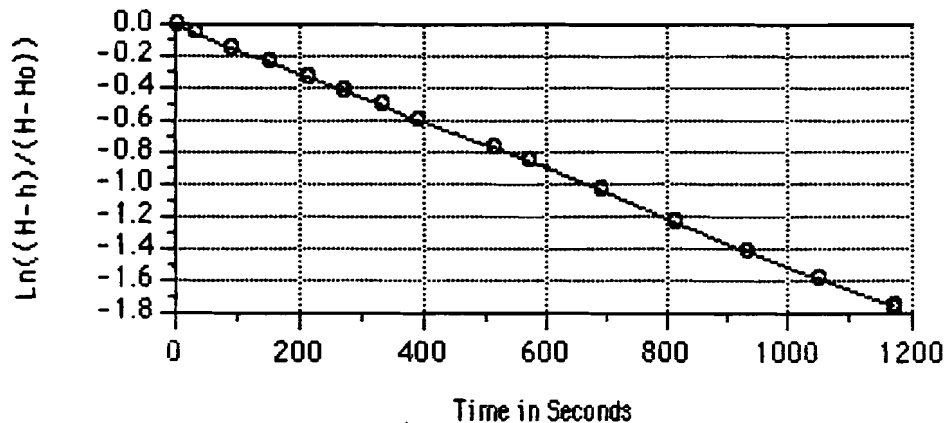
$5.7E-1$ ft/day or $2.1E2$ ft/yr

$R = 5.12$ in.

$T_0 = 662$ sec. Least Squares Fit $r = -1.000$

Coef of Determination = 1.000

Note: K is calculated based on Hvorslev Method (1951)



SLUG-IN TEST REPORT

Monitoring Well T23

Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
0.3	0.0	22.26	50.24	1.00
1	42.0	22.28	50.22	0.99
2	102.0	22.33	50.17	0.98
3	162.0	22.36	50.14	0.97
5	282.0	22.42	50.08	0.96
6	342.0	22.44	50.06	0.95
7	402.0	22.47	50.03	0.94
8	462.0	22.49	50.01	0.94
9	522.0	22.52	49.98	0.93
10	582.0	22.54	49.96	0.92
12	702.0	22.58	49.92	0.91
14	822.0	22.62	49.88	0.90
16	942.0	22.65	49.85	0.89
18	1062.0	22.68	49.82	0.88
20	1182.0	22.72	49.78	0.87

r = 2.00 in.

K = 5.1E-7 ft/sec or 1.5E-5 cm/sec

L = 10 ft

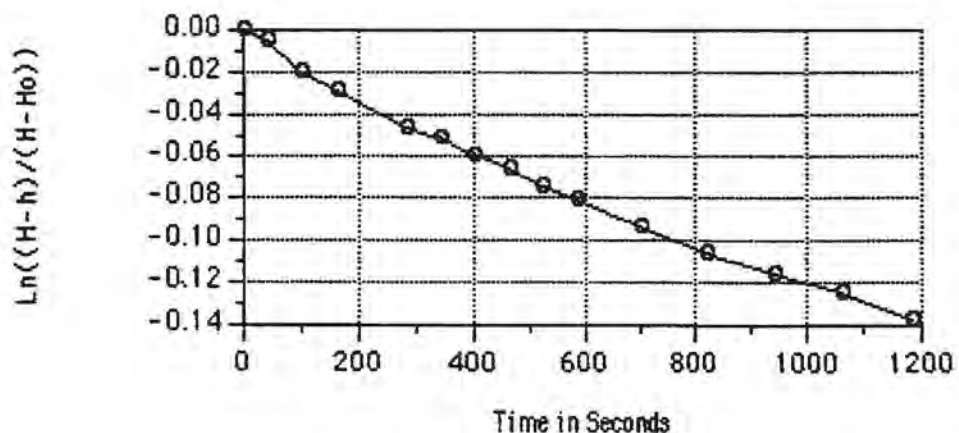
4.4E-2 ft/day or 1.6E1 ft/yr

R = 5.12 in.

To = 8628 sec. Least Squares Fit r = -0.992

Coef of Determination = 0.984

Note: K is calculated based on Hvorslev Method (1951)



SLUG-OUT TEST REPORT

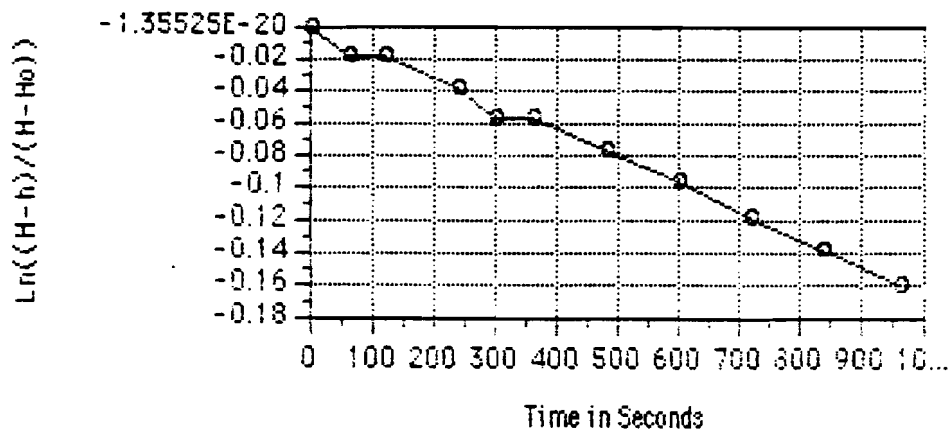
Monitoring Well T24

Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	n	(H-h)/(H-Ho)
2:	0.0:	45.04	82.46	1.00
3:	60.0:	45.03	82.47	0.98
4:	120.0:	45.03	82.47	0.98
5:	240.0:	45.02	82.48	0.96
7:	300.0:	45.01	82.49	0.94
8:	360.0:	45.01	82.49	0.94
10:	480.0:	45	82.50	0.93
12:	600.0:	44.99	82.51	0.91
14:	720.0:	44.98	82.52	0.89
16:	840.0:	44.97	82.53	0.87
18:	960.0:	44.96	82.54	0.85

r = 1.00 in. K = 2.1E-7 ft/sec or 6.3E-6 cm/sec
 L = 10 ft 1.8E-2 ft/day or 6.6E0 ft/yr
 R = 3 in. To = 6154 sec. Least Squares Fit r=-0.997
 Coef of Determination = 0.995

Note: K is calculated based on Hvorslev Method (1951)



SLUG-IN TEST REPORT

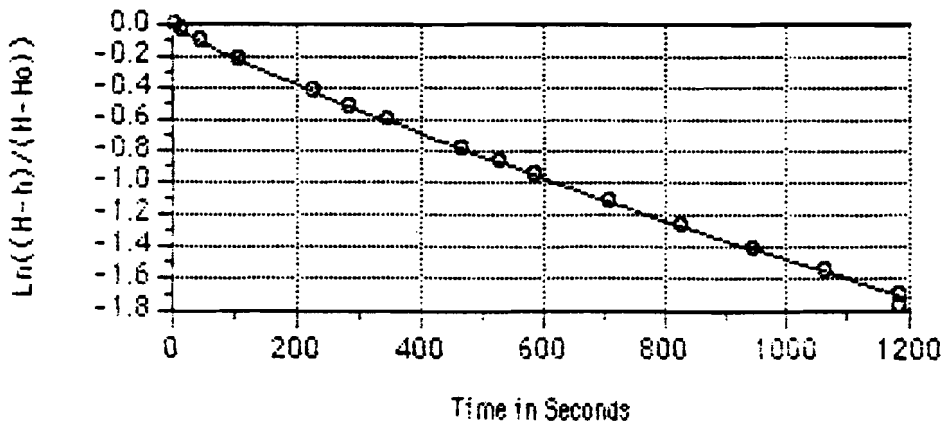
Monitoring Well T25

Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
0.3	0.0	6.44	16.06	1.00
0.5	12.0	6.55	15.95	0.97
1	42.0	6.75	15.74	0.90
2	102.0	7.06	15.44	0.80
4	222.0	7.53	14.97	0.66
5	282.0	7.72	14.78	0.60
6	342.0	7.88	14.62	0.55
8	462.0	8.16	14.34	0.46
9	522.0	8.28	14.22	0.42
10	582.0	8.38	14.12	0.39
12	702.0	8.57	13.93	0.33
14	822.0	8.72	13.78	0.28
16	942.0	8.84	13.66	0.24
18	1062.0	8.94	13.56	0.21
20	1182.0	9.05	13.47	0.18

r = 2.00 in. K = 6.8E-6 ft/sec or 2.1E-4 cm/sec
 L = 10 ft 5.9E-1 ft/day or 2.1E2 ft/yr
 R = 5.12 in. To = 646 sec. Least Squares Fit r = -0.997
 Coef of Determination = 0.994

Note: K is calculated based on Hvorslev Method (1951)



SLUG-IN TEST REPORT

Monitoring Well T26

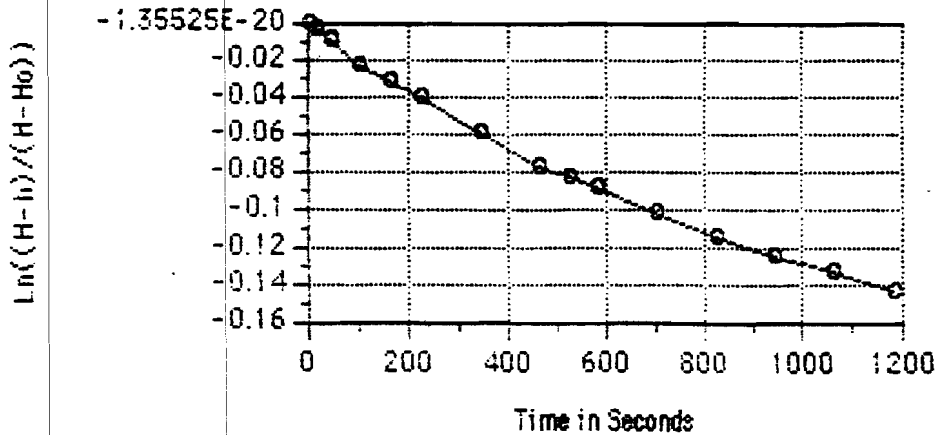
Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(h-h ₀)/(h-h ₀)
0.3	0.0	24.67	47.83	1.00
0.5	12.0	24.69	47.82	1.00
1	42.0	24.7	47.80	0.99
2	102.0	24.75	47.75	0.98
3	162.0	24.78	47.72	0.97
4	222.0	24.81	47.69	0.96
6	342.0	24.87	47.63	0.94
8	462.0	24.93	47.57	0.93
9	522.0	24.95	47.55	0.92
10	582.0	24.97	47.53	0.91
12	702.0	25.01	47.49	0.90
14	822.0	25.05	47.45	0.89
16	942.0	25.08	47.42	0.88
18	1062.0	25.11	47.39	0.88
20	1182.0	25.14	47.36	0.87

r = 2.00 in.
L = 10 ft
R = 5.12 in.

K = 5.4E-7 ft/sec or 1.7E-5 cm/sec
4.7E-2 ft/day or 1.7E-1 ft/yr
T₀ = 8080 sec. Least Squares Fit r = -0.989
Coef of Determination = 0.978

Note: K is calculated based on Hvorslev Method (1951)



SLUG-OUT TEST REPORT

Monitoring Well T26

Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
0.3	0.0	28.7	43.80	1.00
0.5	12.0	28.69	43.81	0.98
1	42.0	28.68	43.82	0.96
2	102.0	28.65	43.85	0.90
3	162.0	28.64	43.86	0.88
4	222.0	28.62	43.88	0.84
6	342.0	28.6	43.90	0.80
8	462.0	28.58	43.92	0.78
9	522.0	28.57	43.93	0.75
10	582.0	28.56	43.94	0.73
12	702.0	28.54	43.96	0.69
14	822.0	28.52	43.98	0.65
16	942.0	28.51	43.99	0.63
18	1062.0	28.49	44.01	0.59
20	1182.0	28.48	44.02	0.57

r = 2.00 in.

K = 2.1E-6 ft/sec or 6.5E-5 cm/sec

L = 10 ft

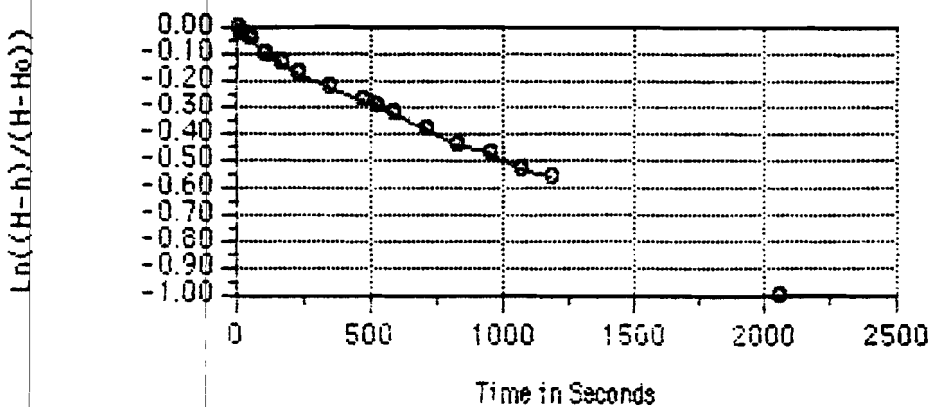
1.8E-1 ft/day or 6.7E1 ft/yr

R = 5.12 in.

To = 2058 sec. Least Squares Fit r = -0.994

Coef of Determination = 0.988

Note: K is calculated based on Hvorslev Method (1951)

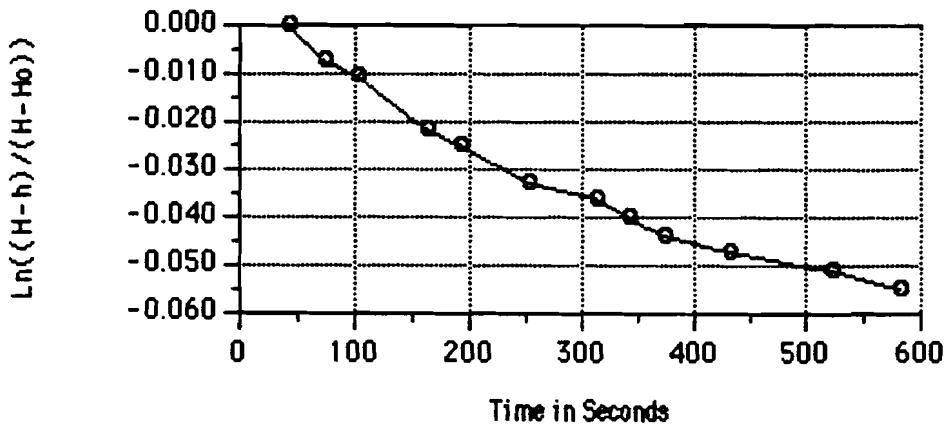


SLUG-IN TEST REPORT
 Monitoring Well T30
 Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
1	42.0	64.25	84.75	1.00
1.5	72.0	64.27	84.73	0.99
2	102.0	64.28	84.72	0.99
3	162.0	64.31	84.69	0.98
3.5	192.0	64.32	84.68	0.98
4.5	252.0	64.34	84.66	0.97
5.5	312.0	64.35	84.65	0.96
6	342.0	64.36	84.64	0.96
6.5	372.0	64.37	84.63	0.96
7.5	432.0	64.38	84.62	0.95
9	522.0	64.39	84.61	0.95
10	582.0	64.4	84.60	0.95

r = 1.00 in. K = 1.3E-7 ft/sec or 3.9E-6 cm/sec
 L = 10 ft 1.1E-2 ft/day or 4.0E0 ft/yr
 R = 3 in. To = 9988 sec. Least Squares Fit r = -0.974
 Coef of Determination = 0.949

Note: K is calculated based on Hvorslev Method (1951)



SLUG-IN TEST REPORT

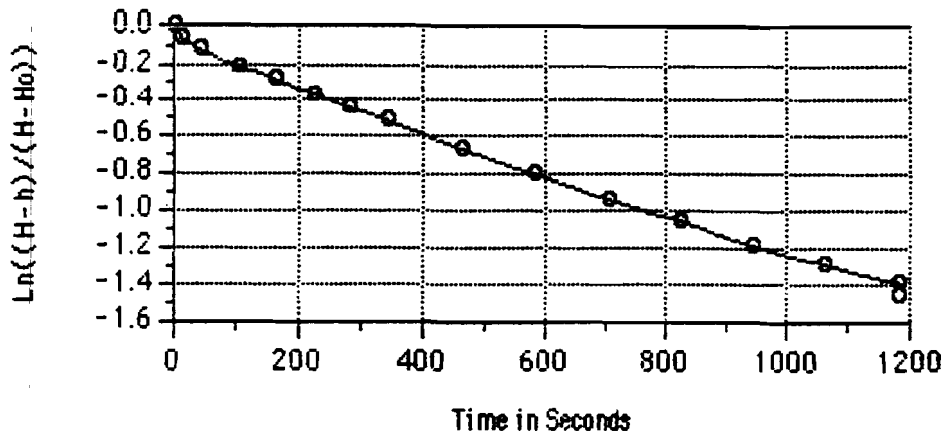
Monitoring Well T31

Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
0.3	0.0	6.06	16.44	1.00
0.5	12.0	6.27	16.23	0.94
1	42.0	6.43	16.07	0.89
2	102.0	6.7	15.80	0.81
3	162.0	6.91	15.59	0.75
4	222.0	7.11	15.39	0.69
5	282.0	7.28	15.22	0.64
6	342.0	7.44	15.06	0.60
8	462.0	7.72	14.78	0.51
10	582.0	7.94	14.56	0.45
12	702.0	8.14	14.36	0.39
14	822.0	8.3	14.20	0.35
16	942.0	8.43	14.07	0.31
18	1062.0	8.53	13.97	0.28
20	1182.0	8.63	13.87	0.25

r = 2.00 in. K = 5.6E-6 ft/sec or 1.7E-4 cm/sec
L = 10 ft 4.8E-1 ft/day or 1.8E2 ft/yr
R = 5.12 in. To = 788 sec. Least Squares Fit r = -0.996
Coef of Determination = 0.993

Note: K is calculated based on Hvorslev Method (1951)



SLUG-OUT TEST REPORT

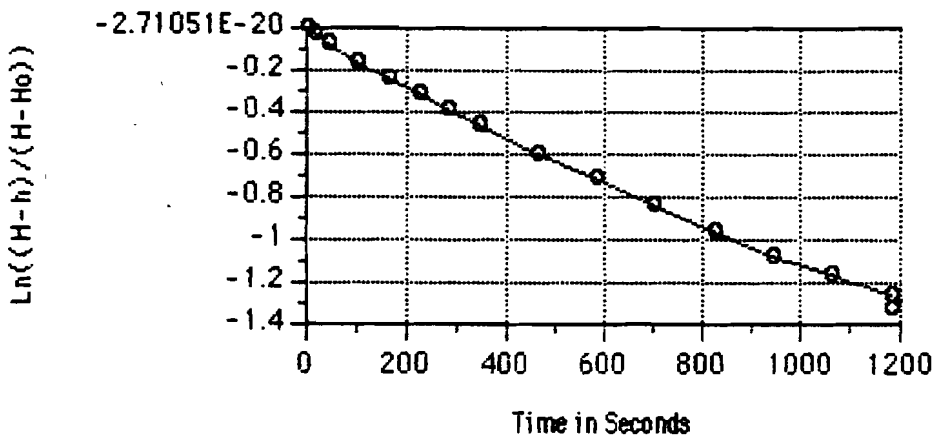
Monitoring Well T31

Test No. 1A

Elapsed time Row Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
0.3	0.0	12.24	10.26	1.00
0.5	12.0	12.18	10.32	0.98
1	42.0	12.05	10.45	0.93
2	102.0	11.83	10.67	0.85
3	162.0	11.65	10.85	0.79
4	222.0	11.5	11.00	0.73
5	282.0	11.36	11.14	0.68
6	342.0	11.22	11.28	0.63
8	462.0	11	11.50	0.55
10	582.0	10.83	11.67	0.49
12	702.0	10.68	11.82	0.43
14	822.0	10.54	11.96	0.38
16	942.0	10.42	12.08	0.34
18	1062.0	10.34	12.16	0.31
20	1182.0	10.26	12.24	0.28

r = 2.00 in. K = 5.0E-6 ft/sec or 1.5E-4 cm/sec
L = 10 ft 4.3E-1 ft/day or 1.6E2 ft/yr
R = 5.12 in. To = 879 sec. Least Squares Fit r = -0.997
 Coef of Determination = 0.993

Note: K is calculated based on Hvorslev Method (1951)



Table

Project No. 40875134

SLUG-IN TEST REPORT

Monitoring Well T32

Test No. 1A

Elapsed time	Elapsed Time	Water	h	(H-h)/(H-Ho)
Raw	Seconds	Depth		
Min		Ft		
0.3	0.0	33.66	38.84	1.00
1	42.0	33.67	38.83	1.00
2	102.0	33.7	38.80	0.99
3	162.0	33.72	38.78	0.98
4	222.0	33.73	38.77	0.98
5	282.0	33.75	38.75	0.97
6	342.0	33.76	38.74	0.97
7	402.0	33.77	38.73	0.96
8	462.0	33.78	38.72	0.96
10	582.0	33.8	38.70	0.95
12	702.0	33.82	38.68	0.95
14	822.0	33.84	38.66	0.94
16	942.0	33.85	38.65	0.94
18	1062.0	33.86	38.64	0.93
20	1182.0	33.88	38.62	0.93

r = 2.00 in.

K = 2.7E-7 ft/sec or 8.1E-6 cm/sec

L = 10 ft

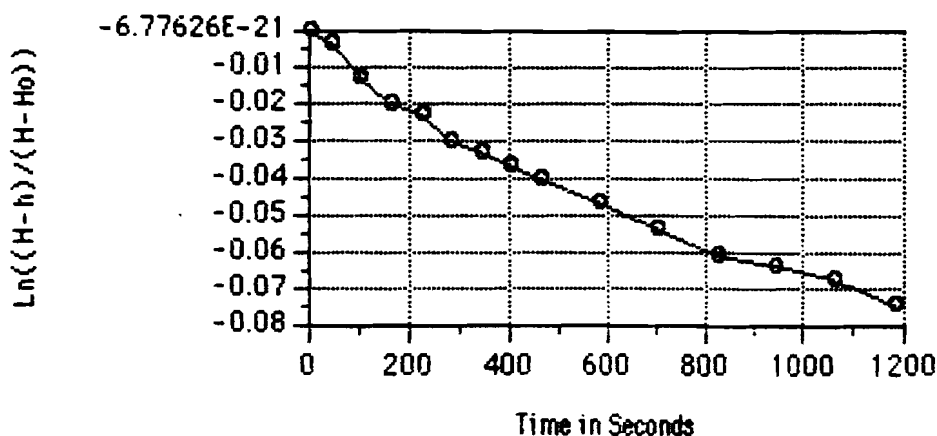
2.3E-2 ft/day or 8.4E0 ft/yr

R = 5.12 in.

To = 16470 sec. Least Squares Fit r = -0.981

Coef of Determination = 0.963

Note: K is calculated based on Hvorslev Method (1951)



SLUG-OUT TEST REPORT

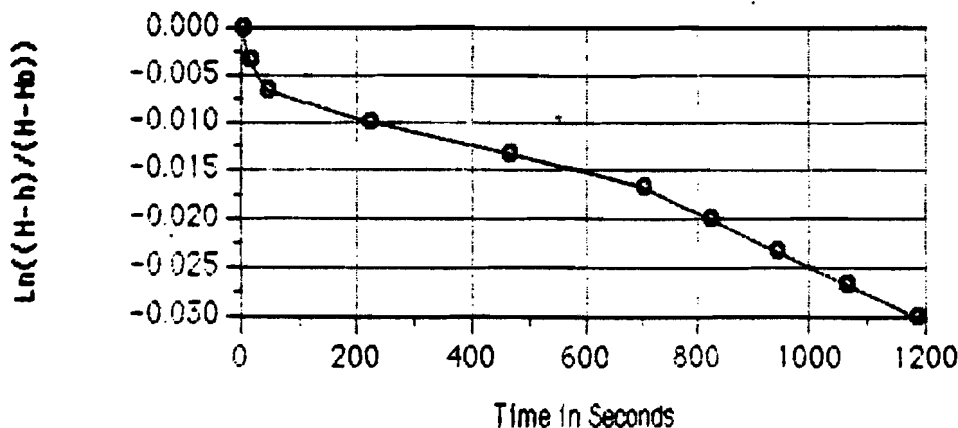
Monitoring Well T32

Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
0.3	0.0	36.46	36.04	1.00
0.5	12.0	36.45	36.05	1.00
1	42.0	36.44	36.06	0.99
4	222.0	36.43	36.07	0.99
8	462.0	36.42	36.08	0.99
12	702.0	36.41	36.09	0.98
14	822.0	36.4	36.10	0.98
16	942.0	36.39	36.11	0.98
18	1062.0	36.38	36.12	0.97
20	1182.0	36.37	36.13	0.97

r = 2.00 in. K = 9.6E-8 ft/sec or **2.9E-6 cm/sec**
 L = 10 ft 8.3E-3 ft/day or 3.0E0 ft/yr
 R = 5.12 in. To = 45852 sec. Least Squares Fit r = -0.986
 Coef of Determination = 0.971

Note: K is calculated based on Hvorslev Method (1951)



SLUG-IN TEST REPORT

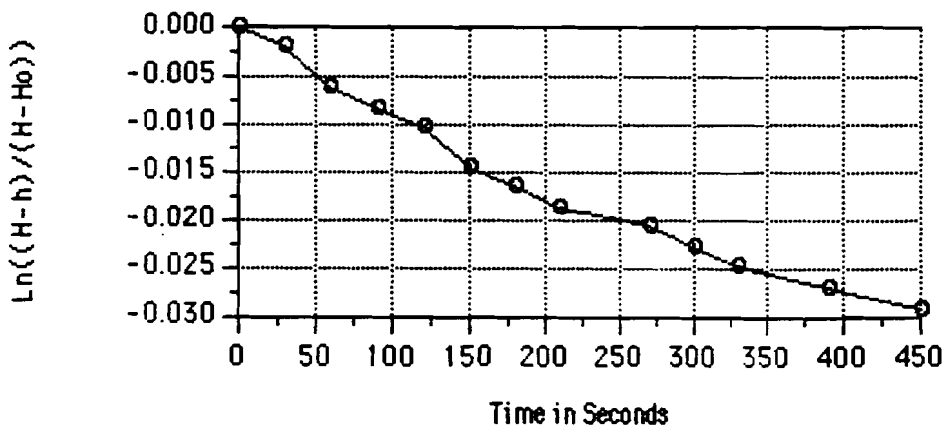
Monitoring Well T33

Test No. 1A

Elapsed time Raw Min	Elapsed Time Seconds	Water Depth Ft	h	(H-h)/(H-Ho)
1.5	0.0	44.41	97.09	1.00
2	30.0	44.42	97.08	1.00
2.5	60.0	44.44	97.06	0.99
3	90.0	44.45	97.05	0.99
3.5	120.0	44.46	97.04	0.99
4	150.0	44.48	97.02	0.99
4.5	180.0	44.49	97.01	0.98
5	210.0	44.5	97.00	0.98
6	270.0	44.51	96.99	0.98
6.5	300.0	44.52	96.98	0.98
7	330.0	44.53	96.97	0.98
8	390.0	44.54	96.96	0.97
9	450.0	44.55	96.95	0.97

$r = 1.00$ in. $K = 8.5E-8$ ft/sec or $2.6E-6$ cm/sec
 $L = 10$ ft $7.3E-3$ ft/day or $2.7E0$ ft/yr
 $R = 3$ in. $T_o = 15138$ sec. Least Squares Fit $r = -0.982$
 Coef of Determination = 0.965

Note: K is calculated based on Hvorslev Method (1951)



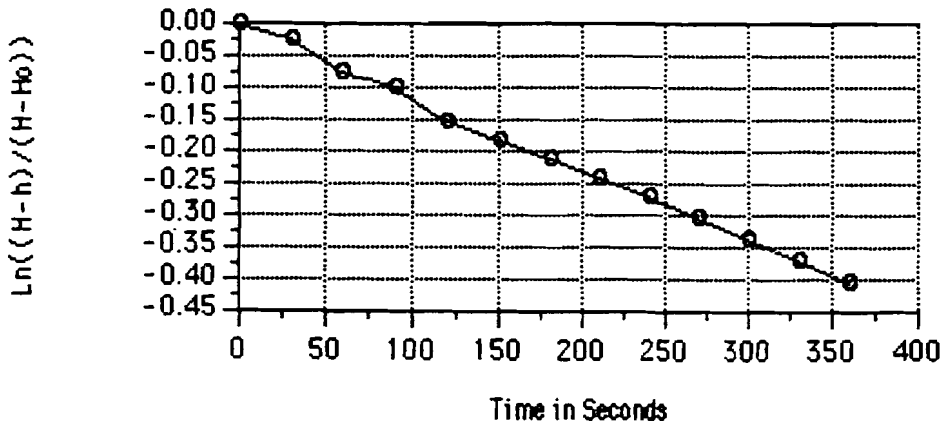
SLUG-OUT TEST REPORT

Monitoring Well T33
 Test No. 1A

Elapsed time	Elapsed Time	Water	h	(H-h)/(H-Ho)
Raw	Seconds	Depth		
Min		Ft		
1.5	0.0	49.72	91.78	1.00
2	30.0	49.71	91.79	0.98
2.5	60.0	49.69	91.81	0.93
3	90.0	49.68	91.82	0.90
3.5	120.0	49.66	91.84	0.86
4	150.0	49.65	91.85	0.83
4.5	180.0	49.64	91.86	0.81
5	210.0	49.63	91.87	0.79
5.5	240.0	49.62	91.88	0.76
6	270.0	49.61	91.89	0.74
6.5	300.0	49.6	91.90	0.71
7	330.0	49.59	91.91	0.69
7.5	360.0	49.58	91.92	0.67

$r = 1.00 \text{ in.}$ $K = 1.4\text{E-}6 \text{ ft/sec}$ or $4.4\text{E-}5 \text{ cm/sec}$
 $L = 10 \text{ ft}$ $1.2\text{E-}1 \text{ ft/day}$ or $4.5\text{E}1 \text{ ft/yr}$
 $R = 3 \text{ in.}$ $T_0 = 889 \text{ sec.}$ Least Squares Fit $r = -0.998$
 Coef of Determination = 0.997

Note: K is calculated based on Hvorslev Method (1951)



APPENDIX F
GROUNDWATER ANALYSES

GROUNDWATER QUALITY ASSESSMENT
IOWA ARMY AMMUNITION PLANT (IAAP)
MIDDLETOWN, IOWA
CONTRACT NO. DACA63-87-C-0139

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATIN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/06/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1977

LAB NUMBER: 88080426
 SAMPLE DESCRIPTION: INERT LANDFILL T01

DATE SAMPLED: 07/21/88
 TIME SAMPLED: 0810

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
HSL PESTICIDE COMPOUNDS			
ALPHA-BHC	ND(8.0)	UG/L	1182-14
BETA-BHC	ND(8.0)	UG/L	1182-14
DELTA-BHC	ND(8.0)	UG/L	1182-14
GAMMA-BHC (LINDANE)	ND(8.0)	UG/L	1182-14
HEPTACHLOR	ND(8.0)	UG/L	1182-14
ALDRIN	ND(8.0)	UG/L	1182-14
HEPTACHLOR EPOXIDE	ND(8.0)	UG/L	1182-14
ENDOSULFAN I	ND(8.0)	UG/L	1182-14
DIELDRIN	ND(8.0)	UG/L	1182-14
4,4'-DDE	ND(16)	UG/L	1182-14
ENDRIN	ND(16)	UG/L	1182-14
ENDOSULFAN II	ND(16)	UG/L	1182-14
4,4'-DDD	ND(16)	UG/L	1182-14
ENDOSULFAN SULFATE	ND(16)	UG/L	1182-14
4,4'-DDT	ND(16)	UG/L	1182-14
METHOXYCHLOR	ND(80)	UG/L	1182-14
ENDRIN KETONE	ND(16)	UG/L	1182-14
ALPHA-CHLORDANE	ND(80)	UG/L	1182-14
GAMMA-CHLORDANE	ND(80)	UG/L	1182-14
TOXAPHENE	ND(160)	UG/L	1182-14
AROCHLOR-1016	ND(80)	UG/L	1182-14
AROCHLOR-1221	ND(80)	UG/L	1182-14
AROCHLOR-1232	ND(80)	UG/L	1182-14
AROCHLOR-1242	ND(80)	UG/L	1182-14
AROCHLOR-1248	ND(80)	UG/L	1182-14
AROCHLOR-1254	ND(160)	UG/L	1182-14
AROCHLOR-1260	ND(160)	UG/L	1182-14
TERRACON EXPL. (40875137) LANDFILL			
2,4,6-TNT	ND(20)	UG/L	
2,4-DNT	ND(10)	UG/L	
2,6-DNT	ND(10)	UG/L	
TETRYL	ND(20)	UG/L	
RDX	ND(22)	UG/L	
HMX	ND(26)	UG/L	

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080426 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
NITRATE/NITRITE	1.5	MG/L AS N	1023-157
SULFATE	(39) ✓	MG/L	515-83
HSL VOLATILE COMPOUNDS			
CHLOROMETHANE	ND(10)	UG/L	1157-5
BROMOMETHANE	ND(10)	UG/L	1157-5
VINYL CHLORIDE	ND(10)	UG/L	1157-5
CHLOROETHANE	ND(10)	UG/L	1157-5
METHYLENE CHLORIDE	(12) ✓	UG/L	1157-5
ACETONE	ND(10)	UG/L	1157-5
CARBON DISULFIDE	ND(5.0)	UG/L	1157-5
1,1-DICHLOROETHENE	ND(5.0)	UG/L	1157-5
1,1-DICHLOROETHANE	ND(5.0)	UG/L	1157-5
1,2-DICHLOROETHENE (TOTAL)	ND(5.0)	UG/L	1157-5
CHLOROFORM	ND(5.0)	UG/L	1157-5
1,2-DICHLOROETHANE	ND(5.0)	UG/L	1157-5
2-BUTANONE	ND(10)	UG/L	1157-5
1,1,1-TRICHLOROETHANE	ND(5.0)	UG/L	1157-5
CARBON TETRACHLORIDE	ND(5.0)	UG/L	1157-5
VINYL ACETATE	ND(10)	UG/L	1157-5
BROMODICHLOROMETHANE	ND(5.0)	UG/L	1157-5
1,2-DICHLOROPROPANE	ND(5.0)	UG/L	1157-5
CIS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-5
TRICHLOROETHENE	ND(5.0)	UG/L	1157-5
DIBROMOCHLOROMETHANE	ND(5.0)	UG/L	1157-5
1,1,2-TRICHLOROETHANE	ND(5.0)	UG/L	1157-5
BENZENE	ND(5.0)	UG/L	1157-5
TRANS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-5
BROMOFORM	ND(5.0)	UG/L	1157-5
4-METHYL-2-PENTANONE	ND(10)	UG/L	1157-5
2-HEXANONE	ND(10)	UG/L	1157-5
TETRACHLOROETHENE	ND(5.0)	UG/L	1157-5
1,1,2,2-TETRACHLOROETHANE	ND(5.0)	UG/L	1157-5
TOLUENE	ND(5.0)	UG/L	1157-5
CHLOROBENZENE	ND(5.0)	UG/L	1157-5
ETHYLBENZENE	ND(5.0)	UG/L	1157-5
STYRENE	10	UG/L	1157-5
XYLENE (TOTAL)	ND(5.0)	UG/L	1157-5
HSL SEMIVOLATILE ORGANIC COMPOUNDS			
PHENOL	ND(10)	UG/L	1104-76
BIS(2-CHLOROETHYL) ETHER	ND(10)	UG/L	1104-76
2-CHLOROPHENOL	ND(10)	UG/L	1104-76
1,3-DICHLOROBENZENE	ND(10)	UG/L	1104-76

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080426 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
1,4-DICHLOROBENZENE	ND(10)	UG/L	1104-76
BENZYL ALCOHOL	ND(10)	UG/L	1104-76
1,2-DICHLOROBENZENE	ND(10)	UG/L	1104-76
2-METHYLPHENOL	ND(10)	UG/L	1104-76
BIS(2-CHLOROISOPROPYL)ETHER	ND(10)	UG/L	1104-76
4-METHYLPHENOL	ND(10)	UG/L	1104-76
N-NITROSO-DI-N-PROPYLAMINE	ND(10)	UG/L	1104-76
HEXACHLOROETHANE	ND(10)	UG/L	1104-76
NITROBENZENE	ND(10)	UG/L	1104-76
ISOPHORONE	ND(10)	UG/L	1104-76
2-NITROPHENOL	ND(50)	UG/L	1104-76
2,4-DIMETHYLPHENOL	ND(10)	UG/L	1104-76
BENZOIC ACID	ND(50)	UG/L	1104-76
BIS(2-CHLOROETHOXY)METHANE	ND(10)	UG/L	1104-76
2,4-DICHLOROPHENOL	ND(10)	UG/L	1104-76
1,2,4-TRICHLOROBENZENE	ND(10)	UG/L	1104-76
NAPHTHALENE	ND(10)	UG/L	1104-76
4-CHLOROANILINE	ND(10)	UG/L	1104-76
HEXACHLOROBUTADIENE	ND(10)	UG/L	1104-76
4-CHLORO-3-METHYLPHENOL	ND(10)	UG/L	1104-76
2-METHYLNAPHTHALENE	ND(10)	UG/L	1104-76
HEXACHLOROCYCLOPENTADIENE	ND(10)	UG/L	1104-76
2,4,6-TRICHLOROPHENOL	ND(10)	UG/L	1104-76
2,4,5-TRICHLOROPHENOL	ND(50)	UG/L	1104-76
2-CHLORONAPHTHALENE	ND(10)	UG/L	1104-76
2-NITROANILINE	ND(50)	UG/L	1104-76
DIMETHYLPHTHALATE	ND(10)	UG/L	1104-76
ACENAPHTHYLENE	ND(10)	UG/L	1104-76
2,6-DINITROTOLUENE	ND(10)	UG/L	1104-76
3-NITROANILINE	ND(50)	UG/L	1104-76
ACENAPHTHENE	ND(10)	UG/L	1104-76
2,4-DINITROPHENOL	ND(50)	UG/L	1104-76
4-NITROPHENOL	ND(50)	UG/L	1104-76
DIBENZOFURAN	ND(10)	UG/L	1104-76
2,4-DINITROTOLUENE	ND(10)	UG/L	1104-76
DIETHYLPHTHALATE	ND(10)	UG/L	1104-76
4-CHLOROPHENYL-PHENYLETHER	ND(10)	UG/L	1104-76
FLUORENE	ND(10)	UG/L	1104-76
4-NITROANILINE	ND(50)	UG/L	1104-76
4,6-DINITRO-2-METHYLPHENOL	ND(50)	UG/L	1104-76
N-NITROSODIPHENYLAMINE(1)	ND(10)	UG/L	1104-76
4-BROMOPHENYL-PHENYLETHER	ND(10)	UG/L	1104-76

LABORATORY REPORT

PAGE 4

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717
ORDER NO.: 1977

LAB NUMBER: 88080426 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
HEXACHLOROBENZENE	ND(10)	UG/L	1104-76
PENTACHLOROPHENOL	ND(50)	UG/L	1104-76
PHENANTHRENE	ND(10)	UG/L	1104-76
ANTHRACENE	ND(10)	UG/L	1104-76
DI-N-BUTYLPHthalate	ND(10)	UG/L	1104-76
FLUORANTHENE	ND(10)	UG/L	1104-76
PYRENE	ND(10)	UG/L	1104-76
BUTYLBENZYLPHthalate	ND(10)	UG/L	1104-76
BENZO(A)ANTHRACENE	ND(10)	UG/L	1104-76
CHRYSENE	ND(10)	UG/L	1104-76
BIS(2-ETHYLHEXYL)PHthalate	(19) ✓	UG/L	1104-76
DI-N-OCTYLPHthalate	ND(10)	UG/L	1104-76
BENZO(B)FLUORANTHENE	ND(10)	UG/L	1104-76
BENZO(K)FLUORANTHENE	ND(10)	UG/L	1104-76
BENZO(A)PYRENE	ND(10)	UG/L	1104-76
IDENO(1,2,3-CD)PYRENE	ND(10)	UG/L	1104-76
DIBENZ(A,H)ANTHRACENE	ND(10)	UG/L	1104-76
BENZO(G,H,I)PERYLENE	ND(10)	UG/L	1104-76
3,3'-DICHLOROBENZIDINE	ND(20)	UG/L	1104-76
ARSENIC, TOTAL	ND(0.01) ✓	MG/L	1164-17
BARIUM, TOTAL	ND(0.2) ✓	MG/L	1172-259
CADMIUM, TOTAL	ND(0.005) ✓	MG/L	1177-34
CHROMIUM, TOTAL	ND(0.03) ✓	MG/L	1177-29
MERCURY, TOTAL	0.0002 ✓	MG/L	1177-22
SELENIUM, TOTAL	ND(0.005) ✓	MG/L	1165-8
SILVER, TOTAL	ND(0.01) ✓	MG/L	1177-39
ARSENIC, FILTERED IN FIELD	ND(0.01)	MG/L	1164-20
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1172-260
CADMIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1177-35
CHROMIUM, FILTERED IN FIELD	ND(0.03)	MG/L	1177-30
MERCURY, FILTERED IN FIELD	0.0002	MG/L	1177-23
SELENIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1165-11
SILVER, FILTERED IN FIELD	ND(0.01)	MG/L	1177-40

—CONCLUSION—LAB NUMBER: 88080426 INERT LANDFILL T01

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/06/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1977

LAB NUMBER: 88080423
 SAMPLE DESCRIPTION: INERT LANDFILL T02

DATE SAMPLED: 07/21/88
 TIME SAMPLED: 1030

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
HSL PESTICIDE COMPOUNDS			
ALPHA-BHC	ND(0.05)	UG/L	1182-14
BETA-BHC	ND(0.05)	UG/L	1182-14
DELTA-BHC	ND(0.05)	UG/L	1182-14
GAMMA-BHC (LINDANE)	ND(0.05)	UG/L	1182-14
HEPTACHLOR	ND(0.05)	UG/L	1182-14
ALDRIN	ND(0.05)	UG/L	1182-14
HEPTACHLOR EPOXIDE	ND(0.05)	UG/L	1182-14
ENDOSULFAN I	ND(0.05)	UG/L	1182-14
DIELDRIN	ND(0.05)	UG/L	1182-14
4,4'-DDE	ND(0.10)	UG/L	1182-14
ENDRIN	ND(0.10)	UG/L	1182-14
ENDOSULFAN II	ND(0.10)	UG/L	1182-14
4,4'-DDD	ND(0.10)	UG/L	1182-14
ENDOSULFAN SULFATE	ND(0.10)	UG/L	1182-14
4,4'-DDT	ND(0.10)	UG/L	1182-14
METHOXYCHLOR	ND(0.5)	UG/L	1182-14
ENDRIN KETONE	ND(0.10)	UG/L	1182-14
ALPHA-CHLORDANE	ND(0.5)	UG/L	1182-14
GAMMA-CHLORDANE	ND(0.5)	UG/L	1182-14
TOXAPHENE	ND(1.0)	UG/L	1182-14
AROCHLOR-1016	ND(0.5)	UG/L	1182-14
AROCHLOR-1221	ND(0.5)	UG/L	1182-14
AROCHLOR-1232	ND(0.5)	UG/L	1182-14
AROCHLOR-1242	ND(0.5)	UG/L	1182-14
AROCHLOR-1248	ND(0.5)	UG/L	1182-14
AROCHLOR-1254	ND(1.0)	UG/L	1182-14
AROCHLOR-1260	ND(1.0)	UG/L	1182-14
TERRACON EXPL. (40875137) LANDFILL			
2,4,6-TNT	ND(20)✓	UG/L	
2,4-DNT	ND(10)✓	UG/L	
2,6-DNT	ND(10)✓	UG/L	
TETRYL	ND(20)✓	UG/L	
RDX	ND(22)✓	UG/L	
HMX	ND(26)✓	UG/L	

LABORATORY REPORT

PAGE 2

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080423 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
NITRATE/NITRITE	0.9	MG/L AS N	1023-157
SULFATE	26	MG/L	515-83
HSL VOLATILE COMPOUNDS			
CHLOROMETHANE	ND(10)	UG/L	1157-9
BROMOMETHANE	ND(10)	UG/L	1157-9
VINYL CHLORIDE	ND(10)	UG/L	1157-9
CHLOROETHANE	ND(10)	UG/L	1157-9
METHYLENE CHLORIDE	ND(5.0)	UG/L	1157-9
ACETONE	ND(10)	UG/L	1157-9
CARBON DISULFIDE	ND(5.0)	UG/L	1157-9
1,1-DICHLOROETHENE	ND(5.0)	UG/L	1157-9
1,1-DICHLOROETHANE	ND(5.0)	UG/L	1157-9
1,2-DICHLOROETHENE (TOTAL)	ND(5.0)	UG/L	1157-9
CHLOROFORM	ND(5.0)	UG/L	1157-9
1,2-DICHLOROETHANE	ND(5.0)	UG/L	1157-9
2-BUTANONE	ND(10)	UG/L	1157-9
1,1,1-TRICHLOROETHANE	ND(5.0)	UG/L	1157-9
CARBON TETRACHLORIDE	ND(5.0)	UG/L	1157-9
VINYL ACETATE	ND(10)	UG/L	1157-9
BROMODICHLOROMETHANE	ND(5.0)	UG/L	1157-9
1,2-DICHLOROPROPANE	ND(5.0)	UG/L	1157-9
CIS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-9
TRICHLOROETHENE	ND(5.0)	UG/L	1157-9
DIBROMOCHLOROMETHANE	ND(5.0)	UG/L	1157-9
1,1,2-TRICHLOROETHANE	ND(5.0)	UG/L	1157-9
BENZENE	ND(5.0)	UG/L	1157-9
TRANS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-9
BROMOFORM	ND(5.0)	UG/L	1157-9
4-METHYL-2-PENTANONE	ND(10)	UG/L	1157-9
2-HEXANONE	ND(10)	UG/L	1157-9
TETRACHLOROETHENE	ND(5.0)	UG/L	1157-9
1,1,2,2-TETRACHLOROETHANE	ND(5.0)	UG/L	1157-9
TOLUENE	ND(5.0)	UG/L	1157-9
CHLOROBENZENE	ND(5.0)	UG/L	1157-9
ETHYLBENZENE	ND(5.0)	UG/L	1157-9
STYRENE	ND(5.0)	UG/L	1157-9
XYLENE (TOTAL)	ND(5.0)	UG/L	1157-9
HSL SEMIVOLATILE ORGANIC COMPOUNDS			
PHENOL	ND(10)	UG/L	1104-73
BIS(2-CHLOROETHYL) ETHER	ND(10)	UG/L	1104-73
2-CHLOROPHENOL	ND(10)	UG/L	1104-73
1,3-DICHLOROBENZENE	ND(10)	UG/L	1104-73

LABORATORY REPORT

PAGE 3

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080423 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
1,4-DICHLOROBENZENE	ND(10)	UG/L	1104-73
BENZYL ALCOHOL	ND(10)	UG/L	1104-73
1,2-DICHLOROBENZENE	ND(10)	UG/L	1104-73
2-METHYLPHENOL	ND(10)	UG/L	1104-73
BIS(2-CHLOROISOPROPYL) ETHER	ND(10)	UG/L	1104-73
4-METHYLPHENOL	ND(10)	UG/L	1104-73
N-NITROSO-DI-N-PROPYLAMINE	ND(10)	UG/L	1104-73
HEXACHLOROETHANE	ND(10)	UG/L	1104-73
NITROBENZENE	ND(10)	UG/L	1104-73
ISOPHORONE	ND(10)	UG/L	1104-73
2-NITROPHENOL	ND(50)	UG/L	1104-73
2,4-DIMETHYLPHENOL	ND(10)	UG/L	1104-73
BENZOIC ACID	ND(50)	UG/L	1104-73
BIS(2-CHLOROETHOXY)METHANE	ND(10)	UG/L	1104-73
2,4-DICHLOROPHENOL	ND(10)	UG/L	1104-73
1,2,4-TRICHLOROBENZENE	ND(10)	UG/L	1104-73
NAPHTHALENE	ND(10)	UG/L	1104-73
4-CHLOROANILINE	ND(10)	UG/L	1104-73
HEXACHLOROBUTADIENE	ND(10)	UG/L	1104-73
4-CHLORO-3-METHYLPHENOL	ND(10)	UG/L	1104-73
2-METHYLNAPHTHALENE	ND(10)	UG/L	1104-73
HEXACHLOROCYCLOPENTADIENE	ND(10)	UG/L	1104-73
2,4,6-TRICHLOROPHENOL	ND(10)	UG/L	1104-73
2,4,5-TRICHLOROPHENOL	ND(50)	UG/L	1104-73
2-CHLORONAPHTHALENE	ND(10)	UG/L	1104-73
2-NITROANILINE	ND(50)	UG/L	1104-73
DIMETHYLPHTHALATE	ND(10)	UG/L	1104-73
ACENAPHTHYLENE	ND(10)	UG/L	1104-73
2,6-DINITROTOLUENE	ND(10)	UG/L	1104-73
3-NITROANILINE	ND(50)	UG/L	1104-73
ACENAPHTHENE	ND(10)	UG/L	1104-73
2,4-DINITROPHENOL	ND(50)	UG/L	1104-73
4-NITROPHENOL	ND(50)	UG/L	1104-73
DIBENZOFURAN	ND(10)	UG/L	1104-73
2,4-DINITROTOLUENE	ND(10)	UG/L	1104-73
DIETHYLPHTHALATE	ND(10)	UG/L	1104-73
4-CHLOROPHENYL-PHENYLETHER	ND(10)	UG/L	1104-73
FLUORENE	ND(10)	UG/L	1104-73
4-NITROANILINE	ND(50)	UG/L	1104-73
4,6-DINITRO-2-METHYLPHENOL	ND(50)	UG/L	1104-73
N-NITROSODIPHENYLAMINE(1)	ND(10)	UG/L	1104-73
4-BROMOPHENYL-PHENYLETHER	ND(10)	UG/L	1104-73

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080423 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
HEXACHLOROBENZENE	ND(10)	UG/L	1104-73
PENTACHLOROPHENOL	ND(50)	UG/L	1104-73
PHENANTHRENE	ND(10)	UG/L	1104-73
ANTHRACENE	ND(10)	UG/L	1104-73
DI-N-BUTYLPHTHALATE	ND(10)	UG/L	1104-73
FLUORANTHENE	ND(10)	UG/L	1104-73
PYRENE	ND(10)	UG/L	1104-73
BUTYLBENZYLPHTHALATE	ND(10)	UG/L	1104-73
BENZO(A)ANTHRACENE	ND(10)	UG/L	1104-73
CHRYSENE	ND(10)	UG/L	1104-73
BIS(2-ETHYLHEXYL)PHTHALATE	ND(10)	UG/L	1104-73
DI-N-OCTYLPHTHALATE	ND(10)	UG/L	1104-73
BENZO(B)FLUORANTHENE	ND(10)	UG/L	1104-73
BENZO(K)FLUORANTHENE	ND(10)	UG/L	1104-73
BENZO(A)PYRENE	ND(10)	UG/L	1104-73
IDENO(1,2,3-CD)PYRENE	ND(10)	UG/L	1104-73
DIBENZ(A,H)ANTHRACENE	ND(10)	UG/L	1104-73
BENZO(G,H,I)PERYLENE	ND(10)	UG/L	1104-73
3,3'-DICHLOROBENZIDINE	ND(20)	UG/L	1104-73
ARSENIC, TOTAL	ND(0.01)	MG/L	1164-17
BARIUM, TOTAL	ND(0.2)	MG/L	1172-259
CADMIUM, TOTAL	ND(0.005)	MG/L	1177-34
CHROMIUM, TOTAL	ND(0.03)	MG/L	1177-29
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-22
SELENIUM, TOTAL	ND(0.005)	MG/L	1165-8
SILVER, TOTAL	ND(0.01)	MG/L	1177-39
ARSENIC, FILTERED IN FIELD	ND(0.01)	MG/L	1164-20
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1172-260
CADMIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1177-35
CHROMIUM, FILTERED IN FIELD	ND(0.03)	MG/L	1177-30
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1177-23
SELENIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1165-11
SILVER, FILTERED IN FIELD	ND(0.01)	MG/L	1177-40

—CONCLUSION—LAB NUMBER: 88080423 INERT LANDFILL T02

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/06/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1977

LAB NUMBER: 88080424
 SAMPLE DESCRIPTION: INERT LANDFILL T03

DATE SAMPLED: 07/21/88
 TIME SAMPLED: 1300

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
HSL PESTICIDE COMPOUNDS			
ALPHA-BHC	ND(8.0)	UG/L	1182-14
BETA-BHC	ND(8.0)	UG/L	1182-14
DELTA-BHC	ND(8.0)	UG/L	1182-14
GAMMA-BHC (LINDANE)	ND(8.0)	UG/L	1182-14
HEPTACHLOR	ND(8.0)	UG/L	1182-14
ALDRIN	ND(8.0)	UG/L	1182-14
HEPTACHLOR EPOXIDE	ND(8.0)	UG/L	1182-14
ENDOSULFAN I	ND(8.0)	UG/L	1182-14
DIELDRIN	ND(8.0)	UG/L	1182-14
4,4'-DDE	ND(16)	UG/L	1182-14
ENDRIN	ND(16)	UG/L	1182-14
ENDOSULFAN II	ND(16)	UG/L	1182-14
4,4'-DDD	ND(16)	UG/L	1182-14
ENDOSULFAN SULFATE	ND(16)	UG/L	1182-14
4,4'-DDT	ND(16)	UG/L	1182-14
METHOXYCHLOR	ND(80)	UG/L	1182-14
ENDRIN KETONE	ND(16)	UG/L	1182-14
ALPHA-CHLORDANE	ND(80)	UG/L	1182-14
GAMMA-CHLORDANE	ND(80)	UG/L	1182-14
TOXAPHENE	ND(160)	UG/L	1182-14
AROCHLOR-1016	ND(80)	UG/L	1182-14
AROCHLOR-1221	ND(80)	UG/L	1182-14
AROCHLOR-1232	ND(80)	UG/L	1182-14
AROCHLOR-1242	ND(80)	UG/L	1182-14
AROCHLOR-1248	ND(80)	UG/L	1182-14
AROCHLOR-1254	ND(160)	UG/L	1182-14
AROCHLOR-1260	ND(160)	UG/L	1182-14
TERRACON EXPL. (40875137) LANDFILL			
2,4,6-TNT	ND(20)	UG/L	
2,4-DNT	ND(10)	UG/L	
2,6-DNT	ND(10)	UG/L	
TEIRYL	ND(20)	UG/L	
RDX	ND(22)	UG/L	
HMX	ND(26)	UG/L	

LABORATORY REPORT

PAGE 2

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080424 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
NITRATE/NITRITE	1.5	MG/L AS N	1023-157
SULFATE	(42) ✓	MG/L	515-83
HSL VOLATILE COMPOUNDS			
CHLOROMETHANE	ND(10)	UG/L	1157-1
BROMOMETHANE	ND(10)	UG/L	1157-1
VINYL CHLORIDE	ND(10)	UG/L	1157-1
CHLOROETHANE	ND(10)	UG/L	1157-1
METHYLENE CHLORIDE	(11) ✓	UG/L	1157-1
ACETONE	ND(10)	UG/L	1157-1
CARBON DISULFIDE	ND(5.0)	UG/L	1157-1
1,1-DICHLOROETHENE	ND(5.0)	UG/L	1157-1
1,1-DICHLOROETHANE	ND(5.0)	UG/L	1157-1
1,2-DICHLOROETHENE (TOTAL)	ND(5.0)	UG/L	1157-1
CHLOROFORM	ND(5.0)	UG/L	1157-1
1,2-DICHLOROETHANE	ND(5.0)	UG/L	1157-1
2-BUTANONE	ND(10)	UG/L	1157-1
1,1,1-TRICHLOROETHANE	ND(5.0)	UG/L	1157-1
CARBON TETRACHLORIDE	ND(5.0)	UG/L	1157-1
VINYL ACETATE	ND(10)	UG/L	1157-1
BROMODICHLOROMETHANE	ND(5.0)	UG/L	1157-1
1,2-DICHLOROPROPANE	ND(5.0)	UG/L	1157-1
CIS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-1
TRICHLOROETHENE	ND(5.0)	UG/L	1157-1
DIBROMOCHLOROMETHANE	ND(5.0)	UG/L	1157-1
1,1,2-TRICHLOROETHANE	ND(5.0)	UG/L	1157-1
BENZENE	ND(5.0)	UG/L	1157-1
TRANS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-1
BROMOFORM	ND(5.0)	UG/L	1157-1
4-METHYL-2-PENTANONE	ND(10)	UG/L	1157-1
2-HEXANONE	ND(10)	UG/L	1157-1
TETRACHLOROETHENE	ND(5.0)	UG/L	1157-1
1,1,2,2-TETRACHLOROETHANE	ND(5.0)	UG/L	1157-1
TOLUENE	ND(5.0)	UG/L	1157-1
CHLOROBENZENE	ND(5.0)	UG/L	1157-1
ETHYLBENZENE	ND(5.0)	UG/L	1157-1
STYRENE	ND(5.0)	UG/L	1157-1
XYLENE (TOTAL)	ND(5.0)	UG/L	1157-1
HSL SEMIVOLATILE ORGANIC COMPOUNDS			
PHENOL	ND(10)	UG/L	1104-73
BIS(2-CHLOROETHYL) ETHER	ND(10)	UG/L	1104-73
2-CHLOROPHENOL	ND(10)	UG/L	1104-73
1,3-DICHLOROBENZENE	ND(10)	UG/L	1104-73

LABORATORY REPORT

PAGE 3

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080424 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
1,4-DICHLOROBENZENE	ND(10)	UG/L	1104-73
BENZYL ALCOHOL	ND(10)	UG/L	1104-73
1,2-DICHLOROBENZENE	ND(10)	UG/L	1104-73
2-METHYLPHENOL	ND(10)	UG/L	1104-73
BIS(2-CHLOROISOPROPYL)ETHER	ND(10)	UG/L	1104-73
4-METHYLPHENOL	ND(10)	UG/L	1104-73
N-NITROSO-DI-N-PROPYLAMINE	ND(10)	UG/L	1104-73
HEXACHLOROETHANE	ND(10)	UG/L	1104-73
NITROBENZENE	ND(10)	UG/L	1104-73
ISOPHORONE	ND(10)	UG/L	1104-73
2-NITROPHENOL	ND(50)	UG/L	1104-73
2,4-DIMETHYLPHENOL	ND(10)	UG/L	1104-73
BENZOIC ACID	ND(50)	UG/L	1104-73
BIS(2-CHLOROETHOXY)METHANE	ND(10)	UG/L	1104-73
2,4-DICHLOROPHENOL	ND(10)	UG/L	1104-73
1,2,4-TRICHLOROBENZENE	ND(10)	UG/L	1104-73
NAPHTHALENE	ND(10)	UG/L	1104-73
4-CHLOROANILINE	ND(10)	UG/L	1104-73
HEXACHLOROBUTADIENE	ND(10)	UG/L	1104-73
4-CHLORO-3-METHYLPHENOL	ND(10)	UG/L	1104-73
2-METHYLNAPHTHALENE	ND(10)	UG/L	1104-73
HEXACHLOROCYCLOPENTADIENE	ND(10)	UG/L	1104-73
2,4,6-TRICHLOROPHENOL	ND(10)	UG/L	1104-73
2,4,5-TRICHLOROPHENOL	ND(50)	UG/L	1104-73
2-CHLORONAPHTHALENE	ND(10)	UG/L	1104-73
2-NITROANILINE	ND(50)	UG/L	1104-73
DIMETHYLPHTHALATE	ND(10)	UG/L	1104-73
ACENAPHTHYLENE	ND(10)	UG/L	1104-73
2,6-DINITROTOLUENE	ND(10)	UG/L	1104-73
3-NITROANILINE	ND(50)	UG/L	1104-73
ACENAPHTHENE	ND(10)	UG/L	1104-73
2,4-DINITROPHENOL	ND(50)	UG/L	1104-73
4-NITROPHENOL	ND(50)	UG/L	1104-73
DIBENZOFURAN	ND(10)	UG/L	1104-73
2,4-DINITROTOLUENE	ND(10)	UG/L	1104-73
DIETHYLPHTHALATE	ND(10)	UG/L	1104-73
4-CHLOROPHENYL-PHENYLETHER	ND(10)	UG/L	1104-73
FLUORENE	ND(10)	UG/L	1104-73
4-NITROANILINE	ND(50)	UG/L	1104-73
4,6-DINITRO-2-METHYLPHENOL	ND(50)	UG/L	1104-73
N-NITROSODIPHENYLAMINE(1)	ND(10)	UG/L	1104-73
4-BROMOPHENYL-PHENYLETHER	ND(10)	UG/L	1104-73

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080424 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
HEXACHLOROBENZENE	ND(10)	UG/L	1104-73
PENTACHLOROPHENOL	ND(50)	UG/L	1104-73
PHENANTHRENE	ND(10)	UG/L	1104-73
ANTHRACENE	ND(10)	UG/L	1104-73
DI-N-BUTYLPHTHALATE	ND(10)	UG/L	1104-73
FLUORANTHENE	ND(10)	UG/L	1104-73
PYRENE	ND(10)	UG/L	1104-73
BUTYLBENZYLPHTHALATE	ND(10)	UG/L	1104-73
BENZO(A)ANTHRACENE	ND(10)	UG/L	1104-73
CHRYSENE	ND(10)	UG/L	1104-73
BIS(2-ETHYLHEXYL)PHTHALATE	ND(10) ✓	UG/L	1104-73
DI-N-OCTYLPHTHALATE	ND(10)	UG/L	1104-73
BENZO(B)FLUORANTHENE	ND(10)	UG/L	1104-73
BENZO(K)FLUORANTHENE	ND(10)	UG/L	1104-73
BENZO(A)PYRENE	ND(10)	UG/L	1104-73
IDENO(1,2,3-CD)PYRENE	ND(10)	UG/L	1104-73
DIBENZ(A,H)ANTHRACENE	ND(10)	UG/L	1104-73
BENZO(G,H,I)PERYLENE	ND(10)	UG/L	1104-73
3,3'-DICHLOROBENZIDINE	ND(20)	UG/L	1104-73
ARSENIC, TOTAL	ND(0.01)	MG/L	1164-17
BARIUM, TOTAL	ND(0.2)	MG/L	1172-259
CADMIUM, TOTAL	ND(0.005)	MG/L	1177-34
CHROMIUM, TOTAL	ND(0.03)	MG/L	1177-29
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-22
SELENIUM, TOTAL	ND(0.005)	MG/L	1165-8
SILVER, TOTAL	ND(0.01)	MG/L	1177-39
ARSENIC, FILTERED IN FIELD	ND(0.01)	MG/L	1164-20
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1172-260
CADMIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1177-35
CHROMIUM, FILTERED IN FIELD	ND(0.03)	MG/L	1177-30
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1177-23
SELENIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1165-11
SILVER, FILTERED IN FIELD	ND(0.01)	MG/L	1177-40

—CONCLUSION—LAB NUMBER: 88080424 INERT LANDFILL T03

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/06/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1977

LAB NUMBER: 88080475
 SAMPLE DESCRIPTION: INERT LANDFILL T04

DATE SAMPLED: 07/25/88
 TIME SAMPLED: 0832

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
HSL PESTICIDE COMPOUNDS			
ALPHA-BHC	ND(8.0)	UG/L	1182-14
BETA-BHC	ND(8.0)	UG/L	1182-14
DELTA-BHC	ND(8.0)	UG/L	1182-14
GAMMA-BHC (LINDANE)	ND(8.0)	UG/L	1182-14
HEPTACHLOR	ND(8.0)	UG/L	1182-14
ALDRIN	ND(8.0)	UG/L	1182-14
HEPTACHLOR EPOXIDE	ND(8.0)	UG/L	1182-14
ENDOSULFAN I	ND(8.0)	UG/L	1182-14
DIELDRIN	ND(8.0)	UG/L	1182-14
4,4'-DDE	ND(16)	UG/L	1182-14
ENDRIN	ND(16)	UG/L	1182-14
ENDOSULFAN II	ND(16)	UG/L	1182-14
4,4'-DDD	ND(16)	UG/L	1182-14
ENDOSULFAN SULFATE	ND(16)	UG/L	1182-14
4,4'-DDT	ND(16)	UG/L	1182-14
METHOXYCHLOR	ND(80)	UG/L	1182-14
ENDRIN KETONE	ND(16)	UG/L	1182-14
ALPHA-CHLORDANE	ND(80)	UG/L	1182-14
GAMMA-CHLORDANE	ND(80)	UG/L	1182-14
TOXAPHENE	ND(160)	UG/L	1182-14
AROCHLOR-1016	ND(80)	UG/L	1182-14
AROCHLOR-1221	ND(80)	UG/L	1182-14
AROCHLOR-1232	ND(80)	UG/L	1182-14
AROCHLOR-1242	ND(80)	UG/L	1182-14
AROCHLOR-1248	ND(80)	UG/L	1182-14
AROCHLOR-1254	ND(160)	UG/L	1182-14
AROCHLOR-1260	ND(160)	UG/L	1182-14
TERRACON EXPL. (40875137) LANDFILL			
2,4,6-TNT	ND(20)	UG/L	
2,4-DNT	ND(10)	UG/L	
2,6-DNT	ND(10)	UG/L	
TEIRYL	ND(20)	UG/L	
RDX	ND(22)	UG/L	
HMX	ND(26)	UG/L	

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080475 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
NITRATE/NITRITE	1.0	MG/L AS N	1023-150
SULFATE	ND(10)	MG/L	515-85
HSL VOLATILE COMPOUNDS			
CHLOROMETHANE	ND(10)	UG/L	1157-3
BROMOMETHANE	ND(10)	UG/L	1157-3
VINYL CHLORIDE	ND(10)	UG/L	1157-3
CHLOROETHANE	ND(10)	UG/L	1157-3
METHYLENE CHLORIDE	ND(5.0)	UG/L	1157-3
ACETONE	ND(10)	UG/L	1157-3
CARBON DISULFIDE	ND(5.0)	UG/L	1157-3
1,1-DICHLOROETHENE	ND(5.0)	UG/L	1157-3
1,1-DICHLOROETHANE	ND(5.0)	UG/L	1157-3
1,2-DICHLOROETHENE (TOTAL)	ND(5.0)	UG/L	1157-3
CHLOROFORM	ND(5.0)	UG/L	1157-3
1,2-DICHLOROETHANE	ND(5.0)	UG/L	1157-3
2-BUTANONE	ND(10)	UG/L	1157-3
1,1,1-TRICHLOROETHANE	ND(5.0)	UG/L	1157-3
CARBON TETRACHLORIDE	ND(5.0)	UG/L	1157-3
VINYL ACETATE	ND(10)	UG/L	1157-3
BROMODICHLOROMETHANE	ND(5.0)	UG/L	1157-3
1,2-DICHLOROPROPANE	ND(5.0)	UG/L	1157-3
CIS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-3
TRICHLOROETHENE	ND(5.0)	UG/L	1157-3
DIBROMOCHLOROMETHANE	ND(5.0)	UG/L	1157-3
1,1,2-TRICHLOROETHANE	ND(5.0)	UG/L	1157-3
BENZENE	ND(5.0)	UG/L	1157-3
TRANS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-3
BROMOFORM	ND(5.0)	UG/L	1157-3
4-METHYL-2-PENTANONE	ND(10)	UG/L	1157-3
2-HEXANONE	ND(10)	UG/L	1157-3
TETRACHLOROETHENE	ND(5.0)	UG/L	1157-3
1,1,2,2-TETRACHLOROETHANE	ND(5.0)	UG/L	1157-3
TOLUENE	ND(5.0)	UG/L	1157-3
CHLOROBENZENE	ND(5.0)	UG/L	1157-3
ETHYLBENZENE	ND(5.0)	UG/L	1157-3
STYRENE	ND(5.0)	UG/L	1157-3
XYLENE (TOTAL)	ND(5.0)	UG/L	1157-3
HSL SEMIVOLATILE ORGANIC COMPOUNDS			
PHENOL	ND(10)	UG/L	1104-79
BIS(2-CHLOROETHYL) ETHER	ND(10)	UG/L	1104-79
2-CHLOROPHENOL	ND(10)	UG/L	1104-79
1,3-DICHLOROBENZENE	ND(10)	UG/L	1104-79

LABORATORY REPORT

PAGE 3

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080475 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
1,4-DICHLOROBENZENE	ND(10)	UG/L	1104-79
BENZYL ALCOHOL	ND(10)	UG/L	1104-79
1,2-DICHLOROBENZENE	ND(10)	UG/L	1104-79
2-METHYLPHENOL	ND(10)	UG/L	1104-79
BIS(2-CHLOROISOPROPYL)ETHER	ND(10)	UG/L	1104-79
4-METHYLPHENOL	ND(10)	UG/L	1104-79
N-NITROSO-DI-N-PROPYLAMINE	ND(10)	UG/L	1104-79
HEXACHLOROETHANE	ND(10)	UG/L	1104-79
NITROBENZENE	ND(10)	UG/L	1104-79
ISOPHORONE	ND(10)	UG/L	1104-79
2-NITROPHENOL	ND(10)	UG/L	1104-79
2,4-DIMETHYLPHENOL	ND(10)	UG/L	1104-79
BENZOIC ACID	ND(50)	UG/L	1104-79
BIS(2-CHLOROETHOXY)METHANE	ND(10)	UG/L	1104-79
2,4-DICHLOROPHENOL	ND(10)	UG/L	1104-79
1,2,4-TRICHLOROBENZENE	ND(10)	UG/L	1104-79
NAPHTHALENE	ND(10)	UG/L	1104-79
4-CHLOROANILINE	ND(10)	UG/L	1104-79
HEXACHLOROBUTADIENE	ND(10)	UG/L	1104-79
4-CHLORO-3-METHYLPHENOL	ND(10)	UG/L	1104-79
2-METHYLNAPHTHALENE	ND(10)	UG/L	1104-79
HEXACHLOROCYCLOPENTADIENE	ND(10)	UG/L	1104-79
2,4,6-TRICHLOROPHENOL	ND(10)	UG/L	1104-79
2,4,5-TRICHLOROPHENOL	ND(50)	UG/L	1104-79
2-CHLORONAPHTHALENE	ND(10)	UG/L	1104-79
2-NITROANILINE	ND(50)	UG/L	1104-79
DIMETHYLPHTHALATE	ND(10)	UG/L	1104-79
ACENAPHTHYLENE	ND(10)	UG/L	1104-79
2,6-DINITROTOLUENE	ND(10)	UG/L	1104-79
3-NITROANILINE	ND(50)	UG/L	1104-79
ACENAPHTHENE	ND(10)	UG/L	1104-79
2,4-DINITROPHENOL	ND(50)	UG/L	1104-79
4-NITROPHENOL	ND(50)	UG/L	1104-79
DIBENZOFURAN	ND(10)	UG/L	1104-79
2,4-DINITROTOLUENE	ND(10)	UG/L	1104-79
DIETHYLPHTHALATE	ND(10)	UG/L	1104-79
4-CHLOROPHENYL-PHENYLETHER	ND(10)	UG/L	1104-79
FLUORENE	ND(10)	UG/L	1104-79
4-NITROANILINE	ND(50)	UG/L	1104-79
4,6-DINITRO-2-METHYLPHENOL	ND(50)	UG/L	1104-79
N-NITROSODIPHENYLAMINE(1)	ND(10)	UG/L	1104-79
4-BROMOPHENYL-PHENYLETHER	ND(10)	UG/L	1104-79

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080475 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
HEXACHLOROBENZENE	ND(10)	UG/L	1104-79
PENTACHLOROPHENOL	ND(50)	UG/L	1104-79
PHENANTHRENE	ND(10)	UG/L	1104-79
ANTHRACENE	ND(10)	UG/L	1104-79
DI-N-BUTYLPHTHALATE	ND(10)	UG/L	1104-79
FLUORANTHENE	ND(10)	UG/L	1104-79
PYRENE	ND(10)	UG/L	1104-79
BUTYLBENZYLPHTHALATE	ND(10)	UG/L	1104-79
BENZO(A)ANTHRACENE	ND(10)	UG/L	1104-79
CHRYSENE	ND(10)	UG/L	1104-79
BIS(2-ETHYLHEXYL)PHTHALATE	ND(10)	UG/L	1104-79
DI-N-OCTYLPHTHALATE	ND(10)	UG/L	1104-79
BENZO(B)FLUORANTHENE	ND(10)	UG/L	1104-79
BENZO(K)FLUORANTHENE	ND(10)	UG/L	1104-79
BENZO(A)PYRENE	ND(10)	UG/L	1104-79
IDENO(1,2,3-CD)PYRENE	ND(10)	UG/L	1104-79
DIBENZ(A,H)ANTHRACENE	ND(10)	UG/L	1104-79
BENZO(G,H,I)PERYLENE	ND(10)	UG/L	1104-79
3,3'-DICHLOROBENZIDINE	ND(20)	UG/L	1104-79
ARSENIC, TOTAL	ND(0.01)	MG/L	1164-21
BARIUM, TOTAL	ND(0.2)	MG/L	1172-259
CADMIUM, TOTAL	ND(0.005)	MG/L	1177-35
CHROMIUM, TOTAL	ND(0.03)	MG/L	1177-30
MERCURY, TOTAL	0.0001	MG/L	1177-22
SELENIUM, TOTAL	ND(0.005)	MG/L	1165-12
SILVER, TOTAL	ND(0.01)	MG/L	1177-39
ARSENIC, FILTERED IN FIELD	ND(0.01)	MG/L	1164-21
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1172-260
CADMIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1177-35
CHROMIUM, FILTERED IN FIELD	ND(0.03)	MG/L	1177-30
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1177-23
SELENIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1165-12
SILVER, FILTERED IN FIELD	ND(0.01)	MG/L	1177-2

—CONCLUSION—LAB NUMBER: 88080475 INERT LANDFILL T04

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/06/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1977

LAB NUMBER: 88080472
 SAMPLE DESCRIPTION: INERT LANDFILL T05

DATE SAMPLED: 07/25/88
 TIME SAMPLED: 0725

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
HSL PESTICIDE COMPOUNDS			
ALPHA-BHC	ND(8.0)	UG/L	1182-14
BETA-BHC	ND(8.0)	UG/L	1182-14
DELTA-BHC	ND(8.0)	UG/L	1182-14
GAMMA-BHC (LINDANE)	ND(8.0)	UG/L	1182-14
HEPTACHLOR	ND(8.0)	UG/L	1182-14
ALDRIN	ND(8.0)	UG/L	1182-14
HEPTACHLOR EPOXIDE	ND(8.0)	UG/L	1182-14
ENDOSULFAN I	ND(8.0)	UG/L	1182-14
DIELDRIN	ND(8.0)	UG/L	1182-14
4,4'-DDE	ND(16)	UG/L	1182-14
ENDRIN	ND(16)	UG/L	1182-14
ENDOSULFAN II	ND(16)	UG/L	1182-14
4,4'-DDD	ND(16)	UG/L	1182-14
ENDOSULFAN SULFATE	ND(16)	UG/L	1182-14
4,4'-DDT	ND(16)	UG/L	1182-14
METHOXYCHLOR	ND(80)	UG/L	1182-14
ENDRIN KETONE	ND(16)	UG/L	1182-14
ALPHA-CHLORDANE	ND(80)	UG/L	1182-14
GAMMA-CHLORDANE	ND(80)	UG/L	1182-14
TOXAPHENE	ND(160)	UG/L	1182-14
AROCHLOR-1016	ND(80)	UG/L	1182-14
AROCHLOR-1221	ND(80)	UG/L	1182-14
AROCHLOR-1232	ND(80)	UG/L	1182-14
AROCHLOR-1242	ND(80)	UG/L	1182-14
AROCHLOR-1248	ND(80)	UG/L	1182-14
AROCHLOR-1254	ND(160)	UG/L	1182-14
AROCHLOR-1260	ND(160)	UG/L	1182-14
TERRACON EXPL. (40875137) LANDFILL			
2,4,6-TNT	ND(20)	UG/L	
2,4-DNT	ND(10)	UG/L	
2,6-DNT	ND(10)	UG/L	
TETRYL	ND(20)	UG/L	
RDX	ND(22)	UG/L	
HMX	ND(26)	UG/L	

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080472 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
NITRATE/NITRITE	0.1	MG/L AS N	1023-150
SULFATE	17	MG/L	515-83
HSL VOLATILE COMPOUNDS			
CHLOROMETHANE	ND(10)	UG/L	1157-7
BROMOMETHANE	ND(10)	UG/L	1157-7
VINYL CHLORIDE	ND(10)	UG/L	1157-7
CHLOROETHANE	ND(10)	UG/L	1157-7
METHYLENE CHLORIDE	ND(5.0)	UG/L	1157-7
ACETONE	ND(10)	UG/L	1157-7
CARBON DISULFIDE	ND(5.0)	UG/L	1157-7
1,1-DICHLOROETHENE	ND(5.0)	UG/L	1157-7
1,1-DICHLOROETHANE	ND(5.0)	UG/L	1157-7
1,2-DICHLOROETHENE (TOTAL)	ND(5.0)	UG/L	1157-7
CHLOROFORM	ND(5.0)	UG/L	1157-7
1,2-DICHLOROETHANE	ND(5.0)	UG/L	1157-7
2-BUTANONE	ND(10)	UG/L	1157-7
1,1,1-TRICHLOROETHANE	ND(5.0)	UG/L	1157-7
CARBON TETRACHLORIDE	ND(5.0)	UG/L	1157-7
VINYL ACETATE	ND(10)	UG/L	1157-7
BROMODICHLOROMETHANE	ND(5.0)	UG/L	1157-7
1,2-DICHLOROPROPANE	ND(5.0)	UG/L	1157-7
CIS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-7
TRICHLOROETHENE	ND(5.0)	UG/L	1157-7
DIBROMOCHLOROMETHANE	ND(5.0)	UG/L	1157-7
1,1,2-TRICHLOROETHANE	ND(5.0)	UG/L	1157-7
BENZENE	ND(5.0)	UG/L	1157-7
TRANS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-7
BROMOFORM	ND(5.0)	UG/L	1157-7
4-METHYL-2-PENTANONE	ND(10)	UG/L	1157-7
2-HEXANONE	ND(10)	UG/L	1157-7
TETRACHLOROETHENE	ND(5.0)	UG/L	1157-7
1,1,2,2-TETRACHLOROETHANE	ND(5.0)	UG/L	1157-7
TOLUENE	ND(5.0)	UG/L	1157-7
CHLOROBENZENE	ND(5.0)	UG/L	1157-7
ETHYLBENZENE	ND(5.0)	UG/L	1157-7
STYRENE	ND(5.0)	UG/L	1157-7
XYLENE (TOTAL)	ND(5.0)	UG/L	1157-7
HSL SEMIVOLATILE ORGANIC COMPOUNDS			
PHENOL	ND(10)	UG/L	1104-73
BIS(2-CHLOROETHYL) ETHER	ND(10)	UG/L	1104-73
2-CHLOROPHENOL	ND(10)	UG/L	1104-73
1,3-DICHLOROBENZENE	ND(10)	UG/L	1104-73

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080472 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
1,4-DICHLOROBENZENE	ND(10)	UG/L	1104-73
BENZYL ALCOHOL	ND(10)	UG/L	1104-73
1,2-DICHLOROBENZENE	ND(10)	UG/L	1104-73
2-METHYLPHENOL	ND(10)	UG/L	1104-73
BIS(2-CHLOROISOPROPYL)ETHER	ND(10)	UG/L	1104-73
4-METHYLPHENOL	ND(10)	UG/L	1104-73
N-NITROSO-DI-N-PROPYLAMINE	ND(10)	UG/L	1104-73
HEXACHLOROETHANE	ND(10)	UG/L	1104-73
NITROBENZENE	ND(10)	UG/L	1104-73
ISOPHORONE	ND(10)	UG/L	1104-73
2-NITROPHENOL	ND(50)	UG/L	1104-73
2,4-DIMETHYLPHENOL	ND(10)	UG/L	1104-73
BENZOIC ACID	ND(50)	UG/L	1104-73
BIS(2-CHLOROETHOXY)METHANE	ND(10)	UG/L	1104-73
2,4-DICHLOROPHENOL	ND(10)	UG/L	1104-73
1,2,4-TRICHLOROBENZENE	ND(10)	UG/L	1104-73
NAPHTHALENE	ND(10)	UG/L	1104-73
4-CHLOROANILINE	ND(10)	UG/L	1104-73
HEXACHLOROBUTADIENE	ND(10)	UG/L	1104-73
4-CHLORO-3-METHYLPHENOL	ND(10)	UG/L	1104-73
2-METHYLNAPHTHALENE	ND(10)	UG/L	1104-73
HEXACHLOROCYCLOPENTADIENE	ND(10)	UG/L	1104-73
2,4,6-TRICHLOROPHENOL	ND(10)	UG/L	1104-73
2,4,5-TRICHLOROPHENOL	ND(50)	UG/L	1104-73
2-CHLORONAPHTHALENE	ND(10)	UG/L	1104-73
2-NITROANILINE	ND(50)	UG/L	1104-73
DIMETHYLPHTHALATE	ND(10)	UG/L	1104-73
ACENAPHTHYLENE	ND(10)	UG/L	1104-73
2,6-DINITROTOLUENE	ND(10)	UG/L	1104-73
3-NITROANILINE	ND(50)	UG/L	1104-73
ACENAPHTHENE	ND(10)	UG/L	1104-73
2,4-DINITROPHENOL	ND(50)	UG/L	1104-73
4-NITROPHENOL	ND(50)	UG/L	1104-73
DIBENZOFURAN	ND(10)	UG/L	1104-73
2,4-DINITROTOLUENE	ND(10)	UG/L	1104-73
DIETHYLPHTHALATE	ND(10)	UG/L	1104-73
4-CHLOROPHENYL-PHENYLETHER	ND(10)	UG/L	1104-73
FLUORENE	ND(10)	UG/L	1104-73
4-NITROANILINE	ND(50)	UG/L	1104-73
4,6-DINITRO-2-METHYLPHENOL	ND(50)	UG/L	1104-73
N-NITROSODIPHENYLAMINE(1)	ND(10)	UG/L	1104-73
4-BROMOPHENYL-PHENYLETHER	ND(10)	UG/L	1104-73

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080472 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
HEXACHLOROBENZENE	ND(10)	UG/L	1104-73
PENTACHLOROPHENOL	ND(50)	UG/L	1104-73
PHENANTHRENE	ND(10)	UG/L	1104-73
ANTHRACENE	ND(10)	UG/L	1104-73
DI-N-BUTYLPHTHALATE	ND(10)	UG/L	1104-73
FLUORANTHENE	ND(10)	UG/L	1104-73
PYRENE	ND(10)	UG/L	1104-73
BUTYLBENZYLPHTHALATE	ND(10)	UG/L	1104-73
BENZO(A)ANTHRACENE	ND(10)	UG/L	1104-73
CHRYSENE	ND(10)	UG/L	1104-73
BIS(2-ETHYLHEXYL)PHTHALATE	ND(10)	UG/L	1104-73
DI-N-OCTYLPHTHALATE	ND(10)	UG/L	1104-73
BENZO(B)FLUORANTHENE	ND(10)	UG/L	1104-73
BENZO(K)FLUORANTHENE	ND(10)	UG/L	1104-73
BENZO(A)PYRENE	ND(10)	UG/L	1104-73
IDENO(1,2,3-CD)PYRENE	ND(10)	UG/L	1104-73
DIBENZ(A,H)ANTHRACENE	ND(10)	UG/L	1104-73
BENZO(G,H,I)PERYLENE	ND(10)	UG/L	1104-73
3,3'-DICHLOROBENZIDINE	ND(20)	UG/L	1104-73
ARSENIC, TOTAL	ND(0.01)	MG/L	1164-21
BARIUM, TOTAL	ND(0.2)	MG/L	1172-259
CADMIUM, TOTAL	ND(0.005)	MG/L	1177-35
CHROMIUM, TOTAL	ND(0.03)	MG/L	1177-29
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-22
SELENIUM, TOTAL	ND(0.005)	MG/L	1165-10
SILVER, TOTAL	ND(0.01)	MG/L	1177-39
ARSENIC, FILTERED IN FIELD	ND(0.01)	MG/L	1164-20
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1172-260
CADMIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1177-35
CHROMIUM, FILTERED IN FIELD	ND(0.03)	MG/L	1177-30
MERCURY, FILTERED IN FIELD	0.0001	MG/L	1177-23
SELENIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1165-11
SILVER, FILTERED IN FIELD	ND(0.01)	MG/L	1177-2

—CONCLUSION—LAB NUMBER: 88080472 INERT LANDFILL T05

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/06/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1977

LAB NUMBER: 88080473
 SAMPLE DESCRIPTION: INERT LANDFILL T06

DATE SAMPLED: 07/25/88
 TIME SAMPLED: 1445

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
HSL PESTICIDE COMPOUNDS			
ALPHA-BHC	ND(8.0)	UG/L	1182-14
BETA-BHC	ND(8.0)	UG/L	1182-14
DELTA-BHC	ND(8.0)	UG/L	1182-14
GAMMA-BHC (LINDANE)	ND(8.0)	UG/L	1182-14
HEPTACHLOR	ND(8.0)	UG/L	1182-14
ALDRIN	ND(8.0)	UG/L	1182-14
HEPTACHLOR EPOXIDE	ND(8.0)	UG/L	1182-14
ENDOSULFAN I	ND(8.0)	UG/L	1182-14
DIELDRIN	ND(8.0)	UG/L	1182-14
4,4'-DDE	ND(16)	UG/L	1182-14
ENDRIN	ND(16)	UG/L	1182-14
ENDOSULFAN II	ND(16)	UG/L	1182-14
4,4'-DDD	ND(16)	UG/L	1182-14
ENDOSULFAN SULFATE	ND(16)	UG/L	1182-14
4,4'-DDT	ND(16)	UG/L	1182-14
METHOXYCHLOR	ND(80)	UG/L	1182-14
ENDRIN KEICONE	ND(16)	UG/L	1182-14
ALPHA-CHLORDANE	ND(80)	UG/L	1182-14
GAMMA-CHLORDANE	ND(80)	UG/L	1182-14
TOXAPHENE	ND(160)	UG/L	1182-14
AROCHLOR-1016	ND(80)	UG/L	1182-14
AROCHLOR-1221	ND(80)	UG/L	1182-14
AROCHLOR-1232	ND(80)	UG/L	1182-14
AROCHLOR-1242	ND(80)	UG/L	1182-14
AROCHLOR-1248	ND(80)	UG/L	1182-14
AROCHLOR-1254	ND(160)	UG/L	1182-14
AROCHLOR-1260	ND(160)	UG/L	1182-14
TERRACON EXPL. (40875137) LANDFILL			
2,4,6-TNT	ND(20)	UG/L	
2,4-DNT	ND(10)	UG/L	
2,6-DNT	ND(10)	UG/L	
TETRYL	ND(20)	UG/L	
RDX	ND(22)	UG/L	
HMX	ND(26)	UG/L	

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080473 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
NITRATE/NITRITE	ND(0.1)	MG/L AS N	1023-150
SULFATE	15	MG/L	515-83
HSL VOLATILE COMPOUNDS			
CHLOROMETHANE	ND(10)	UG/L	1157-7
BROMOMETHANE	ND(10)	UG/L	1157-7
VINYL CHLORIDE	ND(10)	UG/L	1157-7
CHLOROETHANE	ND(10)	UG/L	1157-7
METHYLENE CHLORIDE	ND(5.0)	UG/L	1157-7
ACETONE	ND(10)	UG/L	1157-7
CARBON DISULFIDE	ND(5.0)	UG/L	1157-7
1,1-DICHLOROETHENE	ND(5.0)	UG/L	1157-7
1,1-DICHLOROETHANE	ND(5.0)	UG/L	1157-7
1,2-DICHLOROETHENE (TOTAL)	ND(5.0)	UG/L	1157-7
CHLOROFORM	ND(5.0)	UG/L	1157-7
1,2-DICHLOROETHANE	ND(5.0)	UG/L	1157-7
2-BUTANONE	ND(10)	UG/L	1157-7
1,1,1-TRICHLOROETHANE	ND(5.0)	UG/L	1157-7
CARBON TETRACHLORIDE	ND(5.0)	UG/L	1157-7
VINYL ACETATE	ND(10)	UG/L	1157-7
BROMODICHLOROMETHANE	ND(5.0)	UG/L	1157-7
1,2-DICHLOROPROPANE	ND(5.0)	UG/L	1157-7
CIS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-7
TRICHLOROETHENE	ND(5.0)	UG/L	1157-7
DIBROMOCHLOROMETHANE	ND(5.0)	UG/L	1157-7
1,1,2-TRICHLOROETHANE	ND(5.0)	UG/L	1157-7
BENZENE	ND(5.0)	UG/L	1157-7
TRANS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-7
BROMOFORM	ND(5.0)	UG/L	1157-7
4-METHYL-2-PENTANONE	ND(10)	UG/L	1157-7
2-HEXANONE	ND(10)	UG/L	1157-7
TETRACHLOROETHENE	ND(5.0)	UG/L	1157-7
1,1,2,2-TETRACHLOROETHANE	ND(5.0)	UG/L	1157-7
TOLUENE	ND(5.0)	UG/L	1157-7
CHLOROBENZENE	ND(5.0)	UG/L	1157-7
ETHYLBENZENE	ND(5.0)	UG/L	1157-7
STYRENE	6.6	UG/L	1157-7
XYLENE (TOTAL)	ND(5.0)	UG/L	1157-7
HSL SEMIVOLATILE ORGANIC COMPOUNDS			
PHENOL	ND(10)	UG/L	1104-73
BIS(2-CHLOROETHYL) ETHER	ND(10)	UG/L	1104-73
2-CHLOROPHENOL	ND(10)	UG/L	1104-73
1,3-DICHLOROBENZENE	ND(10)	UG/L	1104-73

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080473 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
1,4-DICHLOROBENZENE	ND(10)	UG/L	1104-73
BENZYL ALCOHOL	ND(10)	UG/L	1104-73
1,2-DICHLOROBENZENE	ND(10)	UG/L	1104-73
2-METHYLPHENOL	ND(10)	UG/L	1104-73
BIS(2-CHLOROISOPROPYL)ETHER	ND(10)	UG/L	1104-73
4-METHYLPHENOL	ND(10)	UG/L	1104-73
N-NITROSO-DI-N-PROPYLAMINE	ND(10)	UG/L	1104-73
HEXACHLOROETHANE	ND(10)	UG/L	1104-73
NITROBENZENE	ND(10)	UG/L	1104-73
ISOPHORONE	ND(10)	UG/L	1104-73
2-NITROPHENOL	ND(50)	UG/L	1104-73
2,4-DIMETHYLPHENOL	ND(10)	UG/L	1104-73
BENZOIC ACID	ND(50)	UG/L	1104-73
BIS(2-CHLOROETHOXY)METHANE	ND(10)	UG/L	1104-73
2,4-DICHLOROPHENOL	ND(10)	UG/L	1104-73
1,2,4-TRICHLOROBENZENE	ND(10)	UG/L	1104-73
NAPHTHALENE	ND(10)	UG/L	1104-73
4-CHLOROANILINE	ND(10)	UG/L	1104-73
HEXACHLOROBUTADIENE	ND(10)	UG/L	1104-73
4-CHLORO-3-METHYLPHENOL	ND(10)	UG/L	1104-73
2-METHYLNAPHTHALENE	ND(10)	UG/L	1104-73
HEXACHLOROCYCLOPENTADIENE	ND(10)	UG/L	1104-73
2,4,6-TRICHLOROPHENOL	ND(10)	UG/L	1104-73
2,4,5-TRICHLOROPHENOL	ND(50)	UG/L	1104-73
2-CHLORONAPHTHALENE	ND(10)	UG/L	1104-73
2-NITROANILINE	ND(50)	UG/L	1104-73
DIMETHYLPHTHALATE	ND(10)	UG/L	1104-73
ACENAPHTHYLENE	ND(10)	UG/L	1104-73
2,6-DINITROTOLUENE	ND(10)	UG/L	1104-73
3-NITROANILINE	ND(50)	UG/L	1104-73
ACENAPHTHENE	ND(10)	UG/L	1104-73
2,4-DINITROPHENOL	ND(50)	UG/L	1104-73
4-NITROPHENOL	ND(50)	UG/L	1104-73
DIBENZOFURAN	ND(10)	UG/L	1104-73
2,4-DINITROTOLUENE	ND(10)	UG/L	1104-73
DIETHYLPHTHALATE	ND(10)	UG/L	1104-73
4-CHLOROPHENYL-PHENYLETHER	ND(10)	UG/L	1104-73
FLUORENE	ND(10)	UG/L	1104-73
4-NITROANILINE	ND(50)	UG/L	1104-73
4,6-DINITRO-2-METHYLPHENOL	ND(50)	UG/L	1104-73
N-NITROSODIPHENYLAMINE(1)	ND(10)	UG/L	1104-73
4-BROMOPHENYL-PHENYLETHER	ND(10)	UG/L	1104-73

LABORATORY REPORT

PAGE 4

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080473 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
HEXACHLOROBENZENE	ND(10)	UG/L	1104-73
PENTACHLOROPHENOL	ND(50)	UG/L	1104-73
PHENANTHRENE	ND(10)	UG/L	1104-73
ANTHRACENE	ND(10)	UG/L	1104-73
DI-N-BUTYLPHTHALATE	12	UG/L	1104-73
FLUORANTHENE	ND(10)	UG/L	1104-73
PYRENE	ND(10)	UG/L	1104-73
BUTYLBENZYLPHTHALATE	ND(10)	UG/L	1104-73
BENZO(A)ANTHRACENE	ND(10)	UG/L	1104-73
CHRYSENE	ND(10)	UG/L	1104-73
BIS(2-ETHYLHEXYL)PHTHALATE	30	UG/L	1104-73
DI-N-OCTYLPHTHALATE	ND(10)	UG/L	1104-73
BENZO(B)FLUORANTHENE	ND(10)	UG/L	1104-73
BENZO(K)FLUORANTHENE	ND(10)	UG/L	1104-73
BENZO(A)PYRENE	ND(10)	UG/L	1104-73
IDENO(1,2,3-CD)PYRENE	ND(10)	UG/L	1104-73
DIBENZ(A,H)ANTHRACENE	ND(10)	UG/L	1104-73
BENZO(G,H,I)PERYLENE	ND(10)	UG/L	1104-73
3,3'-DICHLOROBENZIDINE	ND(20)	UG/L	1104-73
ARSENIC, TOTAL	0.018	MG/L	1164-17
BARIUM, TOTAL	ND(0.2)	MG/L	1172-259
CADMIUM, TOTAL	ND(0.005)	MG/L	1177-35
CHROMIUM, TOTAL	ND(0.03)	MG/L	1177-29
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-43
SELENIUM, TOTAL	ND(0.005)	MG/L	1165-8
SILVER, TOTAL	ND(0.01)	MG/L	1177-39
ARSENIC, FILTERED IN FIELD	0.028	MG/L	1164-21
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1172-260
CADMIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1177-35
CHROMIUM, FILTERED IN FIELD	ND(0.03)	MG/L	1177-30
MERCURY, FILTERED IN FIELD	0.0007	MG/L	1177-23
SELENIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1165-11
SILVER, FILTERED IN FIELD	ND(0.01)	MG/L	1177-2

—CONCLUSION—LAB NUMBER: 88080473 INERT LANDFILL T06

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/06/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1977

LAB NUMBER: 88080474
 SAMPLE DESCRIPTION: INERT LANDFILL T07

DATE SAMPLED: 07/25/88
 TIME SAMPLED: 1240

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
HSL PESTICIDE COMPOUNDS			
ALPHA-BHC	ND(8.0)	UG/L	1182-14
BETA-BHC	ND(8.0)	UG/L	1182-14
DELTA-BHC	ND(8.0)	UG/L	1182-14
GAMMA-BHC (LINDANE)	ND(8.0)	UG/L	1182-14
HEPTACHLOR	ND(8.0)	UG/L	1182-14
ALDRIN	ND(8.0)	UG/L	1182-14
HEPTACHLOR EPOXIDE	ND(8.0)	UG/L	1182-14
ENDOSULFAN I	ND(8.0)	UG/L	1182-14
DIELDRIN	ND(8.0)	UG/L	1182-14
4,4'-DDE	ND(16)	UG/L	1182-14
ENDRIN	ND(16)	UG/L	1182-14
ENDOSULFAN II	ND(16)	UG/L	1182-14
4,4'-DDD	ND(16)	UG/L	1182-14
ENDOSULFAN SULFATE	ND(16)	UG/L	1182-14
4,4'-DDT	ND(16)	UG/L	1182-14
METHOXYCHLOR	ND(80)	UG/L	1182-14
ENDRIN KETONE	ND(16)	UG/L	1182-14
ALPHA-CHLORDANE	ND(80)	UG/L	1182-14
GAMMA-CHLORDANE	ND(80)	UG/L	1182-14
TOXAPHENE	ND(160)	UG/L	1182-14
AROCHLOR-1016	ND(80)	UG/L	1182-14
AROCHLOR-1221	ND(80)	UG/L	1182-14
AROCHLOR-1232	ND(80)	UG/L	1182-14
AROCHLOR-1242	ND(80)	UG/L	1182-14
AROCHLOR-1248	ND(80)	UG/L	1182-14
AROCHLOR-1254	ND(160)	UG/L	1182-14
AROCHLOR-1260	ND(160)	UG/L	1182-14
TERRACON EXPL. (40875137) LANDFILL			
2,4,6-TNT	ND(20)	UG/L	
2,4-DNT	ND(10)	UG/L	
2,6-DNT	ND(10)	UG/L	
TETRYL	ND(20)	UG/L	
RDX	ND(22)	UG/L	
HMX	ND(26)	UG/L	

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717
ORDER NO.: 1977

LAB NUMBER: 88080474 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
NITRATE/NITRITE	1.1	MG/L AS N	1023-150
SULFATE	ND(10)	MG/L	515-83
HSL VOLATILE COMPOUNDS			
CHLOROMETHANE	ND(10)	UG/L	1157-3
BROMOMETHANE	ND(10)	UG/L	1157-3
VINYL CHLORIDE	ND(10)	UG/L	1157-3
CHLOROETHANE	ND(10)	UG/L	1157-3
METHYLENE CHLORIDE	ND(5.0)	UG/L	1157-3
ACETONE	ND(10)	UG/L	1157-3
CARBON DISULFIDE	ND(5.0)	UG/L	1157-3
1,1-DICHLOROETHENE	ND(5.0)	UG/L	1157-3
1,1-DICHLOROETHANE	ND(5.0)	UG/L	1157-3
1,2-DICHLOROETHENE (TOTAL)	ND(5.0)	UG/L	1157-3
CHLOROFORM	ND(5.0)	UG/L	1157-3
1,2-DICHLOROETHANE	ND(5.0)	UG/L	1157-3
2-BUTANONE	ND(10)	UG/L	1157-3
1,1,1-TRICHLOROETHANE	ND(5.0)	UG/L	1157-3
CARBON TETRACHLORIDE	ND(5.0)	UG/L	1157-3
VINYL ACETATE	ND(10)	UG/L	1157-3
BROMODICHLOROMETHANE	ND(5.0)	UG/L	1157-3
1,2-DICHLOROPROPANE	ND(5.0)	UG/L	1157-3
CIS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-3
TRICHLOROETHENE	ND(5.0)	UG/L	1157-3
DIBROMOCHLOROMETHANE	ND(5.0)	UG/L	1157-3
1,1,2-TRICHLOROETHANE	ND(5.0)	UG/L	1157-3
BENZENE	ND(5.0)	UG/L	1157-3
TRANS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-3
BROMOFORM	ND(5.0)	UG/L	1157-3
4-METHYL-2-PENTANONE	ND(10)	UG/L	1157-3
2-HEXANONE	ND(10)	UG/L	1157-3
TETRACHLOROETHENE	ND(5.0)	UG/L	1157-3
1,1,2,2-TETRACHLOROETHANE	ND(5.0)	UG/L	1157-3
TOLUENE	ND(5.0)	UG/L	1157-3
CHLOROBENZENE	ND(5.0)	UG/L	1157-3
ETHYLBENZENE	ND(5.0)	UG/L	1157-3
STYRENE	ND(5.0)	UG/L	1157-3
XYLENE (TOTAL)	ND(5.0)	UG/L	1157-3
HSL SEMIVOLATILE ORGANIC COMPOUNDS			
PHENOL	ND(10)	UG/L	1104-76
BIS(2-CHLOROETHYL) ETHER	ND(10)	UG/L	1104-76
2-CHLOROPHENOL	ND(10)	UG/L	1104-76
1,3-DICHLOROBENZENE	ND(10)	UG/L	1104-76

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080474 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
1,4-DICHLOROBENZENE	ND(10)	UG/L	1104-76
BENZYL ALCOHOL	ND(10)	UG/L	1104-76
1,2-DICHLOROBENZENE	ND(10)	UG/L	1104-76
2-METHYLPHENOL	ND(10)	UG/L	1104-76
BIS(2-CHLOROISOPROPYL) ETHER	ND(10)	UG/L	1104-76
4-METHYLPHENOL	ND(10)	UG/L	1104-76
N-NITROSO-DI-N-PROPYLAMINE	ND(10)	UG/L	1104-76
HEXACHLOROETHANE	ND(10)	UG/L	1104-76
NITROBENZENE	ND(10)	UG/L	1104-76
ISOPHORONE	ND(10)	UG/L	1104-76
2-NITROPHENOL	ND(50)	UG/L	1104-76
2,4-DIMETHYLPHENOL	ND(10)	UG/L	1104-76
BENZOIC ACID	ND(50)	UG/L	1104-76
BIS(2-CHLOROETHOXY)METHANE	ND(10)	UG/L	1104-76
2,4-DICHLOROPHENOL	ND(10)	UG/L	1104-76
1,2,4-TRICHLOROBENZENE	ND(10)	UG/L	1104-76
NAPHTHALENE	ND(10)	UG/L	1104-76
4-CHLOROANILINE	ND(10)	UG/L	1104-76
HEXACHLOROBUTADIENE	ND(10)	UG/L	1104-76
4-CHLORO-3-METHYLPHENOL	ND(10)	UG/L	1104-76
2-METHYLNAPHTHALENE	ND(10)	UG/L	1104-76
HEXACHLOROCYCLOPENTADIENE	ND(10)	UG/L	1104-76
2,4,6-TRICHLOROPHENOL	ND(10)	UG/L	1104-76
2,4,5-TRICHLOROPHENOL	ND(50)	UG/L	1104-76
2-CHLORONAPHTHALENE	ND(10)	UG/L	1104-76
2-NITROANILINE	ND(50)	UG/L	1104-76
DIMETHYLPHTHALATE	ND(10)	UG/L	1104-76
ACENAPHTHYLENE	ND(10)	UG/L	1104-76
2,6-DINITROTOLUENE	ND(10)	UG/L	1104-76
3-NITROANILINE	ND(50)	UG/L	1104-76
ACENAPHTHENE	ND(10)	UG/L	1104-76
2,4-DINITROPHENOL	ND(50)	UG/L	1104-76
4-NITROPHENOL	ND(50)	UG/L	1104-76
DIBENZOFURAN	ND(10)	UG/L	1104-76
2,4-DINITROTOLUENE	ND(10)	UG/L	1104-76
DIETHYLPHTHALATE	ND(10)	UG/L	1104-76
4-CHLOROPHENYL-PHENYLETHER	ND(10)	UG/L	1104-76
FLUORENE	ND(10)	UG/L	1104-76
4-NITROANILINE	ND(50)	UG/L	1104-76
4,6-DINITRO-2-METHYLPHENOL	ND(50)	UG/L	1104-76
N-NITROSODIPHENYLAMINE(1)	ND(10)	UG/L	1104-76
4-BROMOPHENYL-PHENYLETHER	ND(10)	UG/L	1104-76

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080474 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
HEXACHLOROBENZENE	ND(10)	UG/L	1104-76
PENTACHLOROPHENOL	ND(50)	UG/L	1104-76
PHENANTHRENE	ND(10)	UG/L	1104-76
ANTHRACENE	ND(10)	UG/L	1104-76
DI-N-BUTYLPHTHALATE	ND(10)	UG/L	1104-76
FLUORANTHENE	ND(10)	UG/L	1104-76
PYRENE	ND(10)	UG/L	1104-76
BUTYLBENZYLPHTHALATE	ND(10)	UG/L	1104-76
BENZO(A)ANTHRACENE	ND(10)	UG/L	1104-76
CHRYSENE	ND(10)	UG/L	1104-76
BIS(2-ETHYLHEXYL)PHTHALATE	ND(10)	UG/L	1104-76
DI-N-OCTYLPHTHALATE	ND(10)	UG/L	1104-76
BENZO(B)FLUORANTHENE	ND(10)	UG/L	1104-76
BENZO(K)FLUORANTHENE	ND(10)	UG/L	1104-76
BENZO(A)PYRENE	ND(10)	UG/L	1104-76
IDENO(1,2,3-CD)PYRENE	ND(10)	UG/L	1104-76
DIBENZ(A,H)ANTHRACENE	ND(10)	UG/L	1104-76
BENZO(G,H,I)PERYLENE	ND(10)	UG/L	1104-76
3,3'-DICHLOROBENZIDINE	ND(20)	UG/L	1104-76
ARSENIC, TOTAL	0.012	MG/L	1164-17
BARIUM, TOTAL	ND(0.2)	MG/L	1172-259
CADMIUM, TOTAL	ND(0.005)	MG/L	1177-35
CHROMIUM, TOTAL	ND(0.03)	MG/L	1177-30
MERCURY, TOTAL	0.0002	MG/L	1177-22
SELENIUM, TOTAL	ND(0.005)	MG/L	1165-12
SILVER, TOTAL	ND(0.01)	MG/L	1177-39
ARSENIC, FILTERED IN FIELD	0.014	MG/L	1164-21
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1172-260
CADMIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1177-35
CHROMIUM, FILTERED IN FIELD	ND(0.03)	MG/L	1177-30
MERCURY, FILTERED IN FIELD	0.0002	MG/L	1177-23
SELENIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1165-12
SILVER, FILTERED IN FIELD	ND(0.01)	MG/L	1177-2

—CONCLUSION—LAB NUMBER: 88080474 INERT LANDFILL T07

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/06/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1977

LAB NUMBER: 88080495
 SAMPLE DESCRIPTION: INERT LANDFILL T08

DATE SAMPLED: 07/26/88
 TIME SAMPLED: 0720

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
HSL PESTICIDE COMPOUNDS			
ALPHA-BHC	ND(8.0)	UG/L	1182-15
BETA-BHC	ND(8.0)	UG/L	1182-15
DELTA-BHC	ND(8.0)	UG/L	1182-15
GAMMA-BHC (LINDANE)	ND(8.0)	UG/L	1182-15
HEPTACHLOR	ND(8.0)	UG/L	1182-15
ALDRIN	ND(8.0)	UG/L	1182-15
HEPTACHLOR EPOXIDE	ND(8.0)	UG/L	1182-15
ENDOSULFAN I	ND(8.0)	UG/L	1182-15
DIELDRIN	ND(8.0)	UG/L	1182-15
4,4'-DDE	ND(16)	UG/L	1182-15
ENDRIN	ND(16)	UG/L	1182-15
ENDOSULFAN II	ND(16)	UG/L	1182-15
4,4'-DDD	ND(16)	UG/L	1182-15
ENDOSULFAN SULFATE	ND(16)	UG/L	1182-15
4,4'-DDT	ND(16)	UG/L	1182-15
METHOXYCHLOR	ND(80)	UG/L	1182-15
ENDRIN KETONE	ND(16)	UG/L	1182-15
ALPHA-CHLORDANE	ND(80)	UG/L	1182-15
GAMMA-CHLORDANE	ND(80)	UG/L	1182-15
TOXAPHENE	ND(160)	UG/L	1182-15
AROCHLOR-1016	ND(80)	UG/L	1182-15
AROCHLOR-1221	ND(80)	UG/L	1182-15
AROCHLOR-1232	ND(80)	UG/L	1182-15
AROCHLOR-1242	ND(80)	UG/L	1182-15
AROCHLOR-1248	ND(80)	UG/L	1182-15
AROCHLOR-1254	ND(160)	UG/L	1182-15
AROCHLOR-1260	ND(160)	UG/L	1182-15
TERRACON EXPL. (40875137) LANDFILL			
2,4,6-TNT	ND(20)	UG/L	
2,4-DNT	ND(10)	UG/L	
2,6-DNT	ND(10)	UG/L	
TETRYL	ND(20)	UG/L	
RDX	ND(22)	UG/L	
HMX	ND(26)	UG/L	

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080495 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
NITRATE/NITRITE	ND(0.1)	MG/L AS N	1023-157
SULFATE	ND(10)	MG/L	515-83
HSL VOLATILE COMPOUNDS			
CHLOROMETHANE	ND(10)	UG/L	1157-5
BROMOMETHANE	ND(10)	UG/L	1157-5
VINYL CHLORIDE	ND(10)	UG/L	1157-5
CHLOROETHANE	ND(10)	UG/L	1157-5
METHYLENE CHLORIDE	ND(5.0)	UG/L	1157-5
ACETONE	ND(10)	UG/L	1157-5
CARBON DISULFIDE	ND(5.0)	UG/L	1157-5
1,1-DICHLOROETHENE	ND(5.0)	UG/L	1157-5
1,1-DICHLOROETHANE	ND(5.0)	UG/L	1157-5
1,2-DICHLOROETHENE (TOTAL)	ND(5.0)	UG/L	1157-5
CHLOROFORM	ND(5.0)	UG/L	1157-5
1,2-DICHLOROETHANE	ND(5.0)	UG/L	1157-5
2-BUTANONE	ND(10)	UG/L	1157-5
1,1,1-TRICHLOROETHANE	ND(5.0)	UG/L	1157-5
CARBON TETRACHLORIDE	ND(5.0)	UG/L	1157-5
VINYL ACETATE	ND(10)	UG/L	1157-5
BROMODICHLOROMETHANE	ND(5.0)	UG/L	1157-5
1,2-DICHLOROPROPANE	ND(5.0)	UG/L	1157-5
CIS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-5
TRICHLOROETHENE	ND(5.0)	UG/L	1157-5
DIBROMOCHLOROMETHANE	ND(5.0)	UG/L	1157-5
1,1,2-TRICHLOROETHANE	ND(5.0)	UG/L	1157-5
BENZENE	ND(5.0)	UG/L	1157-5
TRANS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-5
BROMOFORM	ND(5.0)	UG/L	1157-5
4-METHYL-2-PENTANONE	ND(10)	UG/L	1157-5
2-HEXANONE	ND(10)	UG/L	1157-5
TETRACHLOROETHENE	ND(5.0)	UG/L	1157-5
1,1,2,2-TETRACHLOROETHANE	ND(5.0)	UG/L	1157-5
TOLUENE	ND(5.0)	UG/L	1157-5
CHLOROBENZENE	ND(5.0)	UG/L	1157-5
ETHYLBENZENE	ND(5.0)	UG/L	1157-5
STYRENE	ND(5.0)	UG/L	1157-5
XYLENE (TOTAL)	ND(5.0)	UG/L	1157-5
HSL SEMIVOLATILE ORGANIC COMPOUNDS			
PHENOL	ND(10)	UG/L	1104-77
BIS(2-CHLOROETHYL) ETHER	ND(10)	UG/L	1104-77
2-CHLOROPHENOL	ND(10)	UG/L	1104-77
1,3-DICHLOROBENZENE	ND(10)	UG/L	1104-77

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080495 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
1,4-DICHLOROBENZENE	ND(10)	UG/L	1104-77
BENZYL ALCOHOL	ND(10)	UG/L	1104-77
1,2-DICHLOROBENZENE	ND(10)	UG/L	1104-77
2-METHYLPHENOL	ND(10)	UG/L	1104-77
BIS(2-CHLOROISOPROPYL)ETHER	ND(10)	UG/L	1104-77
4-METHYLPHENOL	ND(10)	UG/L	1104-77
N-NITROSO-DI-N-PROPYLAMINE	ND(10)	UG/L	1104-77
HEXACHLOROETHANE	ND(10)	UG/L	1104-77
NITROBENZENE	ND(10)	UG/L	1104-77
ISOPHORONE	ND(10)	UG/L	1104-77
2-NITROPHENOL	ND(50)	UG/L	1104-77
2,4-DIMETHYLPHENOL	ND(10)	UG/L	1104-77
BENZOIC ACID	ND(50)	UG/L	1104-77
BIS(2-CHLOROETHOXY)METHANE	ND(10)	UG/L	1104-77
2,4-DICHLOROPHENOL	ND(10)	UG/L	1104-77
1,2,4-TRICHLOROBENZENE	ND(10)	UG/L	1104-77
NAPHTHALENE	ND(10)	UG/L	1104-77
4-CHLOROANILINE	ND(10)	UG/L	1104-77
HEXACHLOROBUTADIENE	ND(10)	UG/L	1104-77
4-CHLORO-3-METHYLPHENOL	ND(10)	UG/L	1104-77
2-METHYLNAPHTHALENE	ND(10)	UG/L	1104-77
HEXACHLOROCYCLOPENTADIENE	ND(10)	UG/L	1104-77
2,4,6-TRICHLOROPHENOL	ND(10)	UG/L	1104-77
2,4,5-TRICHLOROPHENOL	ND(50)	UG/L	1104-77
2-CHLORONAPHTHALENE	ND(10)	UG/L	1104-77
2-NITROANILINE	ND(50)	UG/L	1104-77
DIMETHYLPHTHALATE	ND(10)	UG/L	1104-77
ACENAPHTHYLENE	ND(10)	UG/L	1104-77
2,6-DINITROTOLUENE	ND(10)	UG/L	1104-77
3-NITROANILINE	ND(50)	UG/L	1104-77
ACENAPHTHENE	ND(10)	UG/L	1104-77
2,4-DINITROPHENOL	ND(50)	UG/L	1104-77
4-NITROPHENOL	ND(50)	UG/L	1104-77
DIBENZOFURAN	ND(10)	UG/L	1104-77
2,4-DINITROTOLUENE	ND(10)	UG/L	1104-77
DIETHYLPHTHALATE	ND(10)	UG/L	1104-77
4-CHLOROPHENYL-PHENYLETHER	ND(10)	UG/L	1104-77
FLUORENE	ND(10)	UG/L	1104-77
4-NITROANILINE	ND(50)	UG/L	1104-77
4,6-DINITRO-2-METHYLPHENOL	ND(50)	UG/L	1104-77
N-NITROSODIPHENYLAMINE(1)	ND(10)	UG/L	1104-77
4-BROMOPHENYL-PHENYLETHER	ND(10)	UG/L	1104-77

LABORATORY REPORT

PAGE 4

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080495 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
HEXACHLOROBENZENE	ND(10)	UG/L	1104-77
PENTACHLOROPHENOL	ND(50)	UG/L	1104-77
PHENANTHRENE	ND(10)	UG/L	1104-77
ANTHRACENE	ND(10)	UG/L	1104-77
DI-N-BUTYLPHTHALATE	ND(10)	UG/L	1104-77
FLUORANTHENE	ND(10)	UG/L	1104-77
PYRENE	ND(10)	UG/L	1104-77
BUTYLBENZYLPHTHALATE	ND(10)	UG/L	1104-77
BENZO(A)ANTHRACENE	ND(10)	UG/L	1104-77
CHRYSENE	ND(10)	UG/L	1104-77
BIS(2-ETHYLHEXYL)PHTHALATE	ND(10)	UG/L	1104-77
DI-N-OCTYLPHTHALATE	ND(10)	UG/L	1104-77
BENZO(B)FLUORANTHENE	ND(10)	UG/L	1104-77
BENZO(K)FLUORANTHENE	ND(10)	UG/L	1104-77
BENZO(A)PYRENE	ND(10)	UG/L	1104-77
IDENO(1,2,3-CD)PYRENE	ND(10)	UG/L	1104-77
DIBENZ(A,H)ANTHRACENE	ND(10)	UG/L	1104-77
BENZO(G,H,I)PERYLENE	ND(10)	UG/L	1104-77
3,3'-DICHLOROBENZIDINE	ND(20)	UG/L	1104-77
ARSENIC, TOTAL	ND(0.01)	MG/L	1164-21
BARIUM, TOTAL	ND(0.2)	MG/L	1172-260
CADMIUM, TOTAL	ND(0.005)	MG/L	1177-35
CHROMIUM, TOTAL	ND(0.03)	MG/L	1177-30
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-22
SELENIUM, TOTAL	ND(0.005)	MG/L	1165-12
SILVER, TOTAL	ND(0.01)	MG/L	1177-39
ARSENIC, FILTERED IN FIELD	ND(0.01)	MG/L	1164-20
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1172-260
CADMIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1177-36
CHROMIUM, FILTERED IN FIELD	ND(0.03)	MG/L	1177-30
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1177-23
SELENIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1165-11
SILVER, FILTERED IN FIELD	ND(0.01)	MG/L	1177-40

—CONCLUSION—LAB NUMBER: 88080495 INERT LANDFILL T08

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/06/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1977

LAB NUMBER: 88080493
 SAMPLE DESCRIPTION: INERT LANDFILL T09

DATE SAMPLED: 07/26/88
 TIME SAMPLED: 0745

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
<u>HSL PESTICIDE COMPOUNDS</u>			
ALPHA-BHC	ND(8.0)	UG/L	1182-14
BETA-BHC	ND(8.0)	UG/L	1182-14
DELTA-BHC	ND(8.0)	UG/L	1182-14
GAMMA-BHC (LINDANE)	ND(8.0)	UG/L	1182-14
HEPTACHLOR	ND(8.0)	UG/L	1182-14
ALDRIN	ND(8.0)	UG/L	1182-14
HEPTACHLOR EPOXIDE	ND(8.0)	UG/L	1182-14
ENDOSULFAN I	ND(8.0)	UG/L	1182-14
DIELDRIN	ND(8.0)	UG/L	1182-14
4,4'-DDE	ND(16)	UG/L	1182-14
ENDRIN	ND(16)	UG/L	1182-14
ENDOSULFAN II	ND(16)	UG/L	1182-14
4,4'-DDD	ND(16)	UG/L	1182-14
ENDOSULFAN SULFATE	ND(16)	UG/L	1182-14
4,4'-DDT	ND(16)	UG/L	1182-14
METHOXYCHLOR	ND(80)	UG/L	1182-14
ENDRIN KETONE	ND(16)	UG/L	1182-14
ALPHA-CHLORDANE	ND(80)	UG/L	1182-14
GAMMA-CHLORDANE	ND(80)	UG/L	1182-14
TOXAPHENE	ND(160)	UG/L	1182-14
AROCHLOR-1016	ND(80)	UG/L	1182-14
AROCHLOR-1221	ND(80)	UG/L	1182-14
AROCHLOR-1232	ND(80)	UG/L	1182-14
AROCHLOR-1242	ND(80)	UG/L	1182-14
AROCHLOR-1248	ND(80)	UG/L	1182-14
AROCHLOR-1254	ND(160)	UG/L	1182-14
AROCHLOR-1260	ND(160)	UG/L	1182-14
<u>TERRACON EXPL. (40875137) LANDFILL</u>			
2,4,6-TNT	ND(20)	UG/L	
2,4-DNT	ND(10)	UG/L	
2,6-DNT	ND(10)	UG/L	
TETRYL	ND(20)	UG/L	
RDX	ND(22)	UG/L	
HMX	ND(26)	UG/L	

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080493 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
NITRATE/NITRITE	ND(0.1)	MG/L AS N	1023-157
SULFATE	21	MG/L	515-83
HSL VOLATILE COMPOUNDS			
CHLOROMETHANE	ND(10)	UG/L	1157-5
BROMOMETHANE	ND(10)	UG/L	1157-5
VINYL CHLORIDE	ND(10)	UG/L	1157-5
CHLOROETHANE	ND(10)	UG/L	1157-5
METHYLENE CHLORIDE	ND(5.0)	UG/L	1157-5
ACETONE	ND(10)	UG/L	1157-5
CARBON DISULFIDE	ND(5.0)	UG/L	1157-5
1,1-DICHLOROETHENE	ND(5.0)	UG/L	1157-5
1,1-DICHLOROETHANE	ND(5.0)	UG/L	1157-5
1,2-DICHLOROETHENE (TOTAL)	ND(5.0)	UG/L	1157-5
CHLOROFORM	ND(5.0)	UG/L	1157-5
1,2-DICHLOROETHANE	ND(5.0)	UG/L	1157-5
2-BUTANONE	ND(10)	UG/L	1157-5
1,1,1-TRICHLOROETHANE	ND(5.0)	UG/L	1157-5
CARBON TETRACHLORIDE	ND(5.0)	UG/L	1157-5
VINYL ACETATE	ND(10)	UG/L	1157-5
BROMODICHLOROMETHANE	ND(5.0)	UG/L	1157-5
1,2-DICHLOROPROPANE	ND(5.0)	UG/L	1157-5
CIS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-5
TRICHLOROETHENE	ND(5.0)	UG/L	1157-5
DIBROMOCHLOROMETHANE	ND(5.0)	UG/L	1157-5
1,1,2-TRICHLOROETHANE	ND(5.0)	UG/L	1157-5
BENZENE	ND(5.0)	UG/L	1157-5
TRANS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-5
BROMOFORM	ND(5.0)	UG/L	1157-5
4-METHYL-2-PENTANONE	ND(10)	UG/L	1157-5
2-HEXANONE	ND(10)	UG/L	1157-5
TETRACHLOROETHENE	ND(5.0)	UG/L	1157-5
1,1,2,2-TETRACHLOROETHANE	ND(5.0)	UG/L	1157-5
TOLUENE	ND(5.0)	UG/L	1157-5
CHLOROBENZENE	ND(5.0)	UG/L	1157-5
ETHYLBENZENE	ND(5.0)	UG/L	1157-5
STYRENE	ND(5.0)	UG/L	1157-5
XYLENE (TOTAL)	ND(5.0)	UG/L	1157-5
HSL SEMIVOLATILE ORGANIC COMPOUNDS			
PHENOL	ND(10)	UG/L	1104-76
BIS(2-CHLOROETHYL) ETHER	ND(10)	UG/L	1104-76
2-CHLOROPHENOL	ND(10)	UG/L	1104-76
1,3-DICHLOROBENZENE	ND(10)	UG/L	1104-76

LABORATORY REPORT

PAGE 3

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080493 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
1,4-DICHLOROBENZENE	ND(10)	UG/L	1104-76
BENZYL ALCOHOL	ND(10)	UG/L	1104-76
1,2-DICHLOROBENZENE	ND(10)	UG/L	1104-76
2-METHYLPHENOL	ND(10)	UG/L	1104-76
BIS(2-CHLOROISOPROPYL) ETHER	ND(10)	UG/L	1104-76
4-METHYLPHENOL	ND(10)	UG/L	1104-76
N-NITROSO-DI-N-PROPYLAMINE	ND(10)	UG/L	1104-76
HEXACHLOROETHANE	ND(10)	UG/L	1104-76
NITROBENZENE	ND(10)	UG/L	1104-76
ISOPHORONE	ND(10)	UG/L	1104-76
2-NITROPHENOL	ND(50)	UG/L	1104-76
2,4-DIMETHYLPHENOL	ND(10)	UG/L	1104-76
BENZOIC ACID	ND(50)	UG/L	1104-76
BIS(2-CHLOROETHOXY)METHANE	ND(10)	UG/L	1104-76
2,4-DICHLOROPHENOL	ND(10)	UG/L	1104-76
1,2,4-TRICHLOROBENZENE	ND(10)	UG/L	1104-76
NAPHTHALENE	ND(10)	UG/L	1104-76
4-CHLOROANILINE	ND(10)	UG/L	1104-76
HEXACHLOROBUTADIENE	ND(10)	UG/L	1104-76
4-CHLORO-3-METHYLPHENOL	ND(10)	UG/L	1104-76
2-METHYLNAPHTHALENE	ND(10)	UG/L	1104-76
HEXACHLOROCYCLOPENTADIENE	ND(10)	UG/L	1104-76
2,4,6-TRICHLOROPHENOL	ND(10)	UG/L	1104-76
2,4,5-TRICHLOROPHENOL	ND(50)	UG/L	1104-76
2-CHLORONAPHTHALENE	ND(10)	UG/L	1104-76
2-NITROANILINE	ND(50)	UG/L	1104-76
DIMETHYLPHTHALATE	ND(10)	UG/L	1104-76
ACENAPHTHYLENE	ND(10)	UG/L	1104-76
2,6-DINITROTOLUENE	ND(10)	UG/L	1104-76
3-NITROANILINE	ND(50)	UG/L	1104-76
ACENAPHTHENE	ND(10)	UG/L	1104-76
2,4-DINITROPHENOL	ND(50)	UG/L	1104-76
4-NITROPHENOL	ND(50)	UG/L	1104-76
DIBENZOFURAN	ND(10)	UG/L	1104-76
2,4-DINITROTOLUENE	ND(10)	UG/L	1104-76
DIETHYLPHTHALATE	ND(10)	UG/L	1104-76
4-CHLOROPHENYL-PHENYLETHER	ND(10)	UG/L	1104-76
FLUORENE	ND(10)	UG/L	1104-76
4-NITROANILINE	ND(50)	UG/L	1104-76
4,6-DINITRO-2-METHYLPHENOL	ND(50)	UG/L	1104-76
N-NITROSODIPHENYLAMINE(1)	ND(10)	UG/L	1104-76
4-BROMOPHENYL-PHENYLETHER	ND(10)	UG/L	1104-76

LABORATORY REPORT

PAGE 4

CLIENT: TERRACON (40875137)

FILE NO.: 88-9717

ORDER NO.: 1977

LAB NUMBER: 88080493 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
HEXACHLOROBENZENE	ND(10)	UG/L	1104-76
PENTACHLOROPHENOL	ND(50)	UG/L	1104-76
PHENANTHRENE	ND(10)	UG/L	1104-76
ANTHRACENE	ND(10)	UG/L	1104-76
DI-N-BUTYLPHTHALATE	ND(10)	UG/L	1104-76
FLUORANTHENE	ND(10)	UG/L	1104-76
PYRENE	ND(10)	UG/L	1104-76
BUTYLBENZYLPHTHALATE	ND(10)	UG/L	1104-76
BENZO(A)ANTHRACENE	ND(10)	UG/L	1104-76
CHRYSENE	ND(10)	UG/L	1104-76
BIS(2-ETHYLHEXYL)PHTHALATE	ND(10)	UG/L	1104-76
DI-N-OCTYLPHTHALATE	ND(10)	UG/L	1104-76
BENZO(B)FLUORANTHENE	ND(10)	UG/L	1104-76
BENZO(K)FLUORANTHENE	ND(10)	UG/L	1104-76
BENZO(A)PYRENE	ND(10)	UG/L	1104-76
IDENO(1,2,3-CD)PYRENE	ND(10)	UG/L	1104-76
DIBENZ(A,H)ANTHRACENE	ND(10)	UG/L	1104-76
BENZO(G,H,I)PERYLENE	ND(10)	UG/L	1104-76
3,3'-DICHLOROBENZIDINE	ND(20)	UG/L	1104-76
ARSENIC, TOTAL	ND(0.01)	MG/L	1164-21
BARIUM, TOTAL	ND(0.2)	MG/L	1172-259
CADMIUM, TOTAL	ND(0.005)	MG/L	1177-35
CHROMIUM, TOTAL	ND(0.03)	MG/L	1177-30
MERCURY, TOTAL	0.0003	MG/L	1177-22
SELENIUM, TOTAL	ND(0.005)	MG/L	1165-12
SILVER, TOTAL	ND(0.01)	MG/L	1177-39
ARSENIC, FILTERED IN FIELD	ND(0.01)	MG/L	1164-20
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1172-260
CADMIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1177-35
CHROMIUM, FILTERED IN FIELD	ND(0.03)	MG/L	1177-30
MERCURY, FILTERED IN FIELD	0.0001	MG/L	1177-23
SELENIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1165-11
SILVER, FILTERED IN FIELD	ND(0.01)	MG/L	1177-40

—CONCLUSION—LAB NUMBER: 88080493 INERT LANDFILL T09

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080769
 SAMPLE DESCRIPTION: LINE 6 T-10

DATE SAMPLED: 08/02/88
 TIME SAMPLED: 1044

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	ND(0.1)	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-11
NITRATE/NITRITE	2.1	MG/L AS N	1023-159
SULFATE	51	MG/L	515-84
ANTIMONY, TOTAL	ND(0.06)	MG/L	1183-36
BARIUM, TOTAL	ND(0.2)	MG/L	1183-27
LEAD, TOTAL	ND(0.005)	MG/L	1162-38
MERCURY, TOTAL	ND(0.0001)	MG/L	1130-49
SODIUM, TOTAL	5	MG/L	1183-18
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-303
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-179
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-38
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1130-50
SODIUM, FILTERED IN FIELD	9	MG/L	1181-187

—CONCLUSION—LAB NUMBER: 88080769 LINE 6 T-10

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERIS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080490
 SAMPLE DESCRIPTION: LINE 6 T11

DATE SAMPLED: 07/26/88
 TIME SAMPLED: 0915

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	0.2	MG/L AS N	864-81
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-11
NITRATE/NITRITE	0.9	MG/L AS N	1023-158
SULFATE	21	MG/L	515-83
ANTIMONY, TOTAL	ND(0.06)	MG/L	1181-67
BARIUM, TOTAL	ND(0.2)	MG/L	1181-54
LEAD, TOTAL	ND(0.005)	MG/L	1162-33
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-23
SODIUM, TOTAL	62	MG/L	1181-106
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-67
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-54
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-30
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1177-23
SODIUM, FILTERED IN FIELD	73	MG/L	1181-106

—CONCLUSION—LAB NUMBER: 88080490 LINE 6 T11

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080602
 SAMPLE DESCRIPTION: LINE 6 T12

DATE SAMPLED: 07/29/88
 TIME SAMPLED: 1405

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	0.6	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.02)	MG/L	1180-10
NITRATE/NITRITE	0.1	MG/L AS N	1023-158
SULFATE	ND(10)	MG/L	515-84
ANTIMONY, TOTAL	ND(0.06)	MG/L	1181-67
BARIUM, TOTAL	ND(0.2)	MG/L	1181-54
LEAD, TOTAL	ND(0.005)	MG/L]	1162-28
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-41
SODIUM, TOTAL	52	MG/L	1181-106
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-67
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-54
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-28
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1177-42
SODIUM, FILTERED IN FIELD	61	MG/L	1181-106

—CONCLUSION—LAB NUMBER: 88080602 LINE 6 T12

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080768
 SAMPLE DESCRIPTION: LINE 6 T-13

DATE SAMPLED: 08/02/88
 TIME SAMPLED: 1220

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	ND(0.1)	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-11
NITRATE/NITRITE	ND(0.1)	MG/L AS N	1023-159
SULFATE	40	MG/L	515-84
ANTIMONY, TOTAL	ND(0.06)	MG/L	1183-36
BARIUM, TOTAL	ND(0.2)	MG/L	1183-27
LEAD, TOTAL	ND(0.005)	MG/L	1162-38
MERCURY, TOTAL	ND(0.0001)	MG/L	1130-49
SODIUM, TOTAL	16	MG/L	1183-18
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-311
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-179
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-38
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1130-50
SODIUM, FILTERED IN FIELD	20	MG/L	1181-187

—CONCLUSION—LAB NUMBER: 88080768 LINE 6 T-13

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080491
 SAMPLE DESCRIPTION: LINE 6 T14

DATE SAMPLED: 07/26/88
 TIME SAMPLED: 1027

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	0.1	MG/L AS N	864-81
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-11
NITRATE/NITRITE	ND(0.1)	MG/L AS N	1023-158
SULFATE	42	MG/L	515-83
ANTIMONY, TOTAL	ND(0.06)	MG/L	1181-67
BARIUM, TOTAL	ND(0.2)	MG/L	1181-54
LEAD, TOTAL	ND(0.005)	MG/L	1162-33
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-23
SODIUM, TOTAL	24	MG/L	1181-106
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-67
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-54
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-30
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1177-23
SODIUM, FILTERED IN FIELD	30	MG/L	1181-106

—CONCLUSION—LAB NUMBER: 88080491 LINE 6 T14

W. I S O N L A B O R A T O R I E S

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1820
(913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
ATTN: GREGG OLBERTS
P.O. BOX 2025
DAVENPORT, IA 52809

DATE RPID: 09/23/88
DATE RCVD: 07/27/88
PURCHASE AUTH:
FILE NO.: 88-9717
ORDER NO.: 1995

LAB NUMBER: 88090214
SAMPLE DESCRIPTION: LINE 6 T15

DATE SAMPLED: 08/22/88
TIME SAMPLED: 1210

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	0.9	MG/L AS N	864-85
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-31
NITRATE/NITRITE	ND(0.1)	MG/L AS N	1023-169
SULFATE	ND(10)	MG/L	515-85
ANTIMONY, TOTAL	ND(0.06)	MG/L	1183-226
BARIUM, TOTAL	ND(0.2)	MG/L	1183-171
LEAD, TOTAL	ND(0.005)	MG/L	1162-47
MERCURY, TOTAL	ND(0.0001)	MG/L	1130-53
SODIUM, TOTAL	63	MG/L	1183-240
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1183-159
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1183-167
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-48
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1130-53
SODIUM, FILTERED IN FIELD	61	MG/L	1183-163

—CONCLUSION—LAB NUMBER: 88090214 LINE 6 T15

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080771
 SAMPLE DESCRIPTION: LINE 6 T-16

DATE SAMPLED: 08/02/88
 TIME SAMPLED: 1255

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	ND(0.1)	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-12
NITRATE/NITRITE	ND(0.1)	MG/L AS N	1023-159
SULFATE	16	MG/L	515-84
ANTIMONY, TOTAL	ND(0.06)	MG/L	1183-36
BARIUM, TOTAL	ND(0.2)	MG/L	1183-27
LEAD, TOTAL	ND(0.005)	MG/L	1162-38
MERCURY, TOTAL	ND(0.0001)	MG/L	1130-49
SODIUM, TOTAL	10	MG/L	1183-18
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-311
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-179
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-38
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1130-50
SODIUM, FILTERED IN FIELD	14	MG/L	1181-187

—CONCLUSION—LAB NUMBER: 88080771 LINE 6 T-16

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WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERIS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080601
 SAMPLE DESCRIPTION: LINE 6 T17

DATE SAMPLED: 07/29/88
 TIME SAMPLED: 1045

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYEPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	0.3	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.02)	MG/L	1180-10
NITRATE/NITRITE	ND(0.1)	MG/L AS N	1023-158
SULFATE	53	MG/L	515-84
ANTIMONY, TOTAL	ND(0.06)	MG/L	1181-67
BARIUM, TOTAL	ND(0.2)	MG/L	1181-54
LEAD, TOTAL	ND(0.005)	MG/L	1162-28
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-41
SODIUM, TOTAL	24	MG/L	1181-106
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-67
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-54
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-28
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1177-42
SODIUM, FILTERED IN FIELD	29	MG/L	1181-106

---CONCLUSION---LAB NUMBER: 88080601 LINE 6 T17

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080540
 SAMPLE DESCRIPTION: LINE 6 T18

DATE SAMPLED: 07/28/88
 TIME SAMPLED: 1330

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	1.2	MG/L AS N	864-81
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-11
NITRATE/NITRITE	ND(0.1)	MG/L AS N	1023-158
SULFATE	16	MG/L	515-83
ANTIMONY, TOTAL	ND(0.06)	MG/L	1181-67
BARIUM, TOTAL	ND(0.2)	MG/L	1181-54
LEAD, TOTAL	ND(0.005)	MG/L	1162-28
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-41
SODIUM, TOTAL	47	MG/L	1181-106
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-67
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-54
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-28
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1177-42
SODIUM, FILTERED IN FIELD	54	MG/L	1181-106

—CONCLUSION—LAB NUMBER: 88080540 LINE 6 T18

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATIN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080770
 SAMPLE DESCRIPTION: LINE 6 T-19

DATE SAMPLED: 08/02/88
 TIME SAMPLED: 0825

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	ND(0.1)	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-11
NITRATE/NITRITE	0.2	MG/L AS N	1023-159
SULFATE	20	MG/L	515-84
ANTIMONY, TOTAL	ND(0.06)	MG/L	1183-36
BARIUM, TOTAL	ND(0.2)	MG/L	1183-27
LEAD, TOTAL	ND(0.005)	MG/L	1162-38
MERCURY, TOTAL	ND(0.0001)	MG/L	1130-49
SODIUM, TOTAL	9	MG/L	1183-18
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-303
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-179
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-38
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1130-50
SODIUM, FILTERED IN FIELD	12	MG/L	1181-187

—CONCLUSION—LAB NUMBER: 88080770 LINE 6 T-19

W I L S O N L A B O R A T O R I E S

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080734
 SAMPLE DESCRIPTION: LINE 6 T-20

DATE SAMPLED: 08/01/88

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	ND(0.1)	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-11
NITRATE/NITRITE	0.3	MG/L AS N	1023-159
SULFATE	61	MG/L	515-84
ANTIMONY, TOTAL	ND(0.06)	MG/L	1183-36
BARIUM, TOTAL	ND(0.2)	MG/L	1183-27
LEAD, TOTAL	ND(0.005)	MG/L	1162-37
MERCURY, TOTAL	ND(0.0001)	MG/L	1130-49
SODIUM, TOTAL	26	MG/L	1183-18
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-303
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-179
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-38
MERCURY, FILTERED IN FIELD	0.0001	MG/L	1130-50
SODIUM, FILTERED IN FIELD	31	MG/L	1181-187

—CONCLUSION—LAB NUMBER: 88080734 LINE 6 T-20

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATIN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080541
 SAMPLE DESCRIPTION: LINE 6 T21

DATE SAMPLED: 07/28/88
 TIME SAMPLED: 1400

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	0.3	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-11
NITRATE/NITRITE	0.4	MG/L AS N	1023-158
SULFATE	35	MG/L	515-84
ANTIMONY, TOTAL	ND(0.06)	MG/L	1181-67
BARIUM, TOTAL	ND(0.2)	MG/L	1181-54
LEAD, TOTAL	ND(0.005)	MG/L	1162-28
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-41
SODIUM, TOTAL	38	MG/L	1181-106
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-67
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-54
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-28
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1177-42
SODIUM, FILTERED IN FIELD	45	MG/L	1181-106

—CONCLUSION—LAB NUMBER: 88080541 LINE 6 T21

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATIN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080772
 SAMPLE DESCRIPTION: LINE 6 T-22

DATE SAMPLED: 08/02/88
 TIME SAMPLED: 0920

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	ND(0.1)	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-11
NITRATE/NITRITE	ND(0.1)	MG/L AS N	1023-159
SULFATE	30	MG/L	515-84
ANTIMONY, TOTAL	ND(0.06)	MG/L	1183-36
BARIUM, TOTAL	ND(0.2)	MG/L	1183-27
LEAD, TOTAL	ND(0.005)	MG/L	1162-39
MERCURY, TOTAL	ND(0.0001)	MG/L	1130-49
SODIUM, TOTAL	12	MG/L	1183-18
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-303
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-179
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-38
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1130-50
SODIUM, FILTERED IN FIELD	15	MG/L	1181-187

—CONCLUSION—LAB NUMBER: 88080772 LINE 6 T-22

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080732
 SAMPLE DESCRIPTION: LINE 6 T-23

DATE SAMPLED: 08/01/88

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	ND(0.1)	MG/L AS N	864-83
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-11
NITRATE/NITRITE	0.2	MG/L AS N	1023-159
SULFATE	41	MG/L	515-84
ANTIMONY, TOTAL	ND(0.06)	MG/L	1183-36
BARIUM, TOTAL	ND(0.2)	MG/L	1183-27
LEAD, TOTAL	ND(0.005)	MG/L	1162-37
MERCURY, TOTAL	0.0001	MG/L	1130-49
SODIUM, TOTAL	35	MG/L	1183-18
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-311
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-179
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-39
MERCURY, FILTERED IN FIELD	0.0001	MG/L	1130-49
SODIUM, FILTERED IN FIELD	42	MG/L	1181-187

—CONCLUSION—LAB NUMBER: 88080732 LINE 6 T-23

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATIN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080528
 SAMPLE DESCRIPTION: LINE 6 T24

DATE SAMPLED: 07/27/88
 TIME SAMPLED: 1015

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	1.7	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-11
NITRATE/NITRITE	0.5	MG/L AS N	1023-158
SULFATE	ND(10)	MG/L	515-83
ANTIMONY, TOTAL	ND(0.06)	MG/L	1181-67
BARIUM, TOTAL	ND(0.2)	MG/L	1181-54
LEAD, TOTAL	ND(0.005)	MG/L	1162-34
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-41
SODIUM, TOTAL	44	MG/L	1181-106
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-67
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-54
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-31
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1177-41
SODIUM, FILTERED IN FIELD	49	MG/L	1181-106

—CONCLUSION—LAB NUMBER: 88080528 LINE 6 T24

W I L S O N L A B O R A T O R I E S

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080729
 SAMPLE DESCRIPTION: LINE 6 T-25

DATE SAMPLED: 08/01/88
 TIME SAMPLED: 1408

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	0.2	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.02)	MG/L	1180-10
NITRATE/NITRITE	0.3	MG/L AS N	1023-158
SULFATE	49	MG/L	515-84
ANTIMONY, TOTAL	ND(0.06)	MG/L	1181-311
BARIUM, TOTAL	ND(0.2)	MG/L	1183-27
LEAD, TOTAL	ND(0.005)	MG/L	1162-37
MERCURY, TOTAL	ND(0.0001)	MG/L	1130-49
SODIUM, TOTAL	15	MG/L	1183-18
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-303
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-179
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-39
MERCURY, FILTERED IN FIELD	0.0001	MG/L	1130-49
SODIUM, FILTERED IN FIELD	19	MG/L	1181-187

—CONCLUSION—LAB NUMBER: 88080729 LINE 6 T-25

W I L S O N L A B O R A T O R I E S

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATIN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080733
 SAMPLE DESCRIPTION: LINE 6 T-26

DATE SAMPLED: 08/01/88

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	0.6	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.02)	MG/L	1180-11
NITRATE/NITRITE	0.3	MG/L AS N	1023-159
SULFATE	24	MG/L	515-85
ANTIMONY, TOTAL	ND(0.06)	MG/L	1183-36
BARIUM, TOTAL	ND(0.2)	MG/L	1183-27
LEAD, TOTAL	ND(0.005)	MG/L	1162-37
MERCURY, TOTAL	0.0001	MG/L	1130-49
SODIUM, TOTAL	38	MG/L	1183-18
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-303
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-179
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-38
MERCURY, FILTERED IN FIELD	0.0001	MG/L	1130-50
SODIUM, FILTERED IN FIELD	46	MG/L	1181-187

---CONCLUSION---LAB NUMBER: 88080733 LINE 6 T-26

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080730
 SAMPLE DESCRIPTION: LINE 6 T-27

DATE SAMPLED: 08/01/88
 TIME SAMPLED: 1509

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	1.1	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.02)	MG/L	1180-10
NITRATE/NITRITE	1.7	MG/L AS N	1023-159
SULFATE	17	MG/L	515-84
ANTIMONY, TOTAL	ND(0.06)	MG/L	1183-36
BARIUM, TOTAL	ND(0.2)	MG/L	1183-27
LEAD, TOTAL	ND(0.005)	MG/L	1162-37
MERCURY, TOTAL	ND(0.0001)	MG/L	1130-49
SODIUM, TOTAL	46	MG/L	1183-18
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-303
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-179
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-39
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1130-49
SODIUM, FILTERED IN FIELD	57	MG/L	1181-187

—CONCLUSION—LAB NUMBER: 88080730 LINE 6 T-27

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080731
 SAMPLE DESCRIPTION: LINE 6 T-28

DATE SAMPLED: 08/01/88
 TIME SAMPLED: 0930

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	ND(0.1)	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-11
NITRATE/NITRITE	ND(0.1)	MG/L AS N	1023-159
SULFATE	33	MG/L	515-84
ANTIMONY, TOTAL	ND(0.06)	MG/L	1183-36
BARIUM, TOTAL	ND(0.2)	MG/L	1183-27
LEAD, TOTAL	ND(0.005)	MG/L	1162-37
MERCURY, TOTAL	ND(0.0001)	MG/L	1130-49
SODIUM, TOTAL	15	MG/L	1183-18
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-303
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-179
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-39
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1130-49
SODIUM, FILTERED IN FIELD	20	MG/L	1181-187

—CONCLUSION—LAB NUMBER: 88080731 LINE 6 T-28

W I L S O N L A B O R A T O R I E S

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATIN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080531
 SAMPLE DESCRIPTION: LINE 6 T29

DATE SAMPLED: 07/27/88
 TIME SAMPLED: 1500

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	0.3	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.02)	MG/L	1180-11
NITRATE/NITRITE	1.3	MG/L AS N	1023-158
SULFATE	25	MG/L	515-83
ANTIMONY, TOTAL	ND(0.06)	MG/L	1181-67
BARIUM, TOTAL	ND(0.2)	MG/L	1181-54
LEAD, TOTAL	ND(0.005)	MG/L	1162-29
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-41
SODIUM, TOTAL	35	MG/L	1181-106
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-67
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-54
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-31
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1177-42
SODIUM, FILTERED IN FIELD	40	MG/L	1181-106

—CONCLUSION—LAB NUMBER: 88080531 LINE 6 T29

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATIN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080542
 SAMPLE DESCRIPTION: LINE 6 T30

DATE SAMPLED: 07/28/88
 TIME SAMPLED: 1430

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	1.8	MG/L AS N	864-82
CYANIDE, TOTAL	0.02	MG/L	1180-10
NITRATE/NITRITE	0.2	MG/L AS N	1023-158
SULFATE	ND(10)	MG/L	515-84
ANTIMONY, TOTAL	ND(0.06)	MG/L	1181-67
BARIUM, TOTAL	ND(0.2)	MG/L	1181-54
LEAD, TOTAL	ND(0.005)	MG/L	1162-28
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-41
SODIUM, TOTAL	47	MG/L	1181-106
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-67
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-54
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-28
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1177-42
SODIUM, FILTERED IN FIELD	59	MG/L	1181-106

—CONCLUSION—LAB NUMBER: 88080542 LINE 6 T30

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080728
 SAMPLE DESCRIPTION: LINE 6 T-31

DATE SAMPLED: 08/01/88
 TIME SAMPLED: 0850

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TEIRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	ND(0.1)	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.02)	MG/L	1180-10
NITRATE/NITRITE	0.1	MG/L AS N	1023-158
SULFATE	77	MG/L	515-84
ANTIMONY, TOTAL	ND(0.06)	MG/L	1183-36
BARIUM, TOTAL	ND(0.2)	MG/L	1183-27
LEAD, TOTAL	ND(0.005)	MG/L	1162-37
MERCURY, TOTAL	ND(0.0001)	MG/L	1130-49
SODIUM, TOTAL	15	MG/L	1183-18
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-303
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-179
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-39
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1130-49
SODIUM, FILTERED IN FIELD	20	MG/L	1181-187

—CONCLUSION—LAB NUMBER: 88080728 LINE 6 T-31

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080530
 SAMPLE DESCRIPTION: LINE 6 T32

DATE SAMPLED: 07/27/88
 TIME SAMPLED: 1400

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	ND(0.1)	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-11
NITRATE/NITRITE	1.0	MG/L AS N	1023-158
SULFATE	ND(10)	MG/L	515-83
ANTIMONY, TOTAL	ND(0.06)	MG/L	1181-67
BARIUM, TOTAL	ND(0.2)	MG/L	1181-54
LEAD, TOTAL	ND(0.005)	MG/L	1162-36
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-41
SODIUM, TOTAL	38	MG/L	1181-106
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-67
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-54
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-31
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1177-42
SODIUM, FILTERED IN FIELD	44	MG/L	1181-106

—CONCLUSION—LAB NUMBER: 88080530 LINE 6 T32

W I S O N L A B O R A T O R I E S

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1820
(913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/23/88
 DATE RCVD: 07/27/88
 PURCHASE AJIH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88090215
 SAMPLE DESCRIPTION: LINE 6 T33

DATE SAMPLED: 08/22/88
 TIME SAMPLED: 1300

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	1.5	MG/L AS N	864-85
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-31
NITRATE/NITRITE	ND(0.1)	MG/L AS N	1023-169
SULFATE	ND(10)	MG/L	515-85
ANTIMONY, TOTAL	ND(0.06)	MG/L	1183-226
BARIUM, TOTAL	ND(0.2)	MG/L	1183-171
LEAD, TOTAL	ND(0.005)	MG/L	1162-51
MERCURY, TOTAL	ND(0.0001)	MG/L	1130-53
SODIUM, TOTAL	82	MG/L	1183-240
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1183-159
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1183-167
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-50
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1130-53
SODIUM, FILTERED IN FIELD	103	MG/L	1183-163

—CONCLUSION—LAB NUMBER: 88090215 LINE 6 T33

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080727
 SAMPLE DESCRIPTION: LINE 6 T-34

DATE SAMPLED: 08/01/88
 TIME SAMPLED: 0808

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	ND(0.1)	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-10
NITRATE/NITRITE	ND(0.1)	MG/L AS N	1023-158
SULFATE	29	MG/L	515-84
ANTIMONY, TOTAL	ND(0.06)	MG/L	1183-36
BARIUM, TOTAL	ND(0.2)	MG/L	1183-27
LEAD, TOTAL	ND(0.005)	MG/L	1162-37
MERCURY, TOTAL	ND(0.0001)	MG/L	1130-49
SODIUM, TOTAL	12	MG/L	1183-18
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-303
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-179
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-39
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1130-49
SODIUM, FILTERED IN FIELD	16	MG/L	1181-187

—CONCLUSION—LAB NUMBER: 88080727 LINE 6 T-34

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATIN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080492
 SAMPLE DESCRIPTION: LINE 6 T35

DATE SAMPLED: 07/26/88
 TIME SAMPLED: 1415

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	0.1	MG/L AS N	864-81
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-13
NITRATE/NITRITE	1.0	MG/L AS N	1023-158
SULFATE	14	MG/L	515-83
ANTIMONY, TOTAL	ND(0.06)	MG/L	1181-67
BARIUM, TOTAL	ND(0.2)	MG/L	1181-54
LEAD, TOTAL	ND(0.005)	MG/L	1162-33
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-23
SODIUM, TOTAL	31	MG/L	1181-106
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-67
BARIUM, FILTERED IN FIELD	0.23	MG/L	1181-54
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-30
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1177-23
SODIUM, FILTERED IN FIELD	37	MG/L	1181-106

—CONCLUSION—LAB NUMBER: 88080492 LINE 6 T35

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATIN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/06/88
 DATE RCVD: 07/27/88
 PURCHASE AUTH:
 FILE NO.: 88-9717
 ORDER NO.: 1995

LAB NUMBER: 88080527
 SAMPLE DESCRIPTION: LINE 6 T36

DATE SAMPLED: 07/27/88
 TIME SAMPLED: 0940

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	4.4	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-11
NITRATE/NITRITE	ND(0.1)	MG/L AS N	1023-158
SULFATE	ND(10)	MG/L	515-83
ANTIMONY, TOTAL	ND(0.06)	MG/L	1181-67
BARIUM, TOTAL	ND(0.2)	MG/L	1181-54
LEAD, TOTAL	ND(0.005)	MG/L	1162-33
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-41
SODIUM, TOTAL	57	MG/L	1181-106
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-67
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-54
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-31
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1177-42
SODIUM, FILTERED IN FIELD	85	MG/L	1181-106

—CONCLUSION—LAB NUMBER: 88080527 LINE 6 T36

APPENDIX G

WILSON LABORATORIES
GROUNDWATER ANALYSES QA DATA

GROUNDWATER QUALITY ASSESSMENT
IOWA ARMY AMMUNITION PLANT (IAAP)
MIDDLETOWN, IOWA
CONTRACT NO. DACA63-87-C-0139

W I L S O N L A B O R A T O R I E S

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1820 - (913)825-7186

SEPTEMBER 9, 1988

TERRACON (40875137)
P.O. BOX 2025
DAVENPORT IA 52809

ATTN : GREGG OLBERTS

RE: WILSON LABORATORIES FILE NO. 88-990

ENCLOSED ARE THE REPORTS FOR THE SAMPLES AS LISTED BELOW:

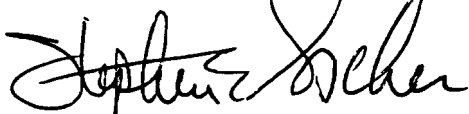
<u>WILSON LAB ID #</u>	<u>ORDER NO.</u>	<u>SAMPLE DESCRIPTION</u>
8808052900	1995A	LINE 6 QA/QC #4
8808063900	1995A	LINE 6 DUPLICATE AS SHOWN
8808064000	1995A	LINE 6 SPIKE AS SHOWN
8808077300	1995A	LINE 6 QA/QC #6
8808083600	1995A	LINE 6 DUPLICATE AS SHOWN
8808083700	1995A	LINE 6 SPIKE AS SHOWN
8808095000	1995A	CONTROL SAMPLE LINE 6

ND(), WHERE NOTED, INDICATES NONE DETECTED WITH THE DETECTION LIMIT IN PARENTHESSES.

ANALYSES WERE PERFORMED ON SAMPLES AS RECEIVED IN ACCORDANCE WITH PROCEDURES REFERENCED IN THE FEDERAL REGISTER, VOL. 49, NO. 209, OCT. 26, 1984; PUBLISHED IN EPA PUBLICATION, SW 846, 2ND ED., JULY 1982 AND IN THE PROPOSED ADDITION TO SW 846, 1984; OR IN EPA PUBLICATION, SW846 3RD ED., SEPTEMBER 1986. WHERE APPROVED METHODS ARE NOT AVAILABLE, EFFORTS ARE MADE TO USE APPROPRIATE STANDARD METHODS.

SAMPLES WILL BE RETAINED FOR 30 DAYS UNLESS OTHERWISE NOTIFIED.

WILSON LABORATORIES



ENCLOSURE

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1820
(913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
ATTN: GREGG OLBERTS
P.O. BOX 2025
DAVENPORT, IA 52809

DATE RPID: 09/09/88
DATE RCVD: 07/28/88
PURCHASE AUTH:
FILE NO.: 88-990
ORDER NO.: 1995A

LAB NUMBER: 88080529
SAMPLE DESCRIPTION: LINE 6 QA/QC #4

DATE SAMPLED: 07/27/88
TIME SAMPLED: 1015

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	1.7	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-11
NITRATE/NITRITE	0.4	MG/L AS N	1023-158
SULFATE	23	MG/L	515-83
ANTIMONY, TOTAL	ND(0.06)	MG/L	1181-67
BARIUM, TOTAL	ND(0.2)	MG/L	1181-54
LEAD, TOTAL	ND(0.005)	MG/L	1162-36
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-41
SODIUM, TOTAL	42	MG/L	1181-106
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-67
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-54
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-31
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1177-41
SODIUM, FILTERED IN FIELD	50	MG/L	1181-106

—CONCLUSION—LAB NUMBER: 88080529 LINE 6 QA/QC #4

LAB NUMBER: 88080639
SAMPLE DESCRIPTION: LINE 6 DUPLICATE AS SHOWN

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	0.7	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.02)	MG/L	1180-10

LABORATORY REPORT

PAGE 2

CLIENT: TERRACON (40875137)

FILE NO.: 88-990

ORDER NO.: 1995A

LAB NUMBER: 88080639 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
NITRATE/NITRITE	ND(0.1)	MG/L AS N	1023-158
SULFATE	14	MG/L	515-83
ANTIMONY, TOTAL	ND(0.06)	MG/L	1181-67
BARIUM, TOTAL	ND(0.2)	MG/L	1181-54
LEAD, TOTAL	ND(0.005)	MG/L	1162-29
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-41
SODIUM, TOTAL	34	MG/L	1181-106
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-67
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-54
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-36
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1177-42
SODIUM, FILTERED IN FIELD	39	MG/L	1181-106

COMMENTS: TERRACON EXPLOSIVES DUPLICATE OF 88080529
 AMMONIA, TOTAL DUPLICATE OF 88080602
 CYANIDE, TOTAL DUPLICATE OF 88080601
 NITRATE/NITRITE DUPLICATE OF 88080540
 SULFATE DUPLICATE OF 88080492
 ALL TOTAL METALS DUPLICATE OF 88080531
 ALL METALS FILTERED IN FIELD DUPLICATE OF 88080531

—CONCLUSION—LAB NUMBER: 88080639 LINE 6 DUPLICATE AS SHOWN

LAB NUMBER: 88080640

SAMPLE DESCRIPTION: LINE 6 SPIKE AS SHOWN

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	111 @ 50	% REC @ UG/L	
TETRACENE	100 @ 50	% REC @ UG/L	
STYPHANATE	79 @ 250	% REC @ UG/L	
AZIDE	100 @ 50	% REC @ UG/L	

LABORATORY REPORT

PAGE 3

CLIENT: TERRACON (40875137)

FILE NO.: 88-990

ORDER NO.: 1995A

LAB NUMBER: 88080640 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
AMMONIA, TOTAL	126	%	864-82
CYANIDE, TOTAL	91	%	1180-10
NITRATE/NITRITE	103	%	1023-158
SULFATE	98	%	515-83
ANTIMONY, TOTAL	80	%	1181-67
BARIUM, TOTAL	83	%	1181-54
LEAD, TOTAL	100	%	1162-29
MERCURY, TOTAL	120	%	1177-41
ANTIMONY, FILTERED IN FIELD	80	%	1181-67
BARIUM, FILTERED IN FIELD	86	%	1181-54
LEAD, FILTERED IN FIELD	108	%	1162-36
MERCURY, FILTERED IN FIELD	100	%	1177-42

COMMENTS: TERRACON EXPLOSIVES SPIKE OF 88080529
 AMMONIA, TOTAL SPIKE OF 88080602
 CYANIDE, TOTAL SPIKE OF 88080602
 NITRATE/NITRITE SPIKE OF 88080540
 SULFATE SPIKE OF 88080492
 ALL TOTAL METALS SPIKE OF 88080531
 ALL METALS FILTERED IN FIELD SPIKE OF 88080531

---CONCLUSION---LAB NUMBER: 88080640 LINE 6 SPIKE AS SHOWN

LAB NUMBER: 88080773

DATE SAMPLED: 08/02/88

SAMPLE DESCRIPTION: LINE 6 QA/QC #6

TIME SAMPLED: 0825

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LINE 6			
RDX	ND(22)	UG/L	
TETRACENE	ND(25)	UG/L	
STYPHANATE	ND(250)	UG/L	
AZIDE	ND(25)	UG/L	
AMMONIA, TOTAL	ND(0.1)	MG/L AS N	864-82
CYANIDE, TOTAL	ND(0.01)	MG/L	1180-11

LABORATORY REPORT

PAGE 4

CLIENT: TERRACON (40875137)

FILE NO.: 88-990

ORDER NO.: 1995A

LAB NUMBER: 88080773 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
NITRATE/NITRITE	0.2	MG/L AS N	1023-159
SULFATE	23	MG/L	515-85
ANTIMONY, TOTAL	ND(0.06)	MG/L	1183-36
BARIUM, TOTAL	ND(0.2)	MG/L	1183-27
LEAD, TOTAL	ND(0.005)	MG/L	1162-39
MERCURY, TOTAL	ND(0.0001)	MG/L	1130-49
SODIUM, TOTAL	9	MG/L	1183-18
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-303
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-179
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-38
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1130-50
SODIUM, FILTERED IN FIELD	13	MG/L	1181-187

—CONCLUSION—LAB NUMBER: 88080773 LINE 6 QA/QC #6

LAB NUMBER: 88080836

SAMPLE DESCRIPTION: LINE 6 DUPLICATE AS SHOWN

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
AMMONIA, TOTAL	ND(0.1)	MG/L AS N	864-83
CYANIDE, TOTAL	0.09/94%	MG/L	1180-11
NITRATE/NITRITE	1.0	MG/L AS N	1023-158
SULFATE	31	MG/L	515-84
ANTIMONY, TOTAL	ND(0.06)	MG/L	1183-36
BARIUM, TOTAL	ND(0.2)	MG/L	1183-27
LEAD, TOTAL	ND(0.005)	MG/L	1162-37
MERCURY, TOTAL	0.0001	MG/L	1130-49
SODIUM, TOTAL	37	MG/L	1183-18
ANTIMONY, FILTERED IN FIELD	ND(0.06)	MG/L	1181-303
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1181-179
LEAD, FILTERED IN FIELD	ND(0.005)	MG/L	1162-38
MERCURY, FILTERED IN FIELD	0.0001	MG/L	1130-50
SODIUM, FILTERED IN FIELD	46	MG/L	1181-187

COMMENTS: AMMONIA, TOTAL DUPLICATE OF 88080530

CYANIDE, TOTAL

NITRATE/NITRITE DUPLICATE OF 88080492

SULFATE DUPLICATE OF 88080772

ALL TOTAL METALS DUPLICATE OF 88080733

ALL METALS FILTERED IN FIELD DUPLICATE OF 88080733

LABORATORY REPORT

PAGE 5

CLIENT: TERRACON (40875137)

FILE NO.: 88-990

ORDER NO.: 1995A

—CONCLUSION—LAB NUMBER: 88080836 LINE 6 DUPLICATE AS SHOWN

LAB NUMBER: 88080837

SAMPLE DESCRIPTION: LINE 6 SPIKE AS SHOWN

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
AMMONIA, TOTAL	74	%	864-83
CYANIDE, TOTAL	84	%	1180-11
NITRATE/NITRITE	103	%	1023-158
SULFATE	100	%	515-84
ANTIMONY, TOTAL	78	%	1183-36
BARIUM, TOTAL	93	%	1183-27
LEAD, TOTAL	80	%	1162-37
MERCURY, TOTAL	110	%	1130-49
ANTIMONY, FILTERED IN FIELD	110	%	1181-303
BARIUM, FILTERED IN FIELD	118	%	1181-179
LEAD, FILTERED IN FIELD	112	%	1162-38
MERCURY, FILTERED IN FIELD	110	%	1130-50

COMMENTS: AMMONIA, TOTAL SPIKE OF 88080530
 CYANIDE, TOTAL SPIKE OF 88080733
 NITRATE/NITRITE SPIKE OF 88080492
 SULFATE SPIKE OF 88080772
 ALL TOTAL METALS SPIKE OF 88080733
 ALL METALS FILTERED IN FIELD SPIKE OF 88080733

—CONCLUSION—LAB NUMBER: 88080837 LINE 6 SPIKE AS SHOWN

LABORATORY REPORT

PAGE 6

CLIENT: TERRACON (40875137)

FILE NO.: 88-990

ORDER NO.: 1995A

LAB NUMBER: 88080950

SAMPLE DESCRIPTION: CONTROL SAMPLE LINE 6

<u>ANALYSIS</u>	<u>CONCENTRATION</u>	<u>UNITS</u>	<u>BOOK-PAGE</u>
AMMONIA, TOTAL	2.00/2.09/105%		864-83
CYANIDE, TOTAL	0.05/0.049/98%		1180-10
NITRATE/NITRITE	4.0/4.1/103%		1023-158
SULFATE	50/50/100%		515-84
ANTIMONY, TOTAL	0.50/0.43/86%		1181-67
BARIUM, TOTAL	2.0/1.8/90%		1181-54
LEAD, TOTAL	.050/.053/106%		1162-32
MERCURY, TOTAL	.0020/.0020/100		1177-41
SODIUM, TOTAL	100/100/100%		1181-41
ANTIMONY, FILTERED IN FIELD	3.00/2.97/99%		1181-67
BARIUM, FILTERED IN FIELD	5.0/4.9/98%		1181-54
LEAD, FILTERED IN FIELD	.100/.105/105%		1162-30
MERCURY, FILTERED IN FIELD	.0020/.0020/100		1177-41
SODIUM, FILTERED IN FIELD	90/95/106%		1181-41

—CONCLUSION—LAB NUMBER: 88080950 CONTROL SAMPLE LINE 6

W I L S O N L A B O R A T O R I E S

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1820
(913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
ATTN: GREGG OLBERIS
P.O. BOX 2025
DAVENPORT, IA 52809

DATE RPID: 09/09/88
DATE RCVD: 07/28/88
PURCHASE AUTH:
FILE NO.: 88-990
ORDER NO.: 1995A

LAB NUMBER: 88080529
SAMPLE DESCRIPTION: LINE 6 QA/QC #4

DATE SAMPLED: 07/27/88
TIME SAMPLED: 1015

ANALYSIS	ANALYST	DATE	DATE	METHOD
		ANALYZED	PREPPED	
TERRACON EXPL. (40875137) LINE 6	CAS		NA	
AMMONIA, TOTAL	JDL	08/19/88	NA	
CYANIDE, TOTAL	BAB	08/12/88	NA	
NITRATE/NITRITE	BAB	08/08/88	NA	
SULFATE	JDL	08/25/88	NA	
ANTIMONY, TOTAL	DRW	08/06/88	NA	
BARIUM, TOTAL	DRW	08/06/88	08/05/88	
LEAD, TOTAL	AMB	08/12/88	NA	
MERCURY, TOTAL	SMF	08/04/88	NA	
SODIUM, TOTAL	DRW	08/08/88	NA	
ANTIMONY, FILTERED IN FIELD	DRW	08/06/88	NA	
BARIUM, FILTERED IN FIELD	DRW	08/06/88	NA	
LEAD, FILTERED IN FIELD	DRW	08/10/88	NA	
MERCURY, FILTERED IN FIELD	SMF	08/04/88	NA	
SODIUM, FILTERED IN FIELD	DRW	08/08/88	NA	

—CONCLUSION—LAB NUMBER: 88080529 LINE 6 QA/QC #4

LAB NUMBER: 88080639
SAMPLE DESCRIPTION: LINE 6 DUPLICATE AS SHOWN

ANALYSIS	ANALYST	DATE	DATE	METHOD
		ANALYZED	PREPPED	
TERRACON EXPL. (40875137) LINE 6	CAS		NA	
AMMONIA, TOTAL	JDL	08/04/88	NA	
CYANIDE, TOTAL	BAB	08/12/88	NA	
NITRATE/NITRITE	BAB	08/08/88	NA	
SULFATE	JDL	08/25/88	NA	
ANTIMONY, TOTAL	DRW	08/06/88	08/05/88	
BARIUM, TOTAL	DRW	08/06/88	08/05/88	
LEAD, TOTAL	AMB	08/09/88	08/05/88	
MERCURY, TOTAL	SMF	08/04/88	08/05/88	
SODIUM, TOTAL	DRW	08/08/88	08/05/88	
ANTIMONY, FILTERED IN FIELD	DRW	08/06/88	NA	

CLIENT: TERRACON (40875137)

FILE NO.: 88-990

ORDER NO.: 1995A

LAB NUMBER: 88080639 (CONT.)

ANALYSIS	ANALYST	DATE ANALYZED	DATE PREPPED	METHOD
BARIUM, FILTERED IN FIELD	DRW	08/06/88	NA	
LEAD, FILTERED IN FIELD	AMB	08/12/88	NA	
MERCURY, FILTERED IN FIELD	SMF	08/04/88	NA	
SODIUM, FILTERED IN FIELD	DRW	08/08/88	NA	

COMMENTS: TERRACON EXPLOSIVES DUPLICATE OF 88080529
 AMMONIA, TOTAL DUPLICATE OF 88080602
 CYANIDE, TOTAL DUPLICATE OF 88080601
 NITRATE/NITRITE DUPLICATE OF 88080540
 SULFATE DUPLICATE OF 88080492
 ALL TOTAL METALS DUPLICATE OF 88080531
 ALL METALS FILTERED IN FIELD DUPLICATE OF 88080531

—CONCLUSION—LAB NUMBER: 88080639 LINE 6 DUPLICATE AS SHOWN

LAB NUMBER: 88080640

SAMPLE DESCRIPTION: LINE 6 SPIKE AS SHOWN

ANALYSIS	ANALYST	DATE ANALYZED	DATE PREPPED	METHOD
TERRACON EXPL. (40875137) LINE 6	CAS		NA	
AMMONIA, TOTAL	JDL	08/04/88	NA	
CYANIDE, TOTAL	BAB	08/12/88	NA	
NITRATE/NITRITE	BAB	08/08/88	NA	
SULFATE	JDL	08/25/88	NA	
ANTIMONY, TOTAL	DRW	08/06/88	08/05/88	
BARIUM, TOTAL	DRW	08/06/88	08/05/88	
LEAD, TOTAL	AMB	08/09/88	08/05/88	
MERCURY, TOTAL	SMF	08/04/88	08/05/88	
ANTIMONY, FILTERED IN FIELD	DRW	08/06/88	NA	
BARIUM, FILTERED IN FIELD	DRW	08/06/88	NA	
LEAD, FILTERED IN FIELD	AMB	08/12/88	NA	

CLIENT: TERRACON (40875137)

FILE NO.: 88-990

ORDER NO.: 1995A

LAB NUMBER: 88080640 (CONT.)

ANALYSIS	ANALYST	DATE ANALYZED	DATE PREPPED	METHOD
MERCURY, FILTERED IN FIELD	SMF	08/04/88	NA	

COMMENTS: TERRACON EXPLOSIVES SPIKE OF 88080529
 AMMONIA, TOTAL SPIKE OF 88080602
 CYANIDE, TOTAL SPIKE OF 88080602
 NITRATE/NITRITE SPIKE OF 88080540
 SULFATE SPIKE OF 88080492
 ALL TOTAL METALS SPIKE OF 88080531
 ALL METALS FILTERED IN FIELD SPIKE OF 88080531

—CONCLUSION—LAB NUMBER: 88080640 LINE 6 SPIKE AS SHOWN

LAB NUMBER: 88080773
 SAMPLE DESCRIPTION: LINE 6 QA/QC #6

DATE SAMPLED: 08/02/88
 TIME SAMPLED: 0825

ANALYSIS	ANALYST	DATE ANALYZED	DATE PREPPED	METHOD
TERRACON EXPL. (40875137) LINE 6	CAS		NA	
AMMONIA, TOTAL	JDL	08/04/88	NA	
CYANIDE, TOTAL	BAB	08/12/88	NA	
NITRATE/NITRITE	BAB	08/08/88	NA	
SULFATE	JDL	08/25/88	NA	
ANTIMONY, TOTAL	DRW	08/12/88	08/05/88	
BARIUM, TOTAL	DRW	08/12/88	08/05/88	
LEAD, TOTAL	AMB	08/15/88	08/05/88	
MERCURY, TOTAL	SMF	08/17/88	08/05/88	
SODIUM, TOTAL	DRW	08/12/88	08/05/88	
ANTIMONY, FILTERED IN FIELD	DRW	08/16/88	NA	
BARIUM, FILTERED IN FIELD	DRW	08/11/88	NA	
LEAD, FILTERED IN FIELD	AMB	08/15/88	NA	
MERCURY, FILTERED IN FIELD	SMF	08/17/88	NA	
SODIUM, FILTERED IN FIELD	DRW	08/11/88	NA	

—CONCLUSION—LAB NUMBER: 88080773 LINE 6 QA/QC #6

CLIENT: TERRACON (40875137)

FILE NO.: 88-990
ORDER NO.: 1995A

LAB NUMBER: 88080836

SAMPLE DESCRIPTION: LINE 6 DUPLICATE AS SHOWN

ANALYSIS	ANALYST	DATE ANALYZED	DATE PREPPED	METHOD
AMMONIA, TOTAL	JDL	08/19/88	NA	
CYANIDE, TOTAL	BAB	08/12/88	NA	
NITRATE/NITRITE	BAB	08/08/88	NA	
SULFATE	JDL	08/25/88	NA	
ANTIMONY, TOTAL	DFW	08/12/88	NA	
BARIUM, TOTAL	DFW	08/12/88	NA	
LEAD, TOTAL	AMB	08/15/88	NA	
MERCURY, TOTAL	SMF	08/17/88	NA	
SODIUM, TOTAL	DFW	08/12/88	NA	
ANTIMONY, FILTERED IN FIELD	DFW	08/16/88	NA	
BARIUM, FILTERED IN FIELD	DFW	08/11/88	NA	
LEAD, FILTERED IN FIELD	AMB	08/15/88	NA	
MERCURY, FILTERED IN FIELD	SMF	08/17/88	NA	
SODIUM, FILTERED IN FIELD	DFW	08/11/88	NA	

COMMENTS: AMMONIA, TOTAL DUPLICATE OF 88080530
CYANIDE, TOTAL
NITRATE/NITRITE DUPLICATE OF 88080492
SULFATE DUPLICATE OF 88080772
ALL TOTAL METALS DUPLICATE OF 88080733
ALL METALS FILTERED IN FIELD DUPLICATE OF 88080733

—CONCLUSION—LAB NUMBER: 88080836 LINE 6 DUPLICATE AS SHOWN

LAB NUMBER: 88080837

SAMPLE DESCRIPTION: LINE 6 SPIKE AS SHOWN

ANALYSIS	ANALYST	DATE ANALYZED	DATE PREPPED	METHOD
AMMONIA, TOTAL	JDL	08/19/88	NA	
CYANIDE, TOTAL	BAB	08/12/88	NA	

CLIENT: TERRACON (40875137)

FILE NO.: 88-990

ORDER NO.: 1995A

LAB NUMBER: 88080837 (CONT.)

ANALYSIS	ANALYST	DATE ANALYZED	DATE PREPPED	METHOD
NITRATE/NITRITE	BAB	08/08/88	NA	
SULFATE	JDL	08/25/88	NA	
ANTIMONY, TOTAL	DRW	08/12/88	NA	
BARIUM, TOTAL	DRW	08/12/88	NA	
LEAD, TOTAL	AMB	08/15/88	NA	
MERCURY, TOTAL	SMF	08/17/88	NA	
ANTIMONY, FILTERED IN FIELD	DRW	08/16/88	NA	
BARIUM, FILTERED IN FIELD	DRW	08/11/88	NA	
LEAD, FILTERED IN FIELD	AMB	08/15/88	NA	
MERCURY, FILTERED IN FIELD	SMF	08/17/88	NA	

COMMENTS: AMMONIA, TOTAL SPIKE OF 88080530
 CYANIDE, TOTAL SPIKE OF 88080733
 NITRATE/NITRITE SPIKE OF 88080492
 SULFATE SPIKE OF 88080772
 ALL TOTAL METALS SPIKE OF 88080733
 ALL METALS FILTERED IN FIELD SPIKE OF 88080733

—CONCLUSION—LAB NUMBER: 88080837 LINE 6 SPIKE AS SHOWN

LAB NUMBER: 88080950

SAMPLE DESCRIPTION: CONTROL SAMPLE LINE 6

ANALYSIS	ANALYST	DATE ANALYZED	DATE PREPPED	METHOD
AMMONIA, TOTAL	JDL	08/19/88	NA	
CYANIDE, TOTAL	BAB	08/12/88	NA	
NITRATE/NITRITE	BAB	08/08/88	NA	
SULFATE	JDL	08/25/88	NA	
ANTIMONY, TOTAL	DRW	08/06/88	NA	
BARIUM, TOTAL	DRW	08/06/88	NA	
LEAD, TOTAL	AMB	08/11/88	NA	
MERCURY, TOTAL	SMF	08/04/88	NA	
SODIUM, TOTAL	DRW	08/06/88	NA	

LABORATORY REPORT

PAGE 6

CLIENT: TERRACON (40875137)

FILE NO.: 88-990
ORDER NO.: 1995A

LAB NUMBER: 88080950 (CONT.)

<u>ANALYSIS</u>	<u>ANALYST</u>	<u>DATE ANALYZED</u>	<u>DATE PREPPED</u>	<u>METHOD</u>
ANTIMONY, FILTERED IN FIELD	DRW	08/17/88	NA	
BARIUM, FILTERED IN FIELD	DRW	08/17/88	NA	
LEAD, FILTERED IN FIELD	AMB	08/17/88	NA	
MERCURY, FILTERED IN FIELD	SMF	08/04/88	NA	
SODIUM, FILTERED IN FIELD	DRW	08/17/88	NA	

—CONCLUSION—LAB NUMBER: 88080950 CONTROL SAMPLE LINE 6

W I L S O N L A B O R A T O R I E S

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1820 - (913)825-7186

SEPTEMBER 9, 1988

TERRACON (40875137)
P.O. BOX 2025
DAVENPORT IA 52809

ATTN : GREGG OLBERTS

RE: WILSON LABORATORIES FILE NO. 88-990

ENCLOSED ARE THE REPORTS FOR THE SAMPLES AS LISTED BELOW:

<u>WILSON LAB ID #</u>	<u>ORDER NO.</u>	<u>SAMPLE DESCRIPTION</u>
8808042500	1977A	INERT LANDFILL QA/QC #1
8808049400	1977A	TRAVEL BLANK (T09 INERT)
8808049600	1977A	SAMPLE BLANK (INERT)
8808062900	1977A	TRAVEL BLANK (T02 INERT)
8808063000	1977A	TRAVEL BLANK (T03 INERT)
8808063100	1977A	TRAVEL BLANK (QA/QC #1 INERT)
8808063200	1977A	TRAVEL BLANK (T01 INERT)
8808063300	1977A	TRAVEL BLANK (T05 INERT)
8808063400	1977A	TRAVEL BLANK (T06 INERT)
8808063500	1977A	TRAVEL BLANK (T07 INERT)
8808063600	1977A	TRAVEL BLANK (T04 INERT)
8808063700	1977A	INERT DUPLICATE AS SHOWN
8808063800	1977A	INERT LANDFILL SPIKE AS SHOWN
8808094900	1977A	CONTROL SAMPLE INERT
8809049400	1977A	EXTRACTION BL 88080423-475
8809049500	1977A	EXTRACTION BLANK

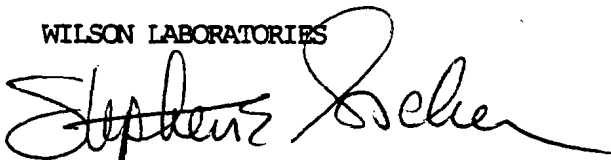
ND(), WHERE NOTED, INDICATES NONE DETECTED WITH THE DETECTION LIMIT IN PARENTHESSES.

PAGE 2
TERRACON (40875137)
88-990
SEPTEMBER 9, 1988

ANALYSES WERE PERFORMED ON SAMPLES AS RECEIVED IN ACCORDANCE WITH PROCEDURES REFERENCED IN THE FEDERAL REGISTER, VOL. 49, NO. 209, OCT. 26, 1984; PUBLISHED IN EPA PUBLICATION, SW 846, 2ND ED., JULY 1982 AND IN THE PROPOSED ADDITION TO SW 846, 1984; OR IN EPA PUBLICATION, SW846 3RD ED., SEPTEMBER 1986. WHERE APPROVED METHODS ARE NOT AVAILABLE, EFFORTS ARE MADE TO USE APPROPRIATE STANDARD METHODS.

SAMPLES WILL BE RETAINED FOR 30 DAYS UNLESS OTHERWISE NOTIFIED.

WILSON LABORATORIES

A handwritten signature in cursive script, appearing to read "Stephen Secker". The signature is written in black ink and is positioned below the typed name "WILSON LABORATORIES".

ENCLOSURE

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/09/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-990
 ORDER NO.: 1977A

LAB NUMBER: 88080494
 SAMPLE DESCRIPTION: TRAVEL BLANK (T09 INERT)

DATE SAMPLED: 07/26/88
 TIME SAMPLED: 0745

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
HSL VOLATILE COMPOUNDS			
CHLOROMETHANE	ND(10)	UG/L	1157-3
BROMOMETHANE	ND(10)	UG/L	1157-3
VINYL CHLORIDE	ND(10)	UG/L	1157-3
CHLOROETHANE	ND(10)	UG/L	1157-3
METHYLENE CHLORIDE	ND(5.0)	UG/L	1157-3
ACEICONE	ND(10)	UG/L	1157-3
CARBON DISULFIDE	ND(5.0)	UG/L	1157-3
1,1-DICHLOROETHENE	ND(5.0)	UG/L	1157-3
1,1-DICHLOROETHANE	ND(5.0)	UG/L	1157-3
1,2-DICHLOROETHENE (TOTAL)	ND(5.0)	UG/L	1157-3
CHLOROFORM	ND(5.0)	UG/L	1157-3
1,2-DICHLOROETHANE	ND(5.0)	UG/L	1157-3
2-BUTANONE	ND(10)	UG/L	1157-3
1,1,1-TRICHLOROETHANE	ND(5.0)	UG/L	1157-3
CARBON TETRACHLORIDE	ND(5.0)	UG/L	1157-3
VINYL ACETATE	ND(10)	UG/L	1157-3
BROMODICHLOROMETHANE	ND(5.0)	UG/L	1157-3
1,2-DICHLOROPROPANE	ND(5.0)	UG/L	1157-3
CIS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-3
TRICHLOROETHENE	ND(5.0)	UG/L	1157-3
DIBROMOCHLOROMETHANE	ND(5.0)	UG/L	1157-3
1,1,2-TRICHLOROETHANE	ND(5.0)	UG/L	1157-3
BENZENE	ND(5.0)	UG/L	1157-3
TRANS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-3
BROMOFORM	ND(5.0)	UG/L	1157-3
4-METHYL-2-PENTANONE	ND(10)	UG/L	1157-3
2-HEXANONE	ND(10)	UG/L	1157-3
TETRACHLOROETHENE	ND(5.0)	UG/L	1157-3
1,1,2,2-TETRACHLOROETHANE	ND(5.0)	UG/L	1157-3
TOLUENE	ND(5.0)	UG/L	1157-3
CHLOROBENZENE	ND(5.0)	UG/L	1157-3
ETHYLBENZENE	ND(5.0)	UG/L	1157-3
STYRENE	ND(5.0)	UG/L	1157-3

LABORATORY REPORT

PAGE 2

CLIENT: TERRACON (40875137)

FILE NO.: 88-990
ORDER NO.: 1977A

LAB NUMBER: 88080494 (CONT.)

<u>ANALYSIS</u>	<u>CONCENTRATION</u>	<u>UNITS</u>	<u>BOOK/PAGE</u>
XYLENE (TOTAL)	ND(5.0)	UG/L	1157-3

—CONCLUSION—LAB NUMBER: 88080494 TRAVEL BLANK (T09 INERT)

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
ATTN: GREGG OLBERTS
P.O. BOX 2025
DAVENPORT, IA 52809

DATE RPTD: 09/09/88
DATE RCVD: 07/22/88
PURCHASE AUTH:
FILE NO.: 88-990
ORDER NO.: 1977A

LAB NUMBER: 88080494
SAMPLE DESCRIPTION: TRAVEL BLANK (T09 INERT)

DATE SAMPLED: 07/26/88
TIME SAMPLED: 0745

ANALYSIS	ANALYST	DATE	DATE	METHOD
		ANALYZED	PREPPED	
HSL VOLATILE COMPOUNDS	EBE	08/18/88	NA	

—CONCLUSION—LAB NUMBER: 88080494 TRAVEL BLANK (T09 INERT)

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/09/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-990
 ORDER NO.: 1977A

LAB NUMBER: 88080496
 SAMPLE DESCRIPTION: SAMPLE BLANK (INERT)

DATE SAMPLED: 07/26/88
 TIME SAMPLED: 0720

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
HSL PESTICIDE COMPOUNDS			
ALPHA-BHC	ND(8.0)	UG/L	1182-15
BETA-BHC	ND(8.0)	UG/L	1182-15
DELTA-BHC	ND(8.0)	UG/L	1182-15
GAMMA-BHC (LINDANE)	ND(8.0)	UG/L	1182-15
HEPTACHLOR	ND(8.0)	UG/L	1182-15
ALDRIN	ND(8.0)	UG/L	1182-15
HEPTACHLOR EPOXIDE	ND(8.0)	UG/L	1182-15
ENDOSULFAN I	ND(8.0)	UG/L	1182-15
DIELDRIN	ND(8.0)	UG/L	1182-15
4,4'-DDE	ND(16)	UG/L	1182-15
ENDRIN	ND(16)	UG/L	1182-15
ENDOSULFAN II	ND(16)	UG/L	1182-15
4,4'-DDD	ND(16)	UG/L	1182-15
ENDOSULFAN SULFATE	ND(16)	UG/L	1182-15
4,4'-DDT	ND(16)	UG/L	1182-15
METHOXYCHLOR	ND(80)	UG/L	1182-15
ENDRIN KETONE	ND(16)	UG/L	1182-15
ALPHA-CHLORDANE	ND(80)	UG/L	1182-15
GAMMA-CHLORDANE	ND(80)	UG/L	1182-15
TOXAPHENE	ND(160)	UG/L	1182-15
AROCHLOR-1016	ND(80)	UG/L	1182-15
AROCHLOR-1221	ND(80)	UG/L	1182-15
AROCHLOR-1232	ND(80)	UG/L	1182-15
AROCHLOR-1242	ND(80)	UG/L	1182-15
AROCHLOR-1248	ND(80)	UG/L	1182-15
AROCHLOR-1254	ND(160)	UG/L	1182-15
AROCHLOR-1260	ND(160)	UG/L	1182-15
TERRACON EXPL. (40875137) LANDFILL			
2,4,6-TNT	ND(20)	UG/L	
2,4-DNT	ND(10)	UG/L	
2,6-DNT	ND(10)	UG/L	
TEIRYL	ND(20)	UG/L	
RDX	ND(22)	UG/L	
HMX	ND(26)	UG/L	

CLIENT: TERRACON (40875137)

FILE NO.: 88-990

ORDER NO.: 1977A

LAB NUMBER: 88080496 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
NITRATE/NITRITE	ND(0.1)	MG/L AS N	1023-157
SULFATE	ND(10)	MG/L	515-83
HSL VOLATILE COMPOUNDS			
CHLOROMETHANE	ND(10)	UG/L	1157-3
BROMOMETHANE	ND(10)	UG/L	1157-3
VINYL CHLORIDE	ND(10)	UG/L	1157-3
CHLOROETHANE	ND(10)	UG/L	1157-3
METHYLENE CHLORIDE	ND(5.0)	UG/L	1157-3
ACETONE	ND(10)	UG/L	1157-3
CARBON DISULFIDE	ND(5.0)	UG/L	1157-3
1,1-DICHLOROETHENE	ND(5.0)	UG/L	1157-3
1,1-DICHLOROETHANE	ND(5.0)	UG/L	1157-3
1,2-DICHLOROETHENE (TOTAL)	ND(5.0)	UG/L	1157-3
CHLOROFORM	ND(5.0)	UG/L	1157-3
1,2-DICHLOROETHANE	ND(5.0)	UG/L	1157-3
2-BUTANONE	ND(10)	UG/L	1157-3
1,1,1-TRICHLOROETHANE	ND(5.0)	UG/L	1157-3
CARBON TETRACHLORIDE	ND(5.0)	UG/L	1157-3
VINYL ACETATE	ND(10)	UG/L	1157-3
BROMODICHLOROMETHANE	ND(5.0)	UG/L	1157-3
1,2-DICHLOROPROPANE	ND(5.0)	UG/L	1157-3
CIS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-3
TRICHLOROETHENE	ND(5.0)	UG/L	1157-3
DIBROMOCHLOROMETHANE	ND(5.0)	UG/L	1157-3
1,1,2-TRICHLOROETHANE	ND(5.0)	UG/L	1157-3
BENZENE	ND(5.0)	UG/L	1157-3
TRANS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-3
BROMOFORM	ND(5.0)	UG/L	1157-3
4-METHYL-2-PENTANONE	ND(10)	UG/L	1157-3
2-HEXANONE	ND(10)	UG/L	1157-3
TETRACHLOROETHENE	ND(5.0)	UG/L	1157-3
1,1,2,2-TETRACHLOROETHANE	ND(5.0)	UG/L	1157-3
TOLUENE	ND(5.0)	UG/L	1157-3
CHLOROBENZENE	ND(5.0)	UG/L	1157-3
ETHYLBENZENE	ND(5.0)	UG/L	1157-3
STYRENE	ND(5.0)	UG/L	1157-3
XYLENE (TOTAL)	ND(5.0)	UG/L	1157-3
HSL SEMIVOLATILE ORGANIC COMPOUNDS			
PHENOL	ND(10)	UG/L	1104-79
BIS(2-CHLOROETHYL) ETHER	ND(10)	UG/L	1104-79
2-CHLOROPHENOL	ND(10)	UG/L	1104-79
1,3-DICHLOROBENZENE	ND(10)	UG/L	1104-79

CLIENT: TERRACON (40875137)

FILE NO.: 88-990
ORDER NO.: 1977A

LAB NUMBER: 88080496 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
1,4-DICHLOROBENZENE	ND(10)	UG/L	1104-79
BENZYL ALCOHOL	ND(10)	UG/L	1104-79
1,2-DICHLOROBENZENE	ND(10)	UG/L	1104-79
2-METHYLPHENOL	ND(10)	UG/L	1104-79
BIS(2-CHLOROISOPROPYL) ETHER	ND(10)	UG/L	1104-79
4-METHYLPHENOL	ND(10)	UG/L	1104-79
N-NITROSO-DI-N-PROPYLAMINE	ND(10)	UG/L	1104-79
HEXACHLOROETHANE	ND(10)	UG/L	1104-79
NITROBENZENE	ND(10)	UG/L	1104-79
ISOPHORONE	ND(10)	UG/L	1104-79
2-NITROPHENOL	ND(50)	UG/L	1104-79
2,4-DIMETHYLPHENOL	ND(10)	UG/L	1104-79
BENZOIC ACID	ND(50)	UG/L	1104-79
BIS(2-CHLOROETHOXY)METHANE	ND(10)	UG/L	1104-79
2,4-DICHLOROPHENOL	ND(10)	UG/L	1104-79
1,2,4-TRICHLOROBENZENE	ND(10)	UG/L	1104-79
NAPHTHALENE	ND(10)	UG/L	1104-79
4-CHLOROANILINE	ND(10)	UG/L	1104-79
HEXACHLOROBUTADIENE	ND(10)	UG/L	1104-79
4-CHLORO-3-METHYLPHENOL	ND(10)	UG/L	1104-79
2-METHYLNAPHTHALENE	ND(10)	UG/L	1104-79
HEXACHLOROCYCLOPENTADIENE	ND(10)	UG/L	1104-79
2,4,6-TRICHLOROPHENOL	ND(10)	UG/L	1104-79
2,4,5-TRICHLOROPHENOL	ND(50)	UG/L	1104-79
2-CHLORONAPHTHALENE	ND(10)	UG/L	1104-79
2-NITROANILINE	ND(50)	UG/L	1104-79
DIMETHYLNAPHTHALENE	ND(10)	UG/L	1104-79
ACENAPHTHYLENE	ND(10)	UG/L	1104-79
2,6-DINITROTOLUENE	ND(10)	UG/L	1104-79
3-NITROANILINE	ND(50)	UG/L	1104-79
ACENAPHTHENE	ND(10)	UG/L	1104-79
2,4-DINITROPHENOL	ND(50)	UG/L	1104-79
4-NITROPHENOL	ND(50)	UG/L	1104-79
DIBENZOFURAN	ND(10)	UG/L	1104-79
2,4-DINITROTOLUENE	ND(10)	UG/L	1104-79
DIETHYLNAPHTHALENE	ND(10)	UG/L	1104-79
4-CHLOROPHENYL-PHENYLETHER	ND(10)	UG/L	1104-79
FLUORENE	ND(10)	UG/L	1104-79
4-NITROANILINE	ND(50)	UG/L	1104-79
4,6-DINITRO-2-METHYLPHENOL	ND(50)	UG/L	1104-79
N-NITROSDIPHENYLAMINE(1)	ND(10)	UG/L	1104-79
4-BROMOPHENYL-PHENYLETHER	ND(10)	UG/L	1104-79

LABORATORY REPORT

PAGE 4

CLIENT: TERRACON (40875137)

FILE NO.: 88-990
ORDER NO.: 1977A

LAB NUMBER: 88080496 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
HEXACHLOROBENZENE	ND(10)	UG/L	1104-79
PENTACHLOROPHENOL	ND(50)	UG/L	1104-79
PHENANTHRENE	ND(10)	UG/L	1104-79
ANTHRACENE	ND(10)	UG/L	1104-79
DI-N-BUTYLPHTHALATE	ND(10)	UG/L	1104-79
FLUORANTHENE	ND(10)	UG/L	1104-79
PYRENE	ND(10)	UG/L	1104-79
BUTYLBENZYLPHTHALATE	ND(10)	UG/L	1104-79
BENZO(A)ANTHRACENE	ND(10)	UG/L	1104-79
CHRYSENE	ND(10)	UG/L	1104-79
BIS(2-ETHYLHEXYL)PHTHALATE	ND(10)	UG/L	1104-79
DI-N-OCTYLPHTHALATE	ND(10)	UG/L	1104-79
BENZO(B)FLUORANTHENE	ND(10)	UG/L	1104-79
BENZO(K)FLUORANTHENE	ND(10)	UG/L	1104-79
BENZO(A)PYRENE	ND(10)	UG/L	1104-79
IDENO(1,2,3-CD)PYRENE	ND(10)	UG/L	1104-79
DIBENZ(A,H)ANTHRACENE	ND(10)	UG/L	1104-79
BENZO(G,H,I)PERYLENE	ND(10)	UG/L	1104-79
3,3'-DICHLOROBENZIDINE	ND(20)	UG/L	1104-79
ARSENIC, TOTAL	ND(0.01)	MG/L	1164-21
BARIUM, TOTAL	ND(0.2)	MG/L	1172-260
CADMIUM, TOTAL	ND(0.005)	MG/L	1177-35
CHROMIUM, TOTAL	ND(0.03)	MG/L	1177-30
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-23
SELENIUM, TOTAL	ND(0.005)	MG/L	1165-12
SILVER, TOTAL	ND(0.01)	MG/L	1177-40
ARSENIC, FILTERED IN FIELD	ND(0.01)	MG/L	1164-20
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1172-260
CADMIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1177-36
CHROMIUM, FILTERED IN FIELD	ND(0.03)	MG/L	1177-30
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1177-23
SELENIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1165-11
SILVER, FILTERED IN FIELD	ND(0.01)	MG/L	1177-40

—CONCLUSION—LAB NUMBER: 88080496 SAMPLE BLANK (INERT)

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/09/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-990
 ORDER NO.: 1977A

LAB NUMBER: 88080496
 SAMPLE DESCRIPTION: SAMPLE BLANK (INERT)

DATE SAMPLED: 07/26/88
 TIME SAMPLED: 0720

ANALYSIS	ANALYST	DATE ANALYZED	DATE PREPPED	METHOD
HSL PESTICIDE COMPOUNDS	HSY	09/01/88	08/04/88	
TERRACON EXPL. (40875137) LANDFILL	CAS		NA	
NITRATE/NITRITE	BAB	08/08/88	NA	
SULFATE	JDL	08/25/88	NA	
HSL VOLATILE COMPOUNDS	BBE	08/18/88	NA	
HSL SEMIVOLATILE ORGANIC COMPOUNDS	LAK	09/02/88	08/01/88	
ARSENIC, TOTAL	DRW	08/11/88	08/03/88	
BARIUM, TOTAL	DRW	08/02/88	08/03/88	
CADMIUM, TOTAL	DRW	08/03/88	08/03/88	
CHROMIUM, TOTAL	DRW	08/03/88	08/03/88	
MERCURY, TOTAL	SMF	08/03/88	08/03/88	
SELENIUM, TOTAL	AMB	08/15/88	08/03/88	
SILVER, TOTAL	DRW	08/03/88	08/03/88	
ARSENIC, FILTERED IN FIELD	DRW	08/10/88	NA	
BARIUM, FILTERED IN FIELD	DRW	08/02/88	NA	
CADMIUM, FILTERED IN FIELD	DRW	08/03/88	NA	
CHROMIUM, FILTERED IN FIELD	DRW	08/03/88	NA	
MERCURY, FILTERED IN FIELD	SMF	08/03/88	NA	
SELENIUM, FILTERED IN FIELD	AMB	08/10/88	NA	
SILVER, FILTERED IN FIELD	DRW	08/03/88	NA	

—CONCLUSION—LAB NUMBER: 88080496 SAMPLE BLANK (INERT)

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
ATTN: GREGG OLBERTS
P.O. BOX 2025
DAVENPORT, IA 52809

DATE RPID: 09/09/88
DATE RCVD: 07/22/88
PURCHASE AUTH:
FILE NO.: 88-990
ORDER NO.: 1977A

LAB NUMBER: 88080629
SAMPLE DESCRIPTION: TRAVEL BLANK (T02 INERT)

<u>ANALYSIS</u>	<u>CONCENTRATION</u>	<u>UNITS</u>	<u>BOOK-PAGE</u>
NO TESTS ASSIGNED	.	.	
<hr/> <p>—CONCLUSION—LAB NUMBER: 88080629 TRAVEL BLANK (T02 INERT)</p> <hr/>			

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
ATTN: GREGG OLBERTS
P.O. BOX 2025
DAVENPORT, IA 52809

DATE RPID: 09/09/88
DATE RCVD: 07/22/88
PURCHASE AJIH:
FILE NO.: 88-990
ORDER NO.: 1977A

LAB NUMBER: 88080630

SAMPLE DESCRIPTION: TRAVEL BLANK (T03 INERT)

<u>ANALYSIS</u>	<u>CONCENTRATION</u>	<u>UNITS</u>	<u>BOOK-PAGE</u>
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NO TESTS ASSIGNED

—CONCLUSION—LAB NUMBER: 88080630 TRAVEL BLANK (T03 INERT)

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
ATTN: GREGG OLBERTS
P.O. BOX 2025
DAVENPORT, IA 52809

DATE RPID: 09/09/88
DATE RCVD: 07/22/88
PURCHASE AUTH:
FILE NO.: 88-990
ORDER NO.: 1977A

LAB NUMBER: 88080631
SAMPLE DESCRIPTION: TRAVEL BLANK (QA/QC #1 INERT)

<u>ANALYSIS</u>	<u>CONCENTRATION</u>	<u>UNITS</u>	<u>BOOK-PAGE</u>
NO TESTS ASSIGNED	.	.	
<hr/> <p>—CONCLUSION—LAB NUMBER: 88080631 TRAVEL BLANK (QA/QC #1 INERT)</p> <hr/>			

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
ATTN: GREGG OLBERTS
P.O. BOX 2025
DAVENPORT, IA 52809

DATE RPID: 09/09/88
DATE RCVD: 07/22/88
PURCHASE AUTH:
FILE NO.: 88-990
ORDER NO.: 1977A

LAB NUMBER: 88080632
SAMPLE DESCRIPTION: TRAVEL BLANK (T01 INERT)

<u>ANALYSIS</u>	<u>CONCENTRATION</u>	<u>UNITS</u>	<u>BOOK-PAGE</u>
NO TESTS ASSIGNED	.	.	

—CONCLUSION—LAB NUMBER: 88080632 TRAVEL BLANK (T01 INERT)

W I L S O N L A B O R A T O R I E S

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
ATTN: GREGG OLBERTS
P.O. BOX 2025
DAVENPORT, IA 52809

DATE RPTD: 09/09/88
DATE RCVD: 07/22/88
PURCHASE AUTH:
FILE NO.: 88-990
ORDER NO.: 1977A

LAB NUMBER: 88080636
SAMPLE DESCRIPTION: TRAVEL BLANK (T04 INERT)

<u>ANALYSIS</u>	<u>CONCENTRATION</u>	<u>UNITS</u>	<u>BOOK-PAGE</u>
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NO TESTS ASSIGNED	.	.	
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—CONCLUSION—LAB NUMBER: 88080636 TRAVEL BLANK (T04 INERT)

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/09/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-990
 ORDER NO.: 1977A

LAB NUMBER: 88080425
 SAMPLE DESCRIPTION: INERT LANDFILL QA/QC #1

DATE SAMPLED: 07/21/88
 TIME SAMPLED: 1300

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
HSL PESTICIDE COMPOUNDS			
ALPHA-BHC	ND(8.0)	UG/L	1182-14
BETA-BHC	ND(8.0)	UG/L	1182-14
DELTA-BHC	ND(8.0)	UG/L	1182-14
GAMMA-BHC (LINDANE)	ND(8.0)	UG/L	1182-14
HEPTACHLOR	ND(8.0)	UG/L	1182-14
ALDRIN	ND(8.0)	UG/L	1182-14
HEPTACHLOR EPOXIDE	ND(8.0)	UG/L	1182-14
ENDOSULFAN I	ND(8.0)	UG/L	1182-14
DIELDRIN	ND(8.0)	UG/L	1182-14
4,4'-DDE	ND(16)	UG/L	1182-14
ENDRIN	ND(16)	UG/L	1182-14
ENDOSULFAN II	ND(16)	UG/L	1182-14
4,4'-DDD	ND(16)	UG/L	1182-14
ENDOSULFAN SULFATE	ND(16)	UG/L	1182-14
4,4'-DDT	ND(16)	UG/L	1182-14
METHOXYCHLOR	ND(80)	UG/L	1182-14
ENDRIN KETONE	ND(16)	UG/L	1182-14
ALPHA-CHLORDANE	ND(80)	UG/L	1182-14
GAMMA-CHLORDANE	ND(80)	UG/L	1182-14
TOXAPHENE	ND(160)	UG/L	1182-14
AROCHLOR-1016	ND(80)	UG/L	1182-14
AROCHLOR-1221	ND(80)	UG/L	1182-14
AROCHLOR-1232	ND(80)	UG/L	1182-14
AROCHLOR-1242	ND(80)	UG/L	1182-14
AROCHLOR-1248	ND(80)	UG/L	1182-14
AROCHLOR-1254	ND(160)	UG/L	1182-14
AROCHLOR-1260	ND(160)	UG/L	1182-14
TERRACON EXPL. (40875137) LANDFILL			
2,4,6-TNT	ND(20)	UG/L	
2,4-DNT	ND(10)	UG/L	
2,6-DNT	ND(10)	UG/L	
TETRYL	ND(20)	UG/L	
RDX	ND(22)	UG/L	
HMX	ND(26)	UG/L	

CLIENT: TERRACON (40875137)

FILE NO.: 88-990
ORDER NO.: 1977A

LAB NUMBER: 88080425 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
NITRATE/NITRITE	0.9	MG/L AS N	1023-157
SULFATE	16	MG/L	515-83
HSL VOLATILE COMPOUNDS			
CHLOROMETHANE	ND(10)	UG/L	1157-1
BROMOMETHANE	ND(10)	UG/L	1157-1
VINYL CHLORIDE	ND(10)	UG/L	1157-1
CHLOROETHANE	ND(10)	UG/L	1157-1
METHYLENE CHLORIDE	ND(5.0)	UG/L	1157-1
ACETONE	ND(10)	UG/L	1157-1
CARBON DISULFIDE	ND(5.0)	UG/L	1157-1
1,1-DICHLOROETHENE	ND(5.0)	UG/L	1157-1
1,1-DICHLOROETHANE	ND(5.0)	UG/L	1157-1
1,2-DICHLOROETHENE (TOTAL)	ND(5.0)	UG/L	1157-1
CHLOROFORM	ND(5.0)	UG/L	1157-1
1,2-DICHLOROETHANE	ND(5.0)	UG/L	1157-1
2-BUTANONE	ND(10)	UG/L	1157-1
1,1,1-TRICHLOROETHANE	ND(5.0)	UG/L	1157-1
CARBON TETRACHLORIDE	ND(5.0)	UG/L	1157-1
VINYL ACETATE	ND(10)	UG/L	1157-1
BROMODICHLOROMETHANE	ND(5.0)	UG/L	1157-1
1,2-DICHLOROPROPANE	ND(5.0)	UG/L	1157-1
CIS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-1
TRICHLOROETHENE	ND(5.0)	UG/L	1157-1
DIBROMOCHLOROMETHANE	ND(5.0)	UG/L	1157-1
1,1,2-TRICHLOROETHANE	ND(5.0)	UG/L	1157-1
BENZENE	ND(5.0)	UG/L	1157-1
TRANS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-1
BROMOFORM	ND(5.0)	UG/L	1157-1
4-METHYL-2-PENTANONE	ND(10)	UG/L	1157-1
2-HEXANONE	ND(10)	UG/L	1157-1
TETRACHLOROETHENE	ND(5.0)	UG/L	1157-1
1,1,2,2-TETRACHLOROETHANE	ND(5.0)	UG/L	1157-1
TOLUENE	ND(5.0)	UG/L	1157-1
CHLOROBENZENE	ND(5.0)	UG/L	1157-1
ETHYLBENZENE	ND(5.0)	UG/L	1157-1
STYRENE	ND(5.0)	UG/L	1157-1
XYLENE (TOTAL)	ND(5.0)	UG/L	1157-1
HSL SEMIVOLATILE ORGANIC COMPOUNDS			
PHENOL	ND(10)	UG/L	1104-71
BIS(2-CHLOROETHYL) ETHER	ND(10)	UG/L	1104-71
2-CHLOROPHENOL	ND(10)	UG/L	1104-71
1,3-DICHLOROBENZENE	ND(10)	UG/L	1104-71

CLIENT: TERRACON (40875137)

FILE NO.: 88-990

ORDER NO.: 1977A

LAB NUMBER: 88080425 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
1,4-DICHLOROBENZENE	ND(10)	UG/L	1104-71
BENZYL ALCOHOL	ND(10)	UG/L	1104-71
1,2-DICHLOROBENZENE	ND(10)	UG/L	1104-71
2-METHYLPHENOL	ND(10)	UG/L	1104-71
BIS(2-CHLOROISOPROPYL)ETHER	ND(10)	UG/L	1104-71
4-METHYLPHENOL	ND(10)	UG/L	1104-71
N-NITROSO-DI-N-PROPYLAMINE	ND(10)	UG/L	1104-71
HEXACHLOROETHANE	ND(10)	UG/L	1104-71
NITROBENZENE	ND(10)	UG/L	1104-71
ISOPHORONE	ND(10)	UG/L	1104-71
2-NITROPHENOL	ND(50)	UG/L	1104-71
2,4-DIMETHYLPHENOL	ND(10)	UG/L	1104-71
BENZOIC ACID	ND(50)	UG/L	1104-71
BIS(2-CHLOROETHOXY)METHANE	ND(10)	UG/L	1104-71
2,4-DICHLOROPHENOL	ND(10)	UG/L	1104-71
1,2,4-TRICHLOROBENZENE	ND(10)	UG/L	1104-71
NAPHTHALENE	ND(10)	UG/L	1104-71
4-CHLOROANILINE	ND(10)	UG/L	1104-71
HEXACHLOROBUTADIENE	ND(10)	UG/L	1104-71
4-CHLORO-3-METHYLPHENOL	ND(10)	UG/L	1104-71
2-METHYLNAPHTHALENE	ND(10)	UG/L	1104-71
HEXACHLOROCYCLOPENTADIENE	ND(10)	UG/L	1104-71
2,4,6-TRICHLOROPHENOL	ND(10)	UG/L	1104-71
2,4,5-TRICHLOROPHENOL	ND(50)	UG/L	1104-71
2-CHLORONAPHTHALENE	ND(10)	UG/L	1104-71
2-NITROANILINE	ND(50)	UG/L	1104-71
DIMETHYLPHTHALATE	ND(10)	UG/L	1104-71
ACENAPHTHYLENE	ND(10)	UG/L	1104-71
2,6-DINITROTOLUENE	ND(10)	UG/L	1104-71
3-NITROANILINE	ND(50)	UG/L	1104-71
ACENAPHTHENE	ND(10)	UG/L	1104-71
2,4-DINITROPHENOL	ND(50)	UG/L	1104-71
4-NITROPHENOL	ND(50)	UG/L	1104-71
DIBENZOFURAN	ND(10)	UG/L	1104-71
2,4-DINITROTOLUENE	ND(10)	UG/L	1104-71
DIETHYLPHTHALATE	ND(10)	UG/L	1104-71
4-CHLOROPHENYL-PHENYLETHER	ND(10)	UG/L	1104-71
FLUORENE	ND(10)	UG/L	1104-71
4-NITROANILINE	ND(50)	UG/L	1104-71
4,6-DINITRO-2-METHYLPHENOL	ND(50)	UG/L	1104-71
N-NITROSODIPHENYLAMINE (1)	ND(10)	UG/L	1104-71
4-BROMOPHENYL-PHENYLETHER	ND(10)	UG/L	1104-71

CLIENT: TERRACON (40875137)

FILE NO.: 88-990
ORDER NO.: 1977A

LAB NUMBER: 88080425 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
HEXACHLOROBENZENE	ND(10)	UG/L	1104-71
PENTACHLOROPHENOL	ND(50)	UG/L	1104-71
PHENANTHRENE	ND(10)	UG/L	1104-71
ANTHRACENE	ND(10)	UG/L	1104-71
DI-N-BUTYLPHTHALATE	ND(10)	UG/L	1104-71
FLUORANTHENE	ND(10)	UG/L	1104-71
PYRENE	ND(10)	UG/L	1104-71
BUTYLBENZYLPHTHALATE	ND(10)	UG/L	1104-71
BENZO(A)ANTHRACENE	ND(10)	UG/L	1104-71
CHRYSENE	ND(10)	UG/L	1104-71
BIS(2-ETHYLHEXYL)PHTHALATE	10	UG/L	1104-71
DI-N-OCTYLPHTHALATE	ND(10)	UG/L	1104-71
BENZO(B)FLUORANTHENE	ND(10)	UG/L	1104-71
BENZO(K)FLUORANTHENE	ND(10)	UG/L	1104-71
BENZO(A)PYRENE	ND(10)	UG/L	1104-71
IDENO(1,2,3-CD)PYRENE	ND(10)	UG/L	1104-71
DIBENZ(A,H)ANTHRACENE	ND(10)	UG/L	1104-71
BENZO(G,H,I)PERYLENE	ND(10)	UG/L	1104-71
3,3'-DICHLOROBENZIDINE	ND(20)	UG/L	1104-71
ARSENIC, TOTAL	ND(0.01)	MG/L	1164-17
BARIUM, TOTAL	ND(0.2)	MG/L	1172-259
CADMIUM, TOTAL	ND(0.005)	MG/L	1177-34
CHROMIUM, TOTAL	ND(0.03)	MG/L	1177-29
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-22
SELENIUM, TOTAL	ND(0.005)	MG/L	1165-8
SILVER, TOTAL	ND(0.01)	MG/L	1177-39
ARSENIC, FILTERED IN FIELD	ND(0.01)	MG/L	1164-20
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1172-260
CADMIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1177-35
CHROMIUM, FILTERED IN FIELD	ND(0.03)	MG/L	1177-30
MERCURY, FILTERED IN FIELD	0.0003	MG/L	1177-23
SELENIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1165-11
SILVER, FILTERED IN FIELD	ND(0.01)	MG/L	1177-40

—CONCLUSION—LAB NUMBER: 88080425 INERT LANDFILL QA/QC #1

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/09/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-990
 ORDER NO.: 1977A

LAB NUMBER: 88080425

DATE SAMPLED: 07/21/88

SAMPLE DESCRIPTION: INERT LANDFILL QA/QC #1

TIME SAMPLED: 1300

ANALYSIS	ANALYST	DATE ANALYZED	DATE PREPPED	METHOD
HSL PESTICIDE COMPOUNDS	HSY	09/01/88	08/04/88	
TERRACON EXPL. (40875137) LANDFILL	CAS		NA	
NITRATE/NITRITE	BAB	08/08/88	NA	
SULFATE	JDL	08/25/88	NA	
HSL VOLATILE COMPOUNDS	BBE	08/11/88	NA	
HSL SEMIVOLATILE ORGANIC COMPOUNDS	LAK	08/31/88	08/01/88	
ARSENIC, TOTAL	AMB	08/04/88	08/03/88	
BARIUM, TOTAL	DFW	08/02/88	08/03/88	
CADMIUM, TOTAL	DFW	08/03/88	08/03/88	
CHROMIUM, TOTAL	DFW	08/03/88	08/03/88	
MERCURY, TOTAL	SMF	08/03/88	08/03/88	
SELENIUM, TOTAL	DFW	08/05/88	08/03/88	
SILVER, TOTAL	DFW	08/03/88	08/03/88	
ARSENIC, FILTERED IN FIELD	DFW	08/10/88	NA	
BARIUM, FILTERED IN FIELD	DFW	08/02/88	NA	
CADMIUM, FILTERED IN FIELD	DFW	08/03/88	NA	
CHROMIUM, FILTERED IN FIELD	DFW	08/03/88	NA	
MERCURY, FILTERED IN FIELD	SMF	08/03/88	NA	
SELENIUM, FILTERED IN FIELD	AMB	08/10/88	NA	
SILVER, FILTERED IN FIELD	DFW	08/03/88	NA	

—CONCLUSION—LAB NUMBER: 88080425 INERT LANDFILL QA/QC #1

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
ATTN: GREGG OLBERTS
P.O. BOX 2025
DAVENPORT, IA 52809

DATE RPTD: 09/09/88
DATE RCVD: 07/22/88
PURCHASE AUTH:
FILE NO.: 88-990
ORDER NO.: 1977A

LAB NUMBER: 88080633
SAMPLE DESCRIPTION: TRAVEL BLANK (T05 INERT)

<u>ANALYSIS</u>	<u>CONCENTRATION</u>	<u>UNITS</u>	<u>BOOK-PAGE</u>
NO TESTS ASSIGNED	.	.	

~~CONCLUSION~~—LAB NUMBER: 88080633 TRAVEL BLANK (T05 INERT)

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
ATTN: GREGG OLBERTS
P.O. BOX 2025
DAVENPORT, IA 52809

DATE RPTD: 09/09/88
DATE RCVD: 07/22/88
PURCHASE AUTH:
FILE NO.: 88-990
ORDER NO.: 1977A

LAB NUMBER: 88080634
SAMPLE DESCRIPTION: TRAVEL BLANK (T06 INERT)

<u>ANALYSIS</u>	<u>CONCENTRATION</u>	<u>UNITS</u>	<u>BOOK-PAGE</u>
NO TESTS ASSIGNED	.	.	
<hr/> <p>CONCLUSION—LAB NUMBER: 88080634 TRAVEL BLANK (T06 INERT)</p> <hr/>			

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
ATTN: GREGG OLBERTS
P.O. BOX 2025
DAVENPORT, IA 52809

DATE RPID: 09/09/88
DATE RCVD: 07/22/88
PURCHASE AUTH:
FILE NO.: 88-990
ORDER NO.: 1977A

LAB NUMBER: 88080635
SAMPLE DESCRIPTION: TRAVEL BLANK (T07 INERT)

<u>ANALYSIS</u>	<u>CONCENTRATION</u>	<u>UNITS</u>	<u>BOOK-PAGE</u>
NO TESTS ASSIGNED	.	.	
<hr/> —CONCLUSION—LAB NUMBER: 88080635 TRAVEL BLANK (T07 INERT)			

W I L S O N L A B O R A T O R I E S

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1820
(913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/09/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-990
 ORDER NO.: 1977A

LAB NUMBER: 88080637

SAMPLE DESCRIPTION: INERT DUPLICATE AS SHOWN

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
HSL PESTICIDE COMPOUNDS			
ALPHA-BHC	ND(8.0)	UG/L	1182-15
BETA-BHC	ND(8.0)	UG/L	1182-15
DELTA-BHC	ND(8.0)	UG/L	1182-15
GAMMA-BHC (LINDANE)	ND(8.0)	UG/L	1182-15
HEPTACHLOR	ND(8.0)	UG/L	1182-15
ALDRIN	ND(8.0)	UG/L	1182-15
HEPTACHLOR EPOXIDE	ND(8.0)	UG/L	1182-15
ENDOSULFAN I	ND(8.0)	UG/L	1182-15
DIELDRIN	ND(8.0)	UG/L	1182-15
4,4'-DDE	ND(16)	UG/L	1182-15
ENDRIN	ND(16)	UG/L	1182-15
ENDOSULFAN II	ND(16)	UG/L	1182-15
4,4'-DDD	ND(16)	UG/L	1182-15
ENDOSULFAN SULFATE	ND(16)	UG/L	1182-15
4,4'-DDT	ND(16)	UG/L	1182-15
METHOXYCHLOR	ND(80)	UG/L	1182-15
ENDRIN KETONE	ND(16)	UG/L	1182-15
ALPHA-CHLORDANE	ND(80)	UG/L	1182-15
GAMMA-CHLORDANE	ND(80)	UG/L	1182-15
TOXAPHENE	ND(160)	UG/L	1182-15
AROCHLOR-1016	ND(80)	UG/L	1182-15
AROCHLOR-1221	ND(80)	UG/L	1182-15
AROCHLOR-1232	ND(80)	UG/L	1182-15
AROCHLOR-1242	ND(80)	UG/L	1182-15
AROCHLOR-1248	ND(80)	UG/L	1182-15
AROCHLOR-1254	ND(160)	UG/L	1182-15
AROCHLOR-1260	ND(160)	UG/L	1182-15
TERRACON EXPL. (40875137) LANDFILL			
2,4,6-TNT	ND(20)	UG/L	
2,4-DNT	ND(10)	UG/L	
2,6-DNT	ND(10)	UG/L	
TETRYL	ND(20)	UG/L	
RDX	ND(22)	UG/L	
HMX	ND(26)	UG/L	

CLIENT: TERRACON (40875137)

FILE NO.: 88-990

ORDER NO.: 1977A

LAB NUMBER: 88080637 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
NITRATE/NITRITE	ND(0.1)	MG/L AS N	1023-157
SULFATE	32	MG/L	515-84
HSL VOLATILE COMPOUNDS			
CHLOROMETHANE	ND(10)	UG/L	1157-9
BROMOMETHANE	ND(10)	UG/L	1157-9
VINYL CHLORIDE	ND(10)	UG/L	1157-9
CHLOROETHANE	ND(10)	UG/L	1157-9
METHYLENE CHLORIDE	ND(5.0)	UG/L	1157-9
ACETONE	ND(10)	UG/L	1157-9
CARBON DISULFIDE	ND(5.0)	UG/L	1157-9
1,1-DICHLOROETHENE	ND(5.0)	UG/L	1157-9
1,1-DICHLOROETHANE	ND(5.0)	UG/L	1157-9
1,2-DICHLOROETHENE (TOTAL)	ND(5.0)	UG/L	1157-9
CHLOROFORM	ND(5.0)	UG/L	1157-9
1,2-DICHLOROETHANE	ND(5.0)	UG/L	1157-9
2-BUTANONE	ND(10)	UG/L	1157-9
1,1,1-TRICHLOROETHANE	ND(5.0)	UG/L	1157-9
CARBON TETRACHLORIDE	ND(5.0)	UG/L	1157-9
VINYL ACETATE	ND(10)	UG/L	1157-9
BROMODICHLOROMETHANE	ND(5.0)	UG/L	1157-9
1,2-DICHLOROPROPANE	ND(5.0)	UG/L	1157-9
CIS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-9
TRICHLOROETHENE	ND(5.0)	UG/L	1157-9
DIBROMOCHLOROMETHANE	ND(5.0)	UG/L	1157-9
1,1,2-TRICHLOROETHANE	ND(5.0)	UG/L	1157-9
BENZENE	ND(5.0)	UG/L	1157-9
TRANS-1,3-DICHLOROPROPENE	ND(5.0)	UG/L	1157-9
BROMOFORM	ND(5.0)	UG/L	1157-9
4-METHYL-2-PENTANONE	ND(10)	UG/L	1157-9
2-HEXANONE	ND(10)	UG/L	1157-9
TETRACHLOROETHENE	ND(5.0)	UG/L	1157-9
1,1,2,2-TETRACHLOROETHANE	ND(5.0)	UG/L	1157-9
TOLUENE	ND(5.0)	UG/L	1157-9
CHLOROBENZENE	ND(5.0)	UG/L	1157-9
ETHYLBENZENE	ND(5.0)	UG/L	1157-9
STYRENE	ND(5.0)	UG/L	1157-9
XYLENE (TOTAL)	ND(5.0)	UG/L	1157-9
HSL SEMIVOLATILE ORGANIC COMPOUNDS			
PHENOL	ND(10)	UG/L	1104-79
BIS(2-CHLOROETHYL) ETHER	ND(10)	UG/L	1104-79
2-CHLOROPHENOL	ND(10)	UG/L	1104-79
1,3-DICHLOROBENZENE	ND(10)	UG/L	1104-79

CLIENT: TERRACON (40875137)

FILE NO.: 88-990

ORDER NO.: 1977A

LAB NUMBER: 88080637 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
1,4-DICHLOROBENZENE	ND(10)	UG/L	1104-79
BENZYL ALCOHOL	ND(10)	UG/L	1104-79
1,2-DICHLOROBENZENE	ND(10)	UG/L	1104-79
2-METHYLPHENOL	ND(10)	UG/L	1104-79
BIS(2-CHLOROISOPROPYL)ETHER	ND(10)	UG/L	1104-79
4-METHYLPHENOL	ND(10)	UG/L	1104-79
N-NITROSO-DI-N-PROPYLAMINE	ND(10)	UG/L	1104-79
HEXACHLOROETHANE	ND(10)	UG/L	1104-79
NITROBENZENE	ND(10)	UG/L	1104-79
ISOPHORONE	ND(10)	UG/L	1104-79
2-NITROPHENOL	ND(50)	UG/L	1104-79
2,4-DIMETHYLPHENOL	ND(10)	UG/L	1104-79
BENZOIC ACID	ND(50)	UG/L	1104-79
BIS(2-CHLOROETHOXY)METHANE	ND(10)	UG/L	1104-79
2,4-DICHLOROPHENOL	ND(10)	UG/L	1104-79
1,2,4-TRICHLOROBENZENE	ND(10)	UG/L	1104-79
NAPHTHALENE	ND(10)	UG/L	1104-79
4-CHLOROANILINE	ND(10)	UG/L	1104-79
HEXACHLOROBUTADIENE	ND(10)	UG/L	1104-79
4-CHLORO-3-METHYLPHENOL	ND(10)	UG/L	1104-79
2-METHYLNAPHTHALENE	ND(10)	UG/L	1104-79
HEXACHLOROCYCLOPENTADIENE	ND(10)	UG/L	1104-79
2,4,6-TRICHLOROPHENOL	ND(10)	UG/L	1104-79
2,4,5-TRICHLOROPHENOL	ND(50)	UG/L	1104-79
2-CHLORONAPHTHALENE	ND(10)	UG/L	1104-79
2-NITROANILINE	ND(50)	UG/L	1104-79
DIMETHYLPHTHALATE	ND(10)	UG/L	1104-79
ACENAPHTHYLENE	ND(10)	UG/L	1104-79
2,6-DINITROTOLUENE	ND(10)	UG/L	1104-79
3-NITROANILINE	ND(50)	UG/L	1104-79
ACENAPHTHENE	ND(10)	UG/L	1104-79
2,4-DINITROPHENOL	ND(50)	UG/L	1104-79
4-NITROPHENOL	ND(50)	UG/L	1104-79
DIBENZOFURAN	ND(10)	UG/L	1104-79
2,4-DINITROTOLUENE	ND(10)	UG/L	1104-79
DIEHYLPHTHALATE	ND(10)	UG/L	1104-79
4-CHLOROPHENYL-PHENYLETHER	ND(10)	UG/L	1104-79
FLUORENE	ND(10)	UG/L	1104-79
4-NITROANILINE	ND(50)	UG/L	1104-79
4,6-DINITRO-2-METHYLPHENOL	ND(50)	UG/L	1104-79
N-NITROSODIPHENYLAMINE(1)	ND(10)	UG/L	1104-79
4-BROMOPHENYL-PHENYLETHER	ND(10)	UG/L	1104-79

CLIENT: TERRACON (40875137)

FILE NO.: 88-990

ORDER NO.: 1977A

LAB NUMBER: 88080637 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
HEXACHLOROBENZENE	ND(10)	UG/L	1104-79
PENTACHLOROPHENOL	ND(50)	UG/L	1104-79
PHENANTHRENE	ND(10)	UG/L	1104-79
ANTHRACENE	ND(10)	UG/L	1104-79
DI-N-BUTYLPHTHALATE	35	UG/L	1104-79
FLUORANTHENE	ND(10)	UG/L	1104-79
PYRENE	ND(10)	UG/L	1104-79
BUTYLBENZYLPHTHALATE	ND(10)	UG/L	1104-79
BENZO(A)ANTHRACENE	ND(10)	UG/L	1104-79
CHRYSENE	ND(10)	UG/L	1104-79
BIS(2-ETHYLHEXYL)PHTHALATE	35	UG/L	1104-79
DI-N-OCTYLPHTHALATE	ND(10)	UG/L	1104-79
BENZO(B)FLUORANTHENE	ND(10)	UG/L	1104-79
BENZO(K)FLUORANTHENE	ND(10)	UG/L	1104-79
BENZO(A)PYRENE	ND(10)	UG/L	1104-79
IDENO(1,2,3-CD)PYRENE	ND(10)	UG/L	1104-79
DIBENZ(A,H)ANTHRACENE	ND(10)	UG/L	1104-79
BENZO(G,H,I)PERYLENE	ND(10)	UG/L	1104-79
3,3'-DICHLOROBENZIDINE	ND(20)	UG/L	1104-79
ARSENIC, TOTAL	0.018	MG/L	1164-21
BARIUM, TOTAL	ND(0.2)	MG/L	1172-259
CADMIUM, TOTAL	ND(0.005)	MG/L	1177-35
CHROMIUM, TOTAL	ND(0.03)	MG/L	1177-30
MERCURY, TOTAL	ND(0.0001)	MG/L	1177-43
SELENIUM, TOTAL	ND(0.005)	MG/L	1165-12
SILVER, TOTAL	ND(0.01)	MG/L	1177-40
ARSENIC, FILTERED IN FIELD	0.028	MG/L	1164-20
BARIUM, FILTERED IN FIELD	ND(0.2)	MG/L	1172-260
CADMIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1177-36
CHROMIUM, FILTERED IN FIELD	ND(0.03)	MG/L	1177-31
MERCURY, FILTERED IN FIELD	ND(0.0001)	MG/L	1177-23
SELENIUM, FILTERED IN FIELD	ND(0.005)	MG/L	1165-11
SILVER, FILTERED IN FIELD	ND(0.01)	MG/L	1177-40

COMMENTS: HSL PESTICIDE COMPOUNDS DUPLICATE OF 88080426
TERRACON EXPLOSIVES DUPLICATE OF 88080426
NITRATE/NITRITE DUPLICATE OF 88080493
SULFATE DUPLICATE OF 88080423
HSL VOLATILE COMPOUNDS DUPLICATE OF 88080423
HSL SEMIVOLATILES DUPLICATE OF 88080426
ALL TOTAL METALS DUPLICATE OF 88080473
ALL METALS FILTERED IN FIELD DUPLICATE OF 88080493

—CONCLUSION—LAB NUMBER: 88080637 INERT DUPLICATE AS SHOWN

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1820
(913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
ATTN: GREGG OLBERTS
P.O. BOX 2025
DAVENPORT, IA 52809

DATE RPID: 09/09/88
DATE RCVD: 07/22/88
PURCHASE AUTH:
FILE NO.: 88-990
ORDER NO.: 1977A

LAB NUMBER: 88080637

SAMPLE DESCRIPTION: INERT DUPLICATE AS SHOWN

ANALYSIS	ANALYST	DATE ANALYZED	DATE PREPPED	METHOD
HSL PESTICIDE COMPOUNDS	HSY	09/01/88	08/04/88	
TERRACON EXPL. (40875137) LANDFILL	CAS		NA	
NITRATE/NITRITE	BAB	08/08/88	NA	
SULFATE	JDL	08/25/88	NA	
HSL VOLATILE COMPOUNDS	BBE	08/19/88	NA	
HSL SEMIVOLATILE ORGANIC COMPOUNDS	LAK	09/02/88	08/01/88	
ARSENIC, TOTAL	DRW	08/11/88	08/03/88	
BARIUM, TOTAL	DRW	08/02/88	08/03/88	
CADMIUM, TOTAL	DRW	08/03/88	08/03/88	
CHROMIUM, TOTAL	DRW	08/03/88	08/03/88	
MERCURY, TOTAL	SMF	08/08/88	08/03/88	
SELENIUM, TOTAL	AMB	08/15/88	08/03/88	
SILVER, TOTAL	DRW	08/03/88	08/03/88	
ARSENIC, FILTERED IN FIELD	DRW	08/10/88	NA	
BARIUM, FILTERED IN FIELD	DRW	08/02/88	NA	
CADMIUM, FILTERED IN FIELD	DRW	08/03/88	NA	
CHROMIUM, FILTERED IN FIELD	DRW	08/03/88	NA	
MERCURY, FILTERED IN FIELD	SMF	08/03/88	NA	
SELENIUM, FILTERED IN FIELD	AMB	08/10/88	NA	
SILVER, FILTERED IN FIELD	DRW	08/03/88	NA	

COMMENTS: HSL PESTICIDE COMPOUNDS DUPLICATE OF 88080426
TERRACON EXPLOSIVES DUPLICATE OF 88080426
NITRATE/NITRITE DUPLICATE OF 88080493
SULFATE DUPLICATE OF 88080423
HSL VOLATILE COMPOUNDS DUPLICATE OF 88080423
HSL SEMIVOLATILES DUPLICATE OF 88080426
ALL TOTAL METALS DUPLICATE OF 88080473
ALL METALS FILTERED IN FIELD DUPLICATE OF 88080493

—CONCLUSION—LAB NUMBER: 88080637 INERT DUPLICATE AS SHOWN

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/09/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-990
 ORDER NO.: 1977A

LAB NUMBER: 88080638
 SAMPLE DESCRIPTION: INERT LANDFILL SPIKE AS SHOWN

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
HSL PESTICIDE COMPOUNDS			
ALPHA-BHC	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
BETA-BHC	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
DELTA-BHC	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
GAMMA-BHC (LINDANE)	104	% REC @ 1.0 UG/L	1182-15
HEPTACHLOR	109	% REC @ 1.0 UG/L	1182-15
ALDRIN	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
HEPTACHLOR EPOXIDE	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
ENDOSULFAN I	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
DIELDRIN	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
4,4'-DDE	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
ENDRIN	127	% REC @ 1.0 UG/L	1182-15
ENDOSULFAN II	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
4,4'-DDD	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
ENDOSULFAN SULFATE	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
4,4'-DDT	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
METHOXYCHLOR	116	% REC @ 1.0 UG/L	1182-15
ENDRIN KETONE	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
ALPHA-CHLORDANE	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
GAMMA-CHLORDANE	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
TOXAPHENE	103	% REC @ 1.0 UG/L	1182-15
AROCHLOR-1016	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
AROCHLOR-1221	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
AROCHLOR-1232	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
AROCHLOR-1242	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
AROCHLOR-1248	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
AROCHLOR-1254	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
AROCHLOR-1260	NOT SPIKED	% REC @ 1.0 UG/L	1182-15
TERRACON EXPL. (40875137) LANDFILL			
2,4,6-TNT	95 @ 50	% REC @ UG/L	
2,4-DNT	94 @ 25	% REC @ UG/L	
2,6-DNT	87 @ 25	% REC @ UG/L	
TETRYL	100 @ 25	% REC @ UG/L	
RDX	100 @ 50	% REC @ UG/L	
HMX	53 @ 50	% REC @ UG/L	

LABORATORY REPORT

PAGE 2

CLIENT: TERRACON (40875137)

FILE NO.: 88-990

ORDER NO.: 1977A

LAB NUMBER: 88080638 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
NITRATE/NITRITE	3.1/103	%	1023-157
SULFATE	62/98	%	515-84
HSL VOLATILE COMPOUNDS			
CHLOROMETHANE	80.5	% REC. @ 40 UG/L	1157-9
BROMOMETHANE	119	% REC. @ 40 UG/L	1157-9
VINYL CHLORIDE	137	% REC. @ 40 UG/L	1157-9
CHLOROETHANE	131	% REC. @ 40 UG/L	1157-9
METHYLENE CHLORIDE	105	% REC. @ 40 UG/L	1157-9
ACETONE	ND(10)	% REC. @ 40 UG/L	1157-9
CARBON DISULFIDE	116	% REC. @ 40 UG/L	1157-9
1,1-DICHLOROETHENE	117	% REC. @ 40 UG/L	1157-9
1,1-DICHLOROETHANE	110	% REC. @ 40 UG/L	1157-9
1,2-DICHLOROETHENE (TOTAL)	122	% REC. @ 40 UG/L	1157-9
CHLOROFORM	98.5	% REC. @ 40 UG/L	1157-9
1,2-DICHLOROETHANE	105	% REC. @ 40 UG/L	1157-9
2-BUTANONE	ND(10)	% REC. @ 40 UG/L	1157-9
1,1,1-TRICHLOROETHANE	103	% REC. @ 40 UG/L	1157-9
CARBON TETRACHLORIDE	121	% REC. @ 40 UG/L	1157-9
VINYL ACETATE	94.5	% REC. @ 40 UG/L	1157-9
BROMODICHLOROMETHANE	97.9	% REC. @ 40 UG/L	1157-9
1,2-DICHLOROPROPANE	104	% REC. @ 40 UG/L	1157-9
CIS-1,3-DICHLOROPROPENE	101	% REC. @ 40 UG/L	1157-9
TRICHLOROETHENE	121	% REC. @ 40 UG/L	1157-9
DIBROMOCHLOROMETHANE	99.5	% REC. @ 40 UG/L	1157-9
1,1,2-TRICHLOROETHANE	114	% REC. @ 40 UG/L	1157-9
BENZENE	83.0	% REC. @ 40 UG/L	1157-9
TRANS-1,3-DICHLOROPROPENE	98.5	% REC. @ 40 UG/L	1157-9
BROMOFORM	127	% REC. @ 40 UG/L	1157-9
4-METHYL-2-PENTANONE	27.0	% REC. @ 40 UG/L	1157-9
2-HEXANONE	ND(10)	% REC. @ 40 UG/L	1157-9
TETRACHLOROETHENE	126	% REC. @ 40 UG/L	1157-9
1,1,2,2-TETRACHLOROETHANE	97.5	% REC. @ 40 UG/L	1157-9
TOLUENE	93.6	% REC. @ 40 UG/L	1157-9
CHLOROBENZENE	111	% REC. @ 40 UG/L	1157-9
ETHYLBENZENE	96.1	% REC. @ 40 UG/L	1157-9
STYRENE	95.7	% REC. @ 40 UG/L	1157-9
XYLENE (TOTAL)	103	% REC. @ 40 UG/L	1157-9
HSL SEMIVOLATILE ORGANIC COMPOUNDS			
PHENOL	29.5 @ 200	% REC. @ UG/L	1104-70
BIS(2-CHLOROETHYL) ETHER	NOT SPIKED	% REC. @ UG/L	1104-70
2-CHLOROPHENOL	56.5 @ 200	% REC. @ UG/L	1104-70
1,3-DICHLOROBENZENE	NOT SPIKED	% REC. @ UG/L	1104-70

CLIENT: TERRACON (40875137)

FILE NO.: 88-990

ORDER NO.: 1977A

LAB NUMBER: 88080638 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
1,4-DICHLOROBENZENE	55.5 @ 100	% REC. @ UG/L	1104-70
BENZYL ALCOHOL	NOT SPIKED	% REC. @ UG/L	1104-70
1,2-DICHLOROBENZENE	NOT SPIKED	% REC. @ UG/L	1104-70
2-METHYLPHENOL	NOT SPIKED	% REC. @ UG/L	1104-70
BIS(2-CHLOROISOPROPYL) ETHER	NOT SPIKED	% REC. @ UG/L	1104-70
4-METHYLPHENOL	NOT SPIKED	% REC. @ UG/L	1104-70
N-NITROSO-DI-N-PROPYLAMINE	78.0 @ 100	% REC. @ UG/L	1104-70
HEXACHLOROETHANE	NOT SPIKED	% REC. @ UG/L	1104-70
NITROBENZENE	NOT SPIKED	% REC. @ UG/L	1104-70
ISOPHORONE	NOT SPIKED	% REC. @ UG/L	1104-70
2-NITROPHENOL	NOT SPIKED	% REC. @ UG/L	1104-70
2,4-DIMETHYLPHENOL	NOT SPIKED	% REC. @ UG/L	1104-70
BENZOIC ACID	NOT SPIKED	% REC. @ UG/L	1104-70
BIS(2-CHLOROETHOXY)METHANE	NOT SPIKED	% REC. @ UG/L	1104-70
2,4-DICHLOROPHENOL	NOT SPIKED	% REC. @ UG/L	1104-70
1,2,4-TRICHLOROBENZENE	59.7 @ 100	% REC. @ UG/L	1104-70
NAPHTHALENE	NOT SPIKED	% REC. @ UG/L	1104-70
4-CHLOROANILINE	NOT SPIKED	% REC. @ UG/L	1104-70
HEXACHLOROBUTADIENE	NOT SPIKED	% REC. @ UG/L	1104-70
4-CHLORO-3-METHYLPHENOL	51.5 @ 200	% REC. @ UG/L	1104-70
2-METHYLNAPHTHALENE	NOT SPIKED	% REC. @ UG/L	1104-70
HEXACHLOROCYCLOPENTADIENE	NOT SPIKED	% REC. @ UG/L	1104-70
2,4,6-TRICHLOROPHENOL	NOT SPIKED	% REC. @ UG/L	1104-70
2,4,5-TRICHLOROPHENOL	NOT SPIKED	% REC. @ UG/L	1104-70
2-CHLORONAPHTHALENE	NOT SPIKED	% REC. @ UG/L	1104-70
2-NITROANILINE	NOT SPIKED	% REC. @ UG/L	1104-70
DIMETHYLNAPHTHALENE	NOT SPIKED	% REC. @ UG/L	1104-70
ACENAPHTHYLENE	NOT SPIKED	% REC. @ UG/L	1104-70
2,6-DINITROTOLUENE	NOT SPIKED	% REC. @ UG/L	1104-70
3-NITROANILINE	NOT SPIKED	% REC. @ UG/L	1104-70
ACENAPHTHENE	65.8 @ 100	% REC. @ UG/L	1104-70
2,4-DINITROPHENOL	NOT SPIKED	% REC. @ UG/L	1104-70
4-NITROPHENOL	NOT FOUND	% REC. @ UG/L	1104-70
DIBENZOFURAN	NOT SPIKED	% REC. @ UG/L	1104-70
2,4-DINITROTOLUENE	58.0 @ 100	% REC. @ UG/L	1104-70
DIETHYLNAPHTHALENE	NOT SPIKED	% REC. @ UG/L	1104-70
4-CHLOROPHENYL-PHENYLETHER	NOT SPIKED	% REC. @ UG/L	1104-70
FLUORENE	NOT SPIKED	% REC. @ UG/L	1104-70
4-NITROANILINE	NOT SPIKED	% REC. @ UG/L	1104-70
4,6-DINITRO-2-METHYLPHENOL	NOT SPIKED	% REC. @ UG/L	1104-70
N-NITROSODIPHENYLAMINE (1)	NOT SPIKED	% REC. @ UG/L	1104-70
4-BROMOPHENYL-PHENYLETHER	NOT SPIKED	% REC. @ UG/L	1104-70

LABORATORY REPORT

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CLIENT: TERRACON (40875137)

FILE NO.: 88-990

ORDER NO.: 1977A

LAB NUMBER: 88080638 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
HEXACHLOROBENZENE	NOT SPIKED	% REC. @ UG/L	1104-70
PENTACHLOROPHENOL	69.2 @ 200	% REC. @ UG/L	1104-70
PHENANTHRENE	NOT SPIKED	% REC. @ UG/L	1104-70
ANTHRACENE	NOT SPIKED	% REC. @ UG/L	1104-70
DI-N-BUTYLPHTHALATE	NOT SPIKED	% REC. @ UG/L	1104-70
FLUORANTHENE	NOT SPIKED	% REC. @ UG/L	1104-70
PYRENE	95.3 @ 100	% REC. @ UG/L	1104-70
BUTYLBENZYLPHTHALATE	NOT SPIKED	% REC. @ UG/L	1104-70
BENZO(A)ANTHRACENE	NOT SPIKED	% REC. @ UG/L	1104-70
CHRYSENE	NOT SPIKED	% REC. @ UG/L	1104-70
BIS(2-ETHYLHEXYL)PHTHALATE	NOT SPIKED	% REC. @ UG/L	1104-70
DI-N-OCTYLPHTHALATE	NOT SPIKED	% REC. @ UG/L	1104-70
BENZO(B)FLUORANTHENE	NOT SPIKED	% REC. @ UG/L	1104-70
BENZO(K)FLUORANTHENE	NOT SPIKED	% REC. @ UG/L	1104-70
BENZO(A)PYRENE	NOT SPIKED	% REC. @ UG/L	1104-70
IDENO(1,2,3-CD)PYRENE	NOT SPIKED	% REC. @ UG/L	1104-70
DIBENZ(A,H)ANTHRACENE	NOT SPIKED	% REC. @ UG/L	1104-70
BENZO(G,H,I)PERYLENE	NOT SPIKED	% REC. @ UG/L	1104-70
3,3'-DICHLOROBENZIDINE	NOT SPIKED	% REC. @ UG/L	1104-70
ARSENIC, TOTAL	0.054/90	%	1164-21
BARIUM, TOTAL	2.06/103	%	1172-259
CADMIUM, TOTAL	0.049/98	%	1177-35
CHROMIUM, TOTAL	0.17/85	%	1177-30
MERCURY, TOTAL	0.0010/100	%	1177-43
SELENIUM, TOTAL	0.0091/91	%	1165-12
SILVER, TOTAL	0.01	%	1177-40
ARSENIC, FILTERED IN FIELD	0.070/84	%	1164-21
BARIUM, FILTERED IN FIELD	4.25/106	%	1172-260
CADMIUM, FILTERED IN FIELD	0.258/103	%	1177-36
CHROMIUM, FILTERED IN FIELD	0.99/99	%	1177-31
MERCURY, FILTERED IN FIELD	0.0022/110	%	1177-23
SELENIUM, FILTERED IN FIELD	0.018/89	%	1165-12
SILVER, FILTERED IN FIELD	0.027/108	%	1177-40

COMMENTS: HSL PESTICIDE COMPOUNDS SPIKE OF 88080425
TERRACON EXPLOSIVES SPIKE OF 88080425
NITRATE/NITRITE SPIKE OF 88080493
SULFATE SPIKE OF 88080423
HSL VOLATILE COMPOUNDS SPIKE OF 88080423
HSL SEMIVOLATILES SPIKE OF 88080426
ALL TOTAL METALS SPIKE OF 88080473
ALL METALS FILTERED IN FIELD SPIKE OF 88080493
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WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATIN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/09/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-990
 ORDER NO.: 1977A

LAB NUMBER: 88080638

SAMPLE DESCRIPTION: INERT LANDFILL SPIKE AS SHOWN

ANALYSIS	ANALYST	DATE ANALYZED	DATE PREPPED	METHOD
HSL PESTICIDE COMPOUNDS	HSY	09/01/88	08/04/88	
TERRACON EXPL. (40875137) LANDFILL	CAS		NA	
NITRATE/NITRITE	BAB	08/08/88	NA	
SULFATE	JDL	08/25/88	NA	
HSL VOLATILE COMPOUNDS	BEE	08/19/88	NA	
HSL SEMIVOLATILE ORGANIC COMPOUNDS	LAK	08/31/88	08/01/88	
ARSENIC, TOTAL	DRW	08/11/88	08/03/88	
BARIUM, TOTAL	DRW	08/02/88	08/03/88	
CADMIUM, TOTAL	DRW	08/03/88	08/03/88	
CHROMIUM, TOTAL	DRW	08/03/88	08/03/88	
MERCURY, TOTAL	SMF	08/08/88	08/03/88	
SELENIUM, TOTAL	AMB	08/15/88	08/03/88	
SILVER, TOTAL	DRW	08/03/88	08/03/88	
ARSENIC, FILTERED IN FIELD	DRW	08/11/88	NA	
BARIUM, FILTERED IN FIELD	DRW	08/02/88	NA	
CADMIUM, FILTERED IN FIELD	DRW	08/03/88	NA	
CHROMIUM, FILTERED IN FIELD	DRW	08/03/88	NA	
MERCURY, FILTERED IN FIELD	SMF	08/03/88	NA	
SELENIUM, FILTERED IN FIELD	AMB	08/15/88	NA	
SILVER, FILTERED IN FIELD	DRW	08/03/88	NA	

COMMENTS: HSL PESTICIDE COMPOUNDS SPIKE OF 88080425
 TERRACON EXPLOSIVES SPIKE OF 88080425
 NITRATE/NITRITE SPIKE OF 88080493
 SULFATE SPIKE OF 88080423
 HSL VOLATILE COMPOUNDS SPIKE OF 88080423
 HSL SEMIVOLATILES SPIKE OF 88080426
 ALL TOTAL METALS SPIKE OF 88080473
 ALL METALS FILTERED IN FIELD SPIKE OF 88080493

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WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATIN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/09/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-990
 ORDER NO.: 1977A

LAB NUMBER: 88080949
 SAMPLE DESCRIPTION: CONTROL SAMPLE INERT

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
TERRACON EXPL. (40875137) LANDFILL			
2,4,6-TNT	105	% REC @ 50 UG/L	
2,4-DNT	109	% REC @ 50 UG/L	
2,6-DNT	102	% REC @ 50 UG/L	
TETRYL	95	% REC @ 50 UG/L	
RDX	108	% REC @ 50 UG/L	
HMX	103	% REC @ 50 UG/L	
NITRATE/NITRITE	4.0/4.0/100	%	1023-157
SULFATE	50/50/100	%	515-84
HSL VOLATILE COMPOUNDS			
CHLOROMETHANE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
BROMOMETHANE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
VINYL CHLORIDE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
CHLOROETHANE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
METHYLENE CHLORIDE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
ACETONE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
CARBON DISULFIDE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
1,1-DICHLOROETHENE	123	% REC @ 20.0 UG/L	1156-35
1,1-DICHLOROETHANE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
1,2-DICHLOROETHENE (TOTAL)	96.2	% REC @ 20.0 UG/L	1156-35
CHLOROFORM	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
1,2-DICHLOROETHANE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
2-BUTANONE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
1,1,1-TRICHLOROETHANE	111	% REC @ 20.0 UG/L	1156-35
CARBON TETRACHLORIDE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
VINYL ACETATE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
BROMODICHLOROMETHANE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
1,2-DICHLOROPROPANE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
CIS-1,3-DICHLOROPROPENE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
TRICHLOROETHENE	105	% REC @ 20.0 UG/L	1156-35
DIBROMOCHLOROMETHANE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
1,1,2-TRICHLOROETHANE	84.0	% REC @ 20.0 UG/L	1156-35
BENZENE	98.0	% REC @ 20.0 UG/L	1156-35
TRANS-1,3-DICHLOROPROPENE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
BROMOFORM	100	% REC @ 20.0 UG/L	1156-35

LABORATORY REPORT

PAGE 2

CLIENT: TERRACON (40875137)

FILE NO.: 88-990

ORDER NO.: 1977A

LAB NUMBER: 88080949 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
4-METHYL-2-PENTANONE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
2-HEXANONE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
TETRACHLOROETHENE	117	% REC @ 20.0 UG/L	1156-35
1,1,2,2-TETRACHLOROETHANE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
TOLUENE	109	% REC @ 20.0 UG/L	1156-35
CHLOROBENZENE	103	% REC @ 20.0 UG/L	1156-35
ETHYLBENZENE	101	% REC @ 20.0 UG/L	1156-35
STYRENE	NOT SPIKED	% REC @ 20.0 UG/L	1156-35
XYLENE (TOTAL)	108	% REC @ 20.0 UG/L	1156-35
HSL SEMIVOLATILE ORGANIC COMPOUNDS			
PHENOL	46.0	% REC. @ 100 UG/L	1104-70
BIS(2-CHLOROETHYL) ETHER	94.3	% REC. @ 100 UG/L	1104-70
2-CHLOROPHENOL	90.9	% REC. @ 100 UG/L	1104-70
1,3-DICHLOROBENZENE	90.2	% REC. @ 100 UG/L	1104-70
1,4-DICHLOROBENZENE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
BENZYL ALCOHOL	NOT SPIKED	% REC. @ 100 UG/L	1104-70
1,2-DICHLOROBENZENE	81.5	% REC. @ 100 UG/L	1104-70
2-METHYLPHENOL	NOT SPIKED	% REC. @ 100 UG/L	1104-70
BIS(2-CHLOROISOPROPYL) ETHER	NOT SPIKED	% REC. @ 100 UG/L	1104-70
4-METHYLPHENOL	NOT SPIKED	% REC. @ 100 UG/L	1104-70
N-NITROSO-DI-N-PROPYLAMINE	104	% REC. @ 100 UG/L	1104-70
HEXACHLOROETHANE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
NITROBENZENE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
ISOPHORONE	93.7	% REC. @ 100 UG/L	1104-70
2-NITROPHENOL	72.0	% REC. @ 100 UG/L	1104-70
2,4-DIMETHYLPHENOL	94.9	% REC. @ 100 UG/L	1104-70
BENZOIC ACID	NOT SPIKED	% REC. @ 100 UG/L	1104-70
BIS(2-CHLOROETHOXY)METHANE	96.7	% REC. @ 100 UG/L	1104-70
2,4-DICHLOROPHENOL	71.6	% REC. @ 100 UG/L	1104-70
1,2,4-TRICHLOROBENZENE	79.3	% REC. @ 100 UG/L	1104-70
NAPHTHALENE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
4-CHLOROANILINE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
HEXACHLOROBUTADIENE	52.8	% REC. @ 100 UG/L	1104-70
4-CHLORO-3-METHYLPHENOL	74.8	% REC. @ 100 UG/L	1104-70
2-METHYLNAPHTHALENE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
HEXACHLOROCYCLOPENTADIENE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
2,4,6-TRICHLOROPHENOL	81.7	% REC. @ 100 UG/L	1104-70
2,4,5-TRICHLOROPHENOL	NOT SPIKED	% REC. @ 100 UG/L	1104-70
2-CHLORONAPHTHALENE	84.9	% REC. @ 100 UG/L	1104-70
2-NITROANILINE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
DIMETHYLPHTHALATE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
ACENAPHTHYLENE	NOT SPIKED	% REC. @ 100 UG/L	1104-70

CLIENT: TERRACON (40875137)

FILE NO.: 88-990

ORDER NO.: 1977A

LAB NUMBER: 88080949 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
2,6-DINITROTOLUENE	88.8	% REC. @ 100 UG/L	1104-70
3-NITROANILINE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
ACENAPHTHENE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
2,4-DINITROPHENOL	NOT SPIKED	% REC. @ 100 UG/L	1104-70
4-NITROPHENOL	NOT FOUND	% REC. @ 100 UG/L	1104-70
DIBENZOFURAN	NOT SPIKED	% REC. @ 100 UG/L	1104-70
2,4-DINITROTOLUENE	84.2	% REC. @ 100 UG/L	1104-70
DIETHYLPHTHALATE	85.9	% REC. @ 100 UG/L	1104-70
4-CHLOROPHENYL-PHENYLETHER	NOT SPIKED	% REC. @ 100 UG/L	1104-70
FLUORENE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
4-NITROANILINE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
4,6-DINITRO-2-METHYLPHENOL	69.4	% REC. @ 100 UG/L	1104-70
N-NITROSODIPHENYLAMINE(1)	NOT SPIKED	% REC. @ 100 UG/L	1104-70
4-BROMOPHENYL-PHENYLETHER	NOT SPIKED	% REC. @ 100 UG/L	1104-70
HEXACHLOROBENZENE	85.8	% REC. @ 100 UG/L	1104-70
PENTACHLOROPHENOL	52.6	% REC. @ 100 UG/L	1104-70
PHENANTHRENE	85.0	% REC. @ 100 UG/L	1104-70
ANTHRACENE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
DI-N-BUTYLPHTHALATE	90.0	% REC. @ 100 UG/L	1104-70
FLUORANTHENE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
PYRENE	78.5	% REC. @ 100 UG/L	1104-70
BUTYLBENZYLPHTHALATE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
BENZO(A)ANTHRACENE	85.6	% REC. @ 100 UG/L	1104-70
CHRYSENE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
BIS(2-ETHYLHEXYL)PHTHALATE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
DI-N-OCTYLPHTHALATE	109	% REC. @ 100 UG/L	1104-70
BENZO(B)FLUORANTHENE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
BENZO(K)FLUORANTHENE	71.7	% REC. @ 100 UG/L	1104-70
BENZO(A)PYRENE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
IDENO(1,2,3-CD)PYRENE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
DIBENZ(A,H)ANTHRACENE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
BENZO(G,H,I)PERYLENE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
3,3'-DICHLOROBENZIDINE	NOT SPIKED	% REC. @ 100 UG/L	1104-70
ARSENIC, TOTAL	0.050/0.048/96	%	1164-17
BARIUM, TOTAL	2.0/1.96/99	%	1172-259
CADMIUM, TOTAL	0.050/0.050/100	%	1177-34
CHROMIUM, TOTAL	0.20/0.19/90	%	1177-29
MERCURY, TOTAL	0.001/0.001/100	%	1130-50
SELENIUM, TOTAL	0.025/0.023/92	%	1165-10
SILVER, TOTAL	0.50/0.50/100%	%	1177-39
ARSENIC, FILTERED IN FIELD	0.100/0.103/103	%	1164-20
BARIUM, FILTERED IN FIELD	5.0/4.9/99	%	1181-54

LABORATORY REPORT

PAGE 4

CLIENT: TERRACON (40875137)

FILE NO.: 88-990

ORDER NO.: 1977A

LAB NUMBER: 88080949 (CONT.)

<u>ANALYSIS</u>	<u>CONCENTRATION</u>	<u>UNITS</u>	<u>BOOK/PAGE</u>
CADMIUM, FILTERED IN FIELD	0.500/0.518/104	%	1177-35
CHROMIUM, FILTERED IN FIELD	2.00/1.94/97	%	1177-30
MERCURY, FILTERED IN FIELD	0.001/0.001/100	%	1130-50
SELENIUM, FILTERED IN FIELD	0.020/0.022/110	%	1165-11
SILVER, FILTERED IN FIELD	0.50/0.44/88	%	1177-2

—CONCLUSION—LAB NUMBER: 88080949 CONTROL SAMPLE INERT

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/09/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-990
 ORDER NO.: 1977A

LAB NUMBER: 88080949
 SAMPLE DESCRIPTION: CONTROL SAMPLE INERT

ANALYSIS	ANALYST	DATE ANALYZED	DATE PREPPED	METHOD
TERRACON EXPL. (40875137) LANDFILL	CAS		NA	
NITRATE/NITRITE	BAB	08/08/88	NA	
SULFATE	JDL	08/25/88	NA	
HSL VOLATILE COMPOUNDS	BBE	08/25/88	NA	
HSL SEMIVOLATILE ORGANIC COMPOUNDS	LAK	08/31/88	08/01/88	
ARSENIC, TOTAL	AMB	08/17/88	NA	
BARIUM, TOTAL	DRW	08/17/88	NA	
CADMIUM, TOTAL	DRW	08/17/88	NA	
CHROMIUM, TOTAL	DRW	08/17/88	NA	
MERCURY, TOTAL	SMF	08/17/88	NA	
SELENIUM, TOTAL	DRW	08/05/88	NA	
SILVER, TOTAL	DRW	08/17/88	NA	
ARSENIC, FILTERED IN FIELD	AMB	08/17/88	NA	
BARIUM, FILTERED IN FIELD	DRW	08/06/88	NA	
CADMIUM, FILTERED IN FIELD	DRW	08/17/88	NA	
CHROMIUM, FILTERED IN FIELD	DRW	08/17/88	NA	
MERCURY, FILTERED IN FIELD	SMF	08/17/88	NA	
SELENIUM, FILTERED IN FIELD	AMB	08/17/88	NA	
SILVER, FILTERED IN FIELD	DRW	08/17/88	NA	

—CONCLUSION—LAB NUMBER: 88080949 CONTROL SAMPLE INERT

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATIN: GREGG OLBERTS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPID: 09/09/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-990
 ORDER NO.: 1977A

LAB NUMBER: 88090494
 SAMPLE DESCRIPTION: EXTRACTION BL 88080423-475

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
HSL SEMIVOLATILE ORGANIC COMPOUNDS			
PHENOL	ND(10)	UG/L	1104-70
BIS(2-CHLOROETHYL) ETHER	ND(10)	UG/L	1104-70
2-CHLOROPHENOL	ND(10)	UG/L	1104-70
1,3-DICHLOROBENZENE	ND(10)	UG/L	1104-70
1,4-DICHLOROBENZENE	ND(10)	UG/L	1104-70
BENZYL ALCOHOL	ND(10)	UG/L	1104-70
1,2-DICHLOROBENZENE	ND(10)	UG/L	1104-70
2-METHYLPHENOL	ND(10)	UG/L	1104-70
BIS(2-CHLOROISOPROPYL) ETHER	ND(10)	UG/L	1104-70
4-METHYLPHENOL	ND(10)	UG/L	1104-70
N-NITROSO-DI-N-PROPYLAMINE	ND(10)	UG/L	1104-70
HEXACHLOROETHANE	ND(10)	UG/L	1104-70
NITROBENZENE	ND(10)	UG/L	1104-70
ISOPHORONE	ND(10)	UG/L	1104-70
2-NITROPHENOL	ND(10)	UG/L	1104-70
2,4-DIMETHYLPHENOL	ND(10)	UG/L	1104-70
BENZOIC ACID	ND(50)	UG/L	1104-70
BIS(2-CHLOROETHOXY)METHANE	ND(10)	UG/L	1104-70
2,4-DICHLOROPHENOL	ND(10)	UG/L	1104-70
1,2,4-TRICHLOROBENZENE	ND(10)	UG/L	1104-70
NAPHTHALENE	ND(10)	UG/L	1104-70
4-CHLOROANILINE	ND(10)	UG/L	1104-70
HEXACHLOROBTADIENE	ND(10)	UG/L	1104-70
4-CHLORO-3-METHYLPHENOL	ND(10)	UG/L	1104-70
2-METHYLNAPHTHALENE	ND(10)	UG/L	1104-70
HEXACHLOROCYCLOPENTADIENE	ND(10)	UG/L	1104-70
2,4,6-TRICHLOROPHENOL	ND(10)	UG/L	1104-70
2,4,5-TRICHLOROPHENOL	ND(50)	UG/L	1104-70
2-CHLORONAPHTHALENE	ND(10)	UG/L	1104-70
2-NITROANILINE	ND(50)	UG/L	1104-70
DIMETHYLNAPHTHALATE	ND(10)	UG/L	1104-70
ACENAPHTHYLENE	ND(10)	UG/L	1104-70
2,6-DINITROTOLUENE	ND(10)	UG/L	1104-70
3-NITROANILINE	ND(50)	UG/L	1104-70

LABORATORY REPORT

PAGE 2

CLIENT: TERRACON (40875137)

FILE NO.: 88-990
ORDER NO.: 1977A

LAB NUMBER: 88090494 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
ACENAPHTHENE	ND(10)	UG/L	1104-70
2,4-DINITROPHENOL	ND(50)	UG/L	1104-70
4-NITROPHENOL	ND(50)	UG/L	1104-70
DIBENZOFURAN	ND(10)	UG/L	1104-70
2,4-DINITROTOLUENE	ND(10)	UG/L	1104-70
DIETHYLPHTHALATE	ND(10)	UG/L	1104-70
4-CHLOROPHENYL-PHENYLETHER	ND(10)	UG/L	1104-70
FLUORENE	ND(10)	UG/L	1104-70
4-NITROANILINE	ND(50)	UG/L	1104-70
4,6-DINITRO-2-METHYLPHENOL	ND(50)	UG/L	1104-70
N-NITROSODIPHENYLAMINE(1)	ND(10)	UG/L	1104-70
4-BROMOPHENYL-PHENYLETHER	ND(10)	UG/L	1104-70
HEXACHLOROBENZENE	ND(10)	UG/L	1104-70
PENTACHLOROPHENOL	ND(50)	UG/L	1104-70
PHENANTHRENE	ND(10)	UG/L	1104-70
ANTHRACENE	ND(10)	UG/L	1104-70
DI-N-BUTYLPHTHALATE	ND(10)	UG/L	1104-70
FLUORANTHENE	ND(10)	UG/L	1104-70
PYRENE	ND(10)	UG/L	1104-70
BUTYLBENZYLPHTHALATE	ND(10)	UG/L	1104-70
BENZO(A)ANTHRACENE	ND(10)	UG/L	1104-70
CHRYSENE	ND(10)	UG/L	1104-70
BIS(2-ETHYLHEXYL)PHTHALATE	23	UG/L	1104-70
DI-N-OCTYLPHTHALATE	ND(10)	UG/L	1104-70
BENZO(B)FLUORANTHENE	ND(10)	UG/L	1104-70
BENZO(K)FLUORANTHENE	ND(10)	UG/L	1104-70
BENZO(A)PYRENE	ND(10)	UG/L	1104-70
IDENO(1,2,3-CD)PYRENE	ND(10)	UG/L	1104-70
DIBENZ(A,H)ANTHRACENE	ND(10)	UG/L	1104-70
BENZO(G,H,I)PERYLENE	ND(10)	UG/L	1104-70
3,3'-DICHLOROBENZIDINE	ND(20)	UG/L	1104-70

—CONCLUSION—LAB NUMBER: 88090494 EXTRACTION BL 88080423-475

W I L S O N L A B O R A T O R I E S

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
ATTN: GREGG OLBERTS
P.O. BOX 2025
DAVENPORT, IA 52809

DATE RPID: 09/09/88
DATE RCVD: 07/22/88
PURCHASE AUTH:
FILE NO.: 88-990
ORDER NO.: 1977A

LAB NUMBER: 88090494
SAMPLE DESCRIPTION: EXTRACTION BL 88080423-475

<u>ANALYSIS</u>	<u>ANALYST</u>	<u>DATE ANALYZED</u>	<u>DATE PREPPED</u>	<u>METHOD</u>
HSL SEMIVOLATILE ORGANIC COMPOUNDS	LAK	08/31/88	NA	MS228

~~—CONCLUSION—~~ LAB NUMBER: 88090494 EXTRACTION BL 88080423-475

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
 ATTN: GREGG OLBERIS
 P.O. BOX 2025
 DAVENPORT, IA 52809

DATE RPTD: 09/09/88
 DATE RCVD: 07/22/88
 PURCHASE AUTH:
 FILE NO.: 88-990
 ORDER NO.: 1977A

LAB NUMBER: 88090495
 SAMPLE DESCRIPTION: EXTRACTION BLANK

ANALYSIS	CONCENTRATION	UNITS	BOOK-PAGE
HSL SEMIVOLATILE ORGANIC COMPOUNDS			
PHENOL	ND(10)	UG/L	1104-76
BIS(2-CHLOROETHYL) ETHER	ND(10)	UG/L	1104-76
2-CHLOROPHENOL	ND(10)	UG/L	1104-76
1,3-DICHLOROBENZENE	ND(10)	UG/L	1104-76
1,4-DICHLOROBENZENE	ND(10)	UG/L	1104-76
BENZYL ALCOHOL	ND(10)	UG/L	1104-76
1,2-DICHLOROBENZENE	ND(10)	UG/L	1104-76
2-METHYLPHENOL	ND(10)	UG/L	1104-76
BIS(2-CHLOROISOPROPYL) ETHER	ND(10)	UG/L	1104-76
4-METHYLPHENOL	ND(10)	UG/L	1104-76
N-NITROSO-DI-N-PROPYLAMINE	ND(10)	UG/L	1104-76
HEXACHLOROETHANE	ND(10)	UG/L	1104-76
NITROBENZENE	ND(10)	UG/L	1104-76
ISOPHORONE	ND(10)	UG/L	1104-76
2-NITROPHENOL	ND(10)	UG/L	1104-76
2,4-DIMETHYLPHENOL	ND(10)	UG/L	1104-76
BENZOIC ACID	ND(50)	UG/L	1104-76
BIS(2-CHLOROETHOXY)METHANE	ND(10)	UG/L	1104-76
2,4-DICHLOROPHENOL	ND(10)	UG/L	1104-76
1,2,4-TRICHLOROBENZENE	ND(10)	UG/L	1104-76
NAPHTHALENE	ND(10)	UG/L	1104-76
4-CHLOROANILINE	ND(10)	UG/L	1104-76
HEXACHLOROBUTADIENE	ND(10)	UG/L	1104-76
4-CHLORO-3-METHYLPHENOL	ND(10)	UG/L	1104-76
2-METHYLNAPHTHALENE	ND(10)	UG/L	1104-76
HEXACHLOROCYCLOPENTADIENE	ND(10)	UG/L	1104-76
2,4,6-TRICHLOROPHENOL	ND(10)	UG/L	1104-76
2,4,5-TRICHLOROPHENOL	ND(50)	UG/L	1104-76
2-CHLORONAPHTHALENE	ND(10)	UG/L	1104-76
2-NITROANILINE	ND(50)	UG/L	1104-76
DIMETHYLPHTHALATE	ND(10)	UG/L	1104-76
ACENAPHTHYLENE	ND(10)	UG/L	1104-76
2,6-DINITROTOLUENE	ND(10)	UG/L	1104-76
3-NITROANILINE	ND(50)	UG/L	1104-76

LABORATORY REPORT

PAGE 2

CLIENT: TERRACON (40875137)

FILE NO.: 88-990

ORDER NO.: 1977A

LAB NUMBER: 88090495 (CONT.)

ANALYSIS	CONCENTRATION	UNITS	BOOK/PAGE
ACENAPHTHENE	ND(10)	UG/L	1104-76
2,4-DINITROPHENOL	ND(50)	UG/L	1104-76
4-NITROPHENOL	ND(50)	UG/L	1104-76
DIBENZOFURAN	ND(10)	UG/L	1104-76
2,4-DINITROTOLUENE	ND(10)	UG/L	1104-76
DIETHYLPHTHALATE	ND(10)	UG/L	1104-76
4-CHLOROPHENYL-PHENYLETHER	ND(10)	UG/L	1104-76
FLUORENE	ND(10)	UG/L	1104-76
4-NITROANILINE	ND(50)	UG/L	1104-76
4,6-DINITRO-2-METHYLPHENOL	ND(50)	UG/L	1104-76
N-NITROSODIPHENYLAMINE(1)	ND(10)	UG/L	1104-76
4-BROMOPHENYL-PHENYLETHER	ND(10)	UG/L	1104-76
HEXACHLOROBENZENE	ND(10)	UG/L	1104-76
PENTACHLOROPHENOL	ND(50)	UG/L	1104-76
PHENANTHRENE	ND(10)	UG/L	1104-76
ANTHRACENE	ND(10)	UG/L	1104-76
DI-N-BUTYLPHTHALATE	ND(10)	UG/L	1104-76
FLUORANTHENE	ND(10)	UG/L	1104-76
PYRENE	ND(10)	UG/L	1104-76
BUTYLBENZYLPHTHALATE	ND(10)	UG/L	1104-76
BENZO(A)ANTHRACENE	ND(10)	UG/L	1104-76
CHRYSENE	ND(10)	UG/L	1104-76
BIS(2-ETHYLHEXYL)PHTHALATE	ND(10)	UG/L	1104-76
DI-N-OCTYLPHTHALATE	ND(10)	UG/L	1104-76
BENZO(B)FLUORANTHENE	ND(10)	UG/L	1104-76
BENZO(K)FLUORANTHENE	ND(10)	UG/L	1104-76
BENZO(A)PYRENE	ND(10)	UG/L	1104-76
IDENO(1,2,3-CD)PYRENE	ND(10)	UG/L	1104-76
DIBENZ(A,H)ANTHRACENE	ND(10)	UG/L	1104-76
BENZO(G,H,I)PERYLENE	ND(10)	UG/L	1104-76
3,3'-DICHLOROBENZIDINE	ND(20)	UG/L	1104-76

—CONCLUSION—LAB NUMBER: 88090495 EXTRACTION BLANK

WILSON LABORATORIES

525 NORTH EIGHTH STREET - P.O. BOX 1820 - SALINA, KANSAS 67402-1884 - (913)825-7186

LABORATORY REPORT

PAGE 1

CLIENT: TERRACON (40875137)
ATTN: GREGG OLBERTS
P.O. BOX 2025
DAVENPORT, IA 52809

DATE RPID: 09/09/88
DATE RCVD: 07/22/88
PURCHASE AUTH:
FILE NO.: 88-990
ORDER NO.: 1977A

LAB NUMBER: 88090495
SAMPLE DESCRIPTION: EXTRACTION BLANK

ANALYSIS	ANALYST	DATE ANALYZED	DATE PREPPED	METHOD
HSL SEMIVOLATILE ORGANIC COMPOUNDS	LAK	09/02/88	NA	MS228

—CONCLUSION—LAB NUMBER: 88090495 EXTRACTION BLANK

APPENDIX H

MISSOURI RIVER DIVISION, CORPS OF ENGINEERS
GROUNDWATER ANALYSES QA DATA

GROUNDWATER QUALITY ASSESSMENT
IOWA ARMY AMMUNITION PLANT (IAAP)
MIDDLETOWN, IOWA

CONTRACT NO. DACA63-87-C-0139



DEPARTMENT OF THE ARMY
MISSOURI RIVER DIVISION, CORPS OF ENGINEERS
P.O. BOX 103, DOWNTOWN STATION
OMAHA, NEBRASKA 68101-0103

REPLY TO
ATTENTION OF

CESWF-ED-GG (200)

28 November 88

MEMORANDUM FOR: Commander, US Army Engineer District, Fort Worth,
ATTN: CESWF-ED-GG (Roy Hagen), 819 Taylor Street, Fort Worth, TX
76102-0300

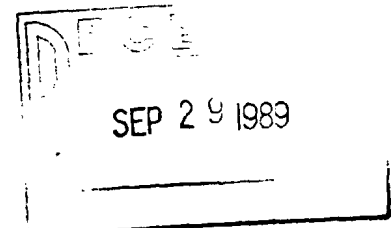
SUBJECT: Iowa Army Ammunition Plant, Middletown, Iowa, QA/QC Final
Report.

1. This is in response to the informal request from CESWF-ED-GG for quality assurance testing.
2. Enclosed is a copy of the QA/QC Final Report, SAB.
3. The Contractor's data met the Quality Control criteria as specified in the approved QCP.
4. Several problems were noted with sample shipments. The QA/QC data generally agreed with only minor discrepancies observed.
5. If there are any questions or comments, please call Joe Solsky, (402) 444-4304.

FOR THE COMMANDER:

1 Encl
QA/QC Report

W. P. Todsen
for WILLIAM P. TODSEN, P.E.
Chief, Engineering Division



DEPARTMENT OF THE ARMY
MISSOURI RIVER DIVISION, CORPS OF ENGINEERS
DIVISION LABORATORY
OMAHA, NEBRASKA 68102

Sheet 1 of 2

25 NOV 1988

Subject: OA/OC Final Report

Project: Iowa Army Ammunition Plant, Middletown, Iowa
Intended Use: RCRA Project - Groundwater Quality Assessment
Source of Material: Inert Landfill and Line 6 Areas

Submitted by: Roy Hagen, CESWF-ED-GG

Date Sampled: _____, Date Received: 26 Jul to 02 Aug 88

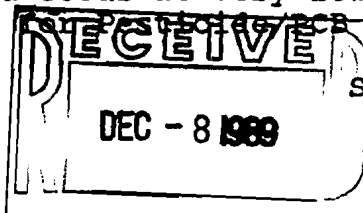
Method of Test or Specification: See attached tables 1 - 4

References: Fort Worth District Request No. E87880261 dated 22 July 88.

-- REMARKS --

1. Overall Evaluation: The Quality Assurance data generally agrees with the Contractor's data, except for a few minor problems which were encountered. Minor chain-of-custody and sample shipping errors were noted.

2. Contractor Data Evaluation: Proper Quality Control procedures were followed and documented in most cases. Trip Blanks analyzed for volatile organics (VOA) were contaminant free (below detection limits). Instrument blanks for VOA analyses were not reported. Extraction (prep) blanks showed no contamination present, except for a trace level of one phthalate (plasticizer - common laboratory contaminant) in one sample. Analytes were reported below detection limits in sample blanks. Matrix spike results were reported within acceptance criteria; however, for styphnate the laboratory reported a detection limit of 250 ug/L, but the spike was added at 250 ug/L and a recovery of 79% was reported. It appears that maybe the detection limit was too high, (spiking amounts should be at least two to five times greater than the reportable detection limit). Duplicate data displayed agreement between initial (laboratory or field) samples and the corresponding duplicate sample. Only small discrepancies for sulfate and mercury were seen in duplicate analyses. Surrogate recoveries for organic analyses were not reported. Results for some dissolved metals (most noticeably sodium in the Line 6 samples) were greater than results for total metals. This is theoretically not possible, unless artificial contamination (filter paper or skin (sweat)) was introduced. These discrepancies are not major and occur at very low levels. Incorrect detection limits were reported for some pesticides in PCB water sample results.



Solsky/des/402-444-4304

3. QA/QC Data Comparison: The QA/QC data showed general agreement. Volatile organic, semivolatile organic and Pesticide/PCB data agreed (split samples showed no contamination). Explosive data agreed, although the QA laboratory did not report results for the nonroutine analytes since methodology was not provided to them. Metals data generally agreed, (few minor discrepancies), but the Contractor's laboratory did report a detectable level of arsenic in the dissolved metal sample for T07. Some results for dissolved metal samples showed arsenic and sodium at levels greater than values reported for total metals, by both laboratories, indicating sampling contamination, not laboratory contamination. Minor discrepancies were noted for cyanide and sulfate. Ammonia and nitrate/nitrite data agreed.

4. Other Problems: Several problems were noted with sample shipments. The time sampled written on some bottle tags did not match the time listed on the chain-of-custody sheets. One cyanide (water) sample was not preserved in the field, but was immediately preserved with NaOH at MRD. The ice melted resulting in tags and bottles being received wet and hard to read. Bottle labels were not present; samples arrived with tags only. Scopes of Work should be written such that the contents of the Final Data Report are very carefully defined. Several laboratory QC criteria items were not included in the Final Data Package.

Submitted by:



R. K. Schlenker, P.E.
Director, MRD Lab

DEPARTMENT OF THE ARMY
Missouri River Division, Corps of Engineers
Division Laboratory
Omaha, Nebraska

COMPARISON OF QA & CONTRACTOR RESULTS

Project: Iowa Army Ammunition Plant, Middletown, Iowa
 QA Sample ID.: Inert Landfill QA/QC #2 Contractor's Sample ID.: T07
 Material Description: Water Date Sampled: 25 Jul 88

Analysis	QA Lab Result	Contractor Result	Units		Analysis	QA Lab Result	Contractor Result	Units
MISCELLANEOUS								
Sulfate	13	<10	mg/L					
Nitrate/Nitrite	0.03	1.1	mg/L					
VOLATILE ORGANICS								
Acetone	BDL	<10	ug/L	1,2-Dichloropropane	<5.0	<5.0	ug/L	
Benzene	<1.0	<5.0	ug/L	cis-1,3-Dichloropropene	<1.0	<5.0	ug/L	
Bromodichloromethane	<1.0	<5.0	ug/L	trans-1,3-Dichloropropene	<1.0	<5.0	ug/L	
Bromoform	<2.0	<5.0	ug/L	Ethylbenzene	<2.0	<5.0	ug/L	
Bromomethane	<2.0	<10	ug/L	2-Hexanone	BDL	<10	ug/L	
2-Butanone	BDL	<10	ug/L	Methylene chloride	7.22 c	<5.0	ug/L	
Carbon disulfide	BDL	<5.0	ug/L	4-Methyl-2-pentanone	BDL	<10	ug/L	
Carbon tetrachloride	<1.0	<5.0	ug/L	Styrene	<2.0	<5.0	ug/L	
Chlorobenzene	<2.0	<5.0	ug/L	1,1,2,2-Tetrachloroethane	<2.0	<5.0	ug/L	
Chloroethane	<5.0	<10	ug/L	Tetrachloroethene	<2.0	<5.0	ug/L	
2-Chloroethyl vinyl ether	<5.0	-	ug/L	Toluene	<2.0	<5.0	ug/L	
Chloroform	<1.0	<5.0	ug/L	1,1,1-Trichloroethane	<1.0	<5.0	ug/L	
1,1-Dibromomethane	<10.0	<10	ug/L	1,1,2-Trichloroethane	<5.0	<5.0	ug/L	
Dibromochloromethane	<2.0	<5.0	ug/L	Trichloroethene	<2.0	<5.0	ug/L	
1,1-Dichloroethane	<1.0	<5.0	ug/L	Vinyl acetate	BDL	<10	ug/L	
1,2-Dichloroethane	<2.0	<5.0	ug/L	Vinyl chloride	<10.0	<10	ug/L	
1,1-Dichloroethene	<2.0	<5.0	ug/L	Total Xylenes	<2.0	<5.0	ug/L	
Total 1,2-Dichloroethene	<2.0	<5.0	ug/L					
PESTICIDES AND PCBs								
Aldrin	<0.01	<0.05	ug/L	Endrin	<0.01	<0.10	ug/L	
alpha-BHC	<0.01	<0.05	ug/L	Endrin aldehyde	<0.02	-	ug/L	
beta-BHC	<0.01	<0.05	ug/L	Endrin Ketone	-	<0.10	ug/L	
gamma-BHC (Lindane)	<0.01	<0.05	ug/L	Heptachlor	<0.007	<0.05	ug/L	
delta-BHC	<0.01	<0.05	ug/L	Heptachlor epoxide	<0.01	<0.05	ug/L	
Chlordane	<0.05	<0.5	ug/L	Methoxychlor	<0.02	<0.5	ug/L	
4,4'-DDD	<0.01	<0.10	ug/L	Toxaphene	<1.0	<1.0	ug/L	
4,4'-DDE	<0.01	<0.10	ug/L	PCB-1016	<1.0	<0.5	ug/L	
4,4'-DDT	<0.01	<0.10	ug/L	PCB-1221	<1.0	<0.5	ug/L	
Dieldrin	<0.01	<0.05	ug/L	PCB-1232	<1.0	<0.5	ug/L	
Endosulfan I	<0.01	<0.05	ug/L	PCB-1242	<1.0	<0.5	ug/L	
Endosulfan II	<0.005	<0.10	ug/L	PCB-1248	<1.0	<0.5	ug/L	
Endosulfan sulfate	<1.0	<0.10	ug/L	PCB-1254	<1.0	<1.0	ug/L	
				PCB-1260	<1.0	<1.0	ug/L	
EXPLOSIVES								
2,4,6-Trinitrophenol (TNT)	<6.9	<20	ug/L	Tetryl	<43.6	<20	ug/L	
2,4-Dinitrophenol (DNT)	<5.7	<10	ug/L	RDX	<13.9	<22	ug/L	
2,6-Dinitrophenol (DNT)	<9.4	<10	ug/L	HMX	<15.3	<26	ug/L	

COMMENTS: BDL: Below Detection Limit, instrument detection limit not established.
 - : Not analyzed.
 c: Common laboratory contaminant.

DEPARTMENT OF THE ARMY
Missouri River Division, Corps of Engineers
Division Laboratory
Omaha, Nebraska

COMPARISON OF QA & CONTRACTOR RESULTS

Project: Iowa Army Ammunition Plant, Middletown, Iowa
QA Sample ID.: Inert Landfill QA/QC #2
Material Description: Water
Contractor's Sample ID.: T07
Date Sampled: 25 Jul 88

Analysis	QA Lab Result	Contractor Result	Units	Analysis	QA Lab Result	Contractor Result	Units
EXTRACTABLE ORGANICS (BNA)							
Acenaphthene	<2.0	<10	ug/L	4,6-Dinitro-2-methylphenol	<20.0	<50	ug/L
Acenaphthylene	<2.0	<10	ug/L	2,4-Dinitrophenol	<40.0	<50	ug/L
Anthracene	<2.0	<10	ug/L	2,4-Dinitrotoluene	<6.0	<10	ug/L
Benzoic acid	BDL	<50	ug/L	2,6-Dinitrotoluene	<6.0	<10	ug/L
Benzo(a)anthracene	<3.0	<10	ug/L	Di-n-octylphthalate	<2.0	<10	ug/L
Benzo(b)fluoranthene	<10.0	<10	ug/L	Fluoranthene	<2.0	<10	ug/L
Benzo(k)fluoranthene	<10.0	<10	ug/L	Fluorene	<3.0	<10	ug/L
Benzo(g,h,i)perylene	<10.0	<10	ug/L	Hexachlorobenzene	<5.0	<10	ug/L
Benzo(a)pyrene	<6.0	<10	ug/L	Hexachlorobutadiene	<12.0	<10	ug/L
Benzyl alcohol	BDL	<10	ug/L	Hexachlorocyclopentadiene	<12.0	<10	ug/L
bis(2-Chloroethoxy)methane	<2.0	<10	ug/L	Hexachloroethane	<6.0	<10	ug/L
bis(2-Chloroethyl)ether	<2.0	<10	ug/L	Indeno(1,2,3-cd)pyrene	<10.0	<10	ug/L
bis(2-Chloroisopropyl)ether	<4.0	<10	ug/L	Isophorone	<2.0	<10	ug/L
bis(2-Ethylhexyl)phthalate	<2.0	<10	ug/L	2-Methylnaphthalene	BDL	<10	ug/L
4-Bromophenyl phenyl ether	<6.0	<10	ug/L	2-Methylphenol (o-cresol)	BDL	<10	ug/L
Butyl benzyl phthalate	<3.0	<10	ug/L	4-Methylphenol (p-cresol)	BDL	<10	ug/L
4-Chloroaniline	BDL	<10	ug/L	Naphthalene	<1.0	<10	ug/L
2-Chloronaphthalene	<3.0	<10	ug/L	2-Nitroaniline	BDL	<50	ug/L
4-Chloro-3-methylphenol	<3.0	<10	ug/L	3-Nitroaniline	BDL	<50	ug/L
Chlorophenol	<2.0	<10	ug/L	4-Nitroaniline	BDL	<50	ug/L
Chlorophenyl phenyl ether	<6.0	<10	ug/L	Nitrobenzene	<3.0	<10	ug/L
Chrysene	<3.0	<10	ug/L	2-Nitrophenol	<4.0	<50	ug/L
Dibenz(a,h)anthracene	<10.0	<10	ug/L	4-Nitrophenol	<20.0	<50	ug/L
Dibenzofuran	BDL	<10	ug/L	N-Nitrosodiphenylamine	<3.0	<10	ug/L
Di-n-butylphthalate	<1.0	<10	ug/L	N-Nitrosodipropylamine	<4.0	<10	ug/L
1,2-Dichlorobenzene	<6.0	<10	ug/L	Pentachlorophenol	<20.0	<50	ug/L
1,3-Dichlorobenzene	<6.0	<10	ug/L	Phenanthrene	<2.0	<10	ug/L
1,4-Dichlorobenzene	<6.0	<10	ug/L	Phenol	<3.0	<10	ug/L
3,3'-Dichlorobenzidine	<10.0	<20	ug/L	Pyrene	<2.0	<10	ug/L
2,4-Dichlorophenol	<4.0	<10	ug/L	1,2,4-Trichlorobenzene	<6.0	<10	ug/L
Diethylphthalate	<2.0	<10	ug/L	2,4,5-Trichlorophenol	BDL	<50	ug/L
2,4-Dimethylphenol	<3.0	<10	ug/L	2,4,6-Trichlorophenol	<5.0	<10	ug/L
Dimethylphthalate	<3.0	<10	ug/L				

Analysis	QA Lab Result	Contractor Result	Units	Analysis	QA Lab Result	Contractor Result	Units
DISSOLVED METALS				TOTAL METALS			
Arsenic	<1.57	* 14	ug/L	Arsenic	13	12	ug/L
Barium	<1.5	<200	ug/L	Barium	99	<200	ug/L
Cadmium	<5.5	<5	ug/L	Cadmium	<5.5	<5	ug/L
Chromium	<12.8	<30	ug/L	Chromium	<12.8	<30	ug/L
Selenium	<0.14	<5	ug/L	Selenium	<0.14	<5	ug/L
Silver	<3.0	<10	ug/L	Silver	<3.0	<10	ug/L
Mercury	0.4	x 0.2	ug/L	Mercury	<0.28	0.2	ug/L

COMMENTS: BDL: Below Detection Limit, instrument detection limit not established.
*: Data disagreement.
x: Results for Dissolved Metals should not be greater than results for Total Metals.

DEPARTMENT OF THE ARMY
Missouri River Division, Corps of Engineers
Division Laboratory
Omaha, Nebraska

COMPARISON OF QA & CONTRACTOR RESULTS

Project: Iowa Army Ammunition Plant, Middletown, Iowa
QA Sample ID.: Trip Blank
Material Description: Water

Contractor's Sample ID.: Travel Blank (T09 Inert)
Date Sampled: 25 Jul 88

Analysis	QA Lab Result	Contractor Result	Units	Analysis	QA Lab Result	Contractor Result	Units
VOLATILE ORGANICS							
Acetone	BDL	<10	ug/L	1,2-Dichloropropane	<5.0	<5.0	ug/L
Benzene	<1.0	<5.0	ug/L	cis-1,3-Dichloropropene	<1.0	<5.0	ug/L
Bromodichloromethane	<1.0	<5.0	ug/L	trans-1,3-Dichloropropene	<1.0	<5.0	ug/L
Bromoform	<2.0	<5.0	ug/L	Ethylbenzene	<2.0	<5.0	ug/L
Bromomethane	<2.0	<10	ug/L	2-Hexanone	BDL	<10	ug/L
2-Butanone	BDL	<10	ug/L	Methylene chloride	<2.0	<5.0	ug/L
Carbon disulfide	BDL	<5.0	ug/L	4-Methyl-2-pentanone	BDL	<10	ug/L
Carbon tetrachloride	<1.0	<5.0	ug/L	Styrene	<2.0	<5.0	ug/L
Chlorobenzene	<2.0	<5.0	ug/L	1,1,2,2-Tetrachloroethane	<2.0	<5.0	ug/L
Chloroethane	<5.0	<10	ug/L	Tetrachloroethene	<2.0	<5.0	ug/L
2-Chloroethyl vinyl ether	<5.0	-	ug/L	Toluene	<2.0	<5.0	ug/L
Chloroform	<1.0	<5.0	ug/L	1,1,1-Trichloroethane	<1.0	<5.0	ug/L
Chloromethane	<10.0	<10	ug/L	1,1,2-Trichloroethane	<5.0	<5.0	ug/L
Dibromochloromethane	<2.0	<5.0	ug/L	Trichloroethene	<2.0	<5.0	ug/L
1,1-Dichloroethane	<1.0	<5.0	ug/L	Vinyl acetate	BDL	<10	ug/L
1,2-Dichloroethane	<2.0	<5.0	ug/L	Vinyl chloride	<10.0	<10	ug/L
1,1-Dichloroethene	<2.0	<5.0	ug/L	Total Xylenes	<2.0	<5.0	ug/L
1,2-Dichloroethene	<2.0	<5.0	ug/L				

COMMENTS: BDL: Below Detection Limit, instrument detection limit not established.
- : Not analyzed.

DEPARTMENT OF THE ARMY
 Missouri River Division, Corps of Engineers
 Division Laboratory
 Omaha, Nebraska

COMPARISON OF QA & CONTRACTOR RESULTS

Project: Iowa Army Ammunition Plant, Middletown, Iowa
 QA Sample ID.: Line 6 QA/QC #3
 Material Description: Water

Contractor's Sample ID.: T36
 Date Sampled: 27 Jul 88

Analysis	QA Lab Result	Contractor Result	Units	Analysis	QA Lab Result	Contractor Result	Units
DISSOLVED METALS				TOTAL METALS			
Antimony	-	<60	ug/L	Antimony	-	<60	ug/L
Barium	63	<200	ug/L	Barium	95	<200	ug/L
Lead	<26.7	<5	ug/L	Lead	<26.7	<5	ug/L
Mercury	0.5x *	<0.1	ug/L	Mercury	<0.28	<0.1	ug/L
Sodium	-	85000	ug/L	Sodium	-	57000	ug/L

Analysis	QA Lab Result	Contractor Result	Units	Analysis	QA Lab Result	Contractor Result	Units
MISCELLANEOUS							
Total Cyanide	0.023	* <0.01	mg/L	Nitrate/Nitrite	0.03	<0.1	mg/L
Sulfate	28	* <10	mg/L	Total Ammonia	9.89	4.4	mg/L

Analysis	QA Lab Result	Contractor Result	Units	Analysis	QA Lab Result	Contractor Result	Units
EXPLOSIVES							
RDX	<13.9	<22	ug/L	Styphnate	+	<250	ug/L
Tetracene	+	<25	ug/L	Azide	+	<25	ug/L

COMMENTS: -: Not analyzed.
 *: Data disagreement.
 x: Results for Dissolved Metals should not be greater than results for Total Metals.
 +: Methodology not provided to the QA laboratory.

DEPARTMENT OF THE ARMY
Missouri River Division, Corps of Engineers
Division Laboratory
Omaha, Nebraska

COMPARISON OF QA & CONTRACTOR RESULTS

Project: Iowa Army Ammunition Plant, Middletown, Iowa
 QA Sample ID.: Line 6 QA/OC #5
 Material Description: Water
 Contractor's Sample ID.: T25
 Date Sampled: 1 Aug 88

Analysis	QA Lab Result	Contractor Result	Units	Analysis	QA Lab Result	Contractor Result	Units
DISSOLVED METALS				TOTAL METALS			
Antimony	-	<60	ug/L	Antimony	-	<60	ug/L
Barium	142 x	<200	ug/L	Barium	82 x	<200	ug/L
Lead	<26.7	<5	ug/L	Lead	<26.7	<5	ug/L
Mercury	<0.28	0.1	ug/L	Mercury	<0.28	<0.1	ug/L
Sodium	32800 x	19000	ug/L	Sodium	17400 x	15000	ug/L

Analysis	QA Lab Result	Contractor Result	Units	Analysis	QA Lab Result	Contractor Result	Units
MISCELLANEOUS							
Total Cyanide	<0.010	<0.02	mg/L	Nitrate/Nitrite	0.28	0.3	mg/L
Sulfate	42	49	mg/L	Total Ammonia	0.54	0.2	mg/L

Analysis	QA Lab Result	Contractor Result	Units	Analysis	QA Lab Result	Contractor Result	Units
EXPLOSIVES							
RDX	<13.9	<22	ug/L	Styphnate	+	<250	ug/L
Tetracene	+	<25	ug/L	Azide	+	<25	ug/L

COMMENTS: - : Not analyzed.
 x: Results for Dissolved Metals should not be greater than results for Total Metals.
 +: Methodology not provided to the QA laboratory.

DEPARTMENT OF THE ARMY
MISSOURI RIVER DIVISION, CORPS OF ENGINEERS
DIVISION LABORATORY
OMAHA, NEBRASKA 68102

Sheet 1 of 2

25 NOV 1988

Subject: QA/OC Final Report

Project: Iowa Army Ammunition Plant, Middletown, Iowa
Intended Use: RCRA Project - Groundwater Quality Assessment
Source of Material: Inert Landfill and Line 6 Areas

Submitted by: Roy Hagen, CESWF-ED-GG
Date Sampled: _____, Date Received: 26 Jul to 02 Aug 88
Method of Test or Specification: See attached tables 1 - 4

References: Fort Worth District Request No. E87880261 dated 22 July 88.

-- REMARKS --

1. Overall Evaluation: The Quality Assurance data generally agrees with the Contractor's data, except for a few minor problems which were encountered. Minor chain-of-custody and sample shipping errors were noted.
2. Contractor Data Evaluation: Proper Quality Control procedures were followed and documented in most cases. Trip Blanks analyzed for volatile organics (VOA) were contaminant free (below detection limits). Instrument blanks for VOA analyses were not reported. Extraction (prep) blanks showed no contamination present, except for a trace level of one phthalate (plasticizer - common laboratory contaminant) in one sample. Analytes were reported below detection limits in sample blanks. Matrix spike results were reported within acceptance criteria; however, for styphnate the laboratory reported a detection limit of 250 ug/L, but the spike was added at 250 ug/L and a recovery of 79% was reported. It appears that maybe the detection limit was too high, (spiking amounts should be at least two to five times greater than the reportable detection limit). Duplicate data displayed agreement between initial (laboratory or field) samples and the corresponding duplicate sample. Only small discrepancies for sulfate and mercury were seen in duplicate analyses. Surrogate recoveries for organic analyses were not reported. Results for some dissolved metals (most noticeably sodium in the Line 6 samples) were greater than results for total metals. This is theoretically not possible, unless artificial contamination (filter paper or skin (sweat)) was introduced. These discrepancies are not major and occur at very low levels. Incorrect detection limits were reported for Pesticide/PCB water sample results.

DEPARTMENT OF THE ARMY
MISSOURI RIVER DIVISION, CORPS OF ENGINEERS
DIVISION LABORATORY
OMAHA, NEBRASKA 68102

Subject: Quality Assurance Test Results

Project: Iowa Army Ammunition Plant, Middletown, Iowa

Intended Use: RCRA Project

Source of Material: Inert Landfill and Line 6 Areas

Submitted by: Roy Hagen, CESWF-ED-GG (Fort Worth District)

Date Sampled: _____, Date Received: 26 & 28 July & 2 Aug 88

Method of Test or Specification: See attached report sheets

References: Fort Worth District Request No. E87880261 dated 22 July 88.

REMARKS

1. Enclosed please find all preliminary Quality Assurance (QA) testing results on the above referenced project. These results were discussed with Roy Hagen on 30 September 1988.

2. Items included are:

I. Chain-of-Custody Forms (3 pages)

II. Detection Limit Table (8 pages)

III. Test results

001. Test results for water sample 'Inert Landfill' (14 pages)

002. Test results for water sample 'Trip Blank' (2 pages)

003. Test results for water sample 'Line 6 QA/QC #3' (8 pages)

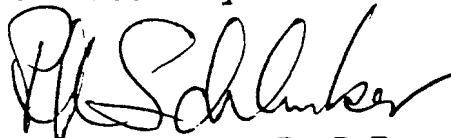
004. Test results for water sample 'Line 6' (8 pages)

IV. Laboratory QC results (21 pages)

3. These results should not be shared with the Contractor until after his data has been submitted.

4. A Final QA/QC Report will be written and forwarded to you upon our receipt of the contractor's results.

Submitted by:



R. K. SCHLENKER, P.E.
Director, MRD Laboratory

I

Chain-of-Custody Forms (3 pages)

CHAIN OF CUSTODY RECORD

PROJ. NO. 40875137		PROJECT NAME GROUNDWATER QUALITY ASSESSMENT				NO. OF CONTAINERS	FILTERED (Y/N)				PRESERVED (Y/N)				REMARKS
SAMPLERS: (Signature) <i>Gregg Albert</i>															
STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION										
QA/QC #2	7-25-88	12:40P		X	1 AAP / INERT LANDFILL	1	N	N						ADDITIONAL WATER (1 LT. AMBER)	
SAME	"	"		X	SAME	1	N	N						PESTICIDES / PCBs (1 LT. AMBER)	
"	"	"		X	SAME	1	N	N						EXPLOSIVES (1 LT. AMBER)	
"	"	"		X	SAME	1	N	N						EXTRACTABLES (1 LT. AMBER)	
"	"	"		X	SAME	1	N	Y						TOTAL METALS (1 LT. PLASTIC)	
"	"	"		X	SAME	1	Y	Y						DISSOLVED METALS (1 LT. PLASTIC)	
"	"	"		X	SAME	1	N	Y						TOTAL MERCURY (1 LT. PLASTIC)	
"	"	"		X	SAME	1	Y	Y						DISSOLVED MERCURY (1 LT. PLASTIC)	
"	"	"		X	SAME	1	N	Y						NITRATES (500 ML PLASTIC)	
"	"	"		X	SAME	1	N	N						SULFATE (500 ML PLASTIC)	
"	"	"		X	SAME	2	N	N						V.O.C.'s (40 ML VIALS)	
"	"	"		X	SAME	2	N	N						TRAVEL BLANKS V.O.C.'s (40 ML VIALS)	
NOTE: TEST ONLY ONE TRAVEL BLANK															
Relinquished by: (Signature) <i>Gregg Albert</i>		Date / Time 7-25-88 5:45P		Received by: (Signature)		Relinquished by: (Signature)		Date / Time 7-26-88 1015		Received by: (Signature) <i>Kimberly O. Meyer</i>					
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)					
Relinquished by: (Signature)		Date / Time		Received for Laboratory by: (Signature)		Date / Time		Remarks CUSTODY SEAL #5 <i>Gregg Albert</i>							

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

635

4744

CHAIN OF CUSTODY RECORD

PROJ. NO.		PROJECT NAME				NO. OF CONTAINERS	FILTERED (Y/N)				PRESERVED (Y/N)				REMARKS				
40875137		GROUNDWATER QUALITY ASSESSMENT																	
SAMPLERS: (Signature) <i>Gregg Alberta</i>																			
STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION														
QA/QC #3	7-27	9:40A		X	IAAP / LINE 6	1	N	Y											TOTAL METALS
"	"	"		X	SAME	1	Y	Y											DISSOLVED METALS
"	"	"		X	SAME	1	N	Y											TOTAL MERCURY
"	"	"		X	SAME	1	Y	Y											DISSOLVED MERCURY
"	"	"		X	SAME	1	N	Y											TOTAL CYANIDE
"	"	"		X	SAME	1	N	N											SULFATE
"	"	"		X	SAME	1	N	Y											AMMONIA + NITRATE
"	"	"		X	SAME	1	N	N											EXPLOSIVES
Relinquished by: (Signature) <i>Gregg Alberta</i>						Date / Time		Received by: (Signature)				Date / Time		Received by: (Signature)					
Relinquished by: (Signature)						Date / Time		Received by: (Signature)				Date / Time		Received by: (Signature)					
Relinquished by: (Signature)						Date / Time		Received for Laboratory by: (Signature) <i>Anthony D. Meyer</i>				Date / Time		Remarks					
						7-27-88 5:45P								SEAL # 13 7-27-88 <i>Gregg Alberta</i>					

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

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CHAIN OF CUSTODY RECORD

PROJ. NO.		PROJECT NAME				NO. OF CONTAINERS	FILTERED (Y/N) PRESERVED (Y/N)				REMARKS
40875137		GROUNDWATER QUALITY ASSESSMENT									
SAMPLERS: (Signature) <i>Gregg Olbert</i>											
STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION						
QA/QC #5	8-1-88	2:08P		X	IAAP / LINE 6	1	N	Y			TOTAL METALS
SAME	"	"		X	SAME	1	Y	Y			DISSOLVED METALS
SAME	"	"		X	SAME	1	N	Y			TOTAL MERCURY
SAME	"	"		X	SAME	1	Y	Y			DISSOLVED MERCURY
SAME	"	"		X	SAME	1	N	Y			TOTAL CYANIDE
SAME	"	"		X	SAME	1	N	Y			AMMONIA, NITRATE
SAME	"	"		X	SAME	1	N	N			SULFATE
SAME	"	"		X	SAME	1	N	N			EXPLOSIVES
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)	
<i>Gregg Olbert</i>		8-1-88 5:00P									
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)	
Relinquished by: (Signature)		Date / Time		Received for Laboratory by: (Signature)		Date / Time		Remarks			
				<i>Tim [Signature]</i>		8-2-88 1100		SEAL # SEALED BY <i>Gregg Olbert</i> 8-1-88 4:30 PM			

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

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II

Detection Limit Table (8 pages)

VOLATILE ORGANICS DETECTION LIMITS

	METHOD 624 WATER (ug/L)	METHOD 8240 SOIL (ug/kg)
Chloromethane -	10.0	10.0
Bromomethane -	2.0	2.0
Vinyl Chloride -	10.0	10.0
Chloroethane -	5.0	5.0
Methylene Chloride -	2.0	2.0
Trichlorofluoromethane -	1.0	1.0
1,1-Dichloroethylene -	2.0	2.0
1,1-Dichloroethane -	1.0	1.0
Trans-1,2-Dichloroethylene -	2.0	2.0
Chloroform -	1.0	1.0
1,2-Dichloroethane -	2.0	2.0
1,1,1-Trichloroethane -	1.0	1.0
Carbontetrachloride -	1.0	1.0
Bromodichloromethane -	1.0	1.0
1,2-Dichloropropane -	5.0	5.0
Trans-1,3-Dichloropropene -	1.0	1.0
Trichloroethylene -	2.0	2.0
Cis-1,3-Dichloropropene -	1.0	1.0
Benzene -	1.0	1.0
Chlorodibromomethane -	2.0	2.0
1,1,2-Trichloroethane -	5.0	5.0
2-Chloroethylvinylether -	5.0	5.0
Bromoform -	2.0	2.0
1,1,2,2-Tetrachloroethane -	2.0	2.0

PESTICIDES - DETECTION LIMITS

	METHOD 608 WATER (ug/L)	METHOD 8080 SOIL (ug/kg)
Lindane	0.01	1.0
Endrin	0.01	1.0
Methoxychlor	0.02	2.0
Toxaphene	0.5	5.0

HERBICIDES - DETECTION LIMITS
EHRT METHOD 232 & 132 (ug/L)

Silvex	0.5
2,4-D	0.5

METHOD DETECTION LIMITS GC/MS

	METHOD 625 WATER (ug/L)	METHOD 8270 SOIL (mg/kg)
Phenol -	3.0	0.5
2-Chlorophenol -	2.0	0.5
2-Nitrophenol -	4.0	1.0
2,4-Dimethylphenol -	3.0	0.5
2,4-Dichlorophenol -	4.0	1.0
4-Chloro-3-Methylphenol -	3.0	0.5
2,4,6-Trichlorophenol -	5.0	1.0
2,4-Dinitrophenol -	40.0	10.0
4-Nitrophenol -	20.0	5.0
4,6-Dinitro-2-Methylphenol -	20.0	5.0
Pentachlorophenol -	20.0	5.0
Bis(-2-Chloroethyl)Ether -	2.0	0.5
1,3-Dichlorobenzene -	6.0	1.0
1,4-Dichlorobenzene -	6.0	1.0
1,2-Dichlorobenzene -	6.0	1.0
Bis(2-Chloroisopropyl)Ether -	4.0	1.0
N-Nitroso-Di-N-Propylamine -	4.0	1.0
Hexachloroethane -	6.0	1.0
Nitrobenzene -	3.0	0.5
Isophorone -	2.0	0.5
Bis(-2-Chloroethoxy)Methane -	2.0	0.5
1,2,4-Trichlorobenzene -	6.0	1.0
Naphthalene -	1.0	0.3
Hexachlorobutadiene -	12.0	3.0
Hexachlorocyclopentadiene -	12.0	3.0
2-Chloronaphthalene -	3.0	0.5
Dimethyl Phthalate -	3.0	0.5

GC/MS CONTINUED

	METHOD 625 WATER (ug/L)	METHOD 8270 SOIL (mg/kg)
Acenaphthylene -	2.0	0.5
Acenaphthene -	2.0	0.5
2,4-Dinitrotoluene -	6.0	1.0
2,6-Dinitrotoluene -	6.0	1.0
Diethylphthalate -	2.0	0.5
4-Chlorophenyl-Phenylether -	6.0	1.0
Fluorene -	3.0	0.5
N-Nitrosodiphenylamine -	3.0	0.5
4-Bromophenyl-Phenylether -	6.0	1.0
Hexachlorobenzene -	5.0	1.0
Phenanthrene -	2.0	0.5
Anthracene -	2.0	0.5
Di-n-Butylphthalate -	1.0	0.3
Fluoranthene -	2.0	0.5
Benzidine -	30.0	10.0
Pyrene -	2.0	0.3
Butylbenzylphthalate -	3.0	0.5
3,3'-Dichlorobenzidine -	10.0	5.0
Bis(2-Ethylhexyl)Phthalate -	2.0	0.3
Benzo(a)Anthracene -	3.0	0.5
Chrysene -	3.0	0.5
Di-n-octyl Phthalate -	2.0	0.5
Benzo(b)Fluoranthene -	10.0	2.0
Benzo(k)Fluoranthene -	10.0	2.0
Benzo(a)Pyrene -	6.0	1.0
Indeno(1,2,3-cd)Pyrene -	10.0	2.0
Dibenzo(a,h)Anthracene -	10.0	2.0
Benzo(g,h,i)Perylene -	10.0	2.0

INSTRUMENT DETECTION LIMIT (IDL*) - mg/L ppm

COMPOUND	ICP		AAS	
	DETECTION LIMIT/WAVELENGTH (ug/L)	(nm)	DETECTION LIMIT/WAVELENGTH (ug/L)	(nm)
Silver	3.0	328.068		
Aluminum	24.6	308.215		
Arsenic	25.9	193.696	1.57	189.0
Barium	1.5	493.404		
Beryllium	1.0	313.042		
Cadmium	5.5	226.502	1.0	228.8
Calcium	10.0	317.933		
Cobalt	6.7	229.616		
Chromium	12.8	267.716		
Copper	5.6	324.754		
Iron	7.6	259.940		
Potassium	130	166.491		
Magnesium	26.7	279.079		
Manganese	1.5	257.610		
Sodium	16.1	588.995		
Nickel	7.8	231.602		
Lead	26.7	220.353	1.63	217.0
Antimony	17.9	206.833		
Selenium	57.1	196.0	0.14	196.0
Strontium	0.3	407.771		
Thallium	300	190.864		
Vanadium	7.3	292.402		
Zinc	2.4	213.856		
Mercury			0.28	253.7 (Cold Vapor)

*The IDL are obtained by multiplying by 3 the σ obtained for 7 runs of a blank injected on 3 non-consecutive days (i.e. total of 21 runs).

PESTICIDES - PCB'S DETECTION LIMITS

	METHOD 608 WATER (ug/L)	METHOD 8080 SOIL (ug/kg)
Aldrin -	0.01	1.0
Dieldrin -	0.01	1.0
Chlordane -	0.05	10.0
4,4'-DDT -	0.01	1.0
4,4'-DDE -	0.01	1.0
4,4'-DDD -	0.01	2.0
Alpha Endosulfan -	0.01	1.0
Beta Endosulfan -	0.005	1.0
Endosulfan Sulfate -	1.0	100.0
Endrin -	0.01	1.0
Endrin Aldehyde -	0.02	2.0
Heptachlor -	0.007	1.0
Heptachlor Epoxide -	0.01	1.0
Alpha BHC -	0.01	1.0
Beta BHC -	0.01	1.0
Gamma BHC -	0.01	1.0
Delta BHC -	0.01	1.0
PCB-1242 -	1.0	150.0
PCB-1254 -	1.0	150.0
PCB-1221 -	1.0	150.0
PCB-1232 -	1.0	150.0
PCB-1248 -	1.0	150.0
PCB-1260 -	1.0	150.0
PCB-1016 -	1.0	150.0
Toxaphene -	1.0	150.0
Methoxychlor -	0.02	5.0

DETECTION LIMIT (mg/L)

As: 0.0002 mg/L - Hydride Generation

Ba: 0.001 mg/L - ICP

Cd: 0.006 mg/L - ICP

Cr: 0.013 mg/L - ICP

Pb: 0.027 mg/L - ICP

Se: 0.00014 mg/L - Hydride Generation

Ag: 0.003 mg/L - ICP

Hg: 0.0003 mg/L - Cold Vapor

VOLATILE ORGANICS - CONTINUED

Tetrachloroethylene -	2.0	2.0
Toluene -	2.0	2.0
Chlorobenzene -	2.0	2.0
Ethylbenzene -	2.0	2.0
Styrene -	2.0	2.0
Xylene -	2.0	2.0

III
Test results

Part 001

Test results for water sample 'Inert Landfill' (14 pages)

001

DEPARTMENT OF THE ARMY
Cold Regions Research and Engineering Laboratory, Corps of Engineers
Hanover, New Hampshire 03755-1290

220726-005

Project: Iowa Army Ammunition Plant, Middletown, Iowa
Date Sample Taken: 26 July 88
Customer Sample No: Inert Landfill
Sample Matrix: Water

Results of Explosives and Nitro-aromatics Analysis

Compound -----	Result -----	Detection Limit -----
HMX	BDL	15.3 ug/L
RDX	BDL	13.9 ug/L
TNB	BDL	7.3 ug/L
DNB	BDL	4.0 ug/L
Tetryl	BDL	43.6 ug/L
NB	BDL	6.4 ug/L
TNT	BDL	6.9 ug/L
2,6-DNT	BDL	9.4 ug/L
2,4-DNT	BDL	5.7 ug/L
o-NT	BDL	11.7 ug/L
m-NT	BDL	7.9 ug/L
p-NT	BDL	8.5 ug/L

*** = Presence confirmed on LC-CN.

BDL = Below Detection Limit

0011

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS
SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY
WORK ORDER NO.: 100 PROJECT NO.: 1438
SAMPLE TYPE: WATER SAMPLE METHOD NO.: EPA 8270
ANALYSIS PERFORMED: GC/MS Analysis for B/N/A DATE ANALYZED: 08-29-88
ANALYST: L. Davidson, Ph.D. LAB NOTEBOOK NO.: 90, Pg. 15
CUSTOMER SAMPLE NO.: INERT LANDFILL (880726-006) EHRT NO.: 12617

RESULTS (ug/L)

2-Picoline - BDL	Methyl Methanesulfonate - BDL
Ethyl Methanesulfonate - BDL	Aniline - BDL
Benzyl Alcohol - BDL	Bis(2-Chloroethyl)Ether - BDL
1,3-Dichlorobenzene - BDL	1,4-Dichlorobenzene - BDL
1,2-Dichlorobenzene - BDL	Bis(2-Chloroisopropyl)Ether - BDL
N-Nitrosodimethylamine - BDL	N(Nitrosodi-N-Propylamine) - BDL
Acetophenone - BDL	Hexachloroethane - BDL
Nitrobenzene - BDL	Isophorone - BDL
Bis(2-Chloroethoxy)Methane - BDL	Benzoic Acid - BDL
a-,a-Dimethylphenethylamine - BDL	1,2,4-Trichlorobenzene - BDL
Naphthalene - BDL	Hexachlorobutadiene - BDL
N-Nitroso-di-n-butylamine - BDL	2-Methylnaphthalene - BDL
Hexachlorocyclopentadiene - BDL	2-Chloronaphthalene - BDL
1-Chloronaphthalene - BDL	2-Nitroaniline - BDL
Dimethylphthalate - BDL	Acenaphthylene - BDL
Acenaphthene - BDL	Pentachloronitrobenzene - BDL
.,2,4,5-Tetrachlorobenzene - BDL	3-Nitroaniline - BDL
4-Nitroaniline - BDL	2,4-Dinitrotoluene - BDL
4-Chloroaniline - BDL	Endrin Ketone - BDL

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 100 PROJECT NO.: 1438

SAMPLE TYPE: WATER SAMPLE METHOD NO.: EPA 8270

ANALYSIS PERFORMED: GC/MS Analysis for B/N/A DATE ANALYZED: 08-29-88

ANALYST: L. Davidson, Ph.D. LAB NOTEBOOK NO.: 90, Pg. 15

CUSTOMER SAMPLE NO.: INERT LANDFILL (880726-006) EHRT NO.: 12617

RESULTS (ug/L)

- | | |
|---------------------------|-----------------------------------|
| 2,6-Dinitrotoluene - BDL | Dibenzofuran - BDL |
| Diethylphthalate - BDL | 1-Naphthylamine - BDL |
| 2-Naphthylamine - BDL | 4-Chlorophenyl-Phenyl-Ether - BDL |
| Fluorene - BDL | N-Nitrosodiphenylamine - BDL |
| Diphenylamine - BDL | 1,2-Diphenylhydrazine - BDL |
| N-Nitrosopiperidine - BDL | 4-Bromophenyl-Phenyl-Ether - BDL |
| 4-Aminobiphenyl - BDL | Hexachlorobenzene - BDL |
| Pentachlorobenzene - BDL | Phenacetin - BDL |
| Pronamide - BDL | Phenanthrene - BDL |
| Anthracene - BDL | Alpha-BHC - BDL |
| Beta-BHC - BDL | Gamma-BHC (Lindane) - BDL |
| Delta-BHC - BDL | Heptachlor - BDL |
| Aldrin - BDL | Di-n-Butylphthalate - BDL |
| Heptachlor Epoxide - BDL | Endosulfan I - BDL |
| Fluoranthene - BDL | Dieldrin - BDL |
| 4,4'-DDE - BDL | Benzidine - BDL |
| Pyrene - BDL | Endrin - BDL |
| Endosulfan II - BDL | 4,4'-DDD - BDL |

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 100 PROJECT NO.: 1438

SAMPLE TYPE: WATER SAMPLE METHOD NO.: EPA 8270

ANALYSIS PERFORMED: GC/MS Analysis for B/N/A DATE ANALYZED: 08-29-88

ANALYST: L. Davidson, Ph.D. LAB NOTEBOOK NO.: 90, Pg. 15

CUSTOMER SAMPLE NO.: INERT LANDFILL (880726-006) EHRT NO.: 12617

RESULTS (ug/L)

p-Dimethylaminoazobenzene - BDL	Butyl-Benzyl-Phthalate - BDL
3,3'-Dichlorobenzidine - BDL	Benzo(a)Anthracene - BDL
Bis(2-Ethyl-Hexyl)Phthalate - BDL	Chrysene - BDL
7,12-Dimethylbenz(a)anthracene - BDL	4,4'-DDD - BDL
Endosulfan Sulfate - BDL	Endrin Aldehyde - BDL
3-Methylcholanthrene - BDL	Di-n-Octylphthalate - BDL
Benzo(b)Fluoranthene - BDL	Benzo(k)Fluoranthene - BDL
Benzo(a)Pyrene - BDL	Dibenz(a,j)Acridine - BDL
Indeno(1,2,3-c,d)Pyrene - BDL	Dibenzo(a,h)Anthracene - BDL
Benzo(g,h,i)Perylene - BDL	

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 100 PROJECT NO.: 1438

SAMPLE TYPE: WATER SAMPLE METHOD NO.: EPA 8270

ANALYSIS PERFORMED: GC/MS Analysis for Acids DATE ANALYZED: 08-29-88

ANALYST: L. Davidson, Ph.D. LAB NOTEBOOK NO.: 90, Pg. 15

CUSTOMER SAMPLE NO.: INERT LANDFILL (880726-006) EHRT NO.: 12617

RESULTS (ug/L)

Phenol - BDL	2-Chlorophenol - BDL
2-Methylphenol - BDL	4-Methylphenol - BDL
2-Nitrophenol - BDL	2,4-Dimethylphenol - BDL
2,4-Dichlorophenol - BDL	2,6-Dichlorophenol - BDL
4-Chloro-3-Methyl Phenol - BDL	2,4,6-Trichlorophenol - BDL
2,4,5-Trichlorophenol - BDL	2,4-Dinitrophenol - BDL
4-Nitrophenol - BDL	2,3,4,6-Tetrachlorophenol - BDL
4,6-Dinitro-2-Methyl Phenol - BDL	Pentachlorophenol - BDL

SURROGATE COMPOUND

PERCENT RECOVERY

Nitrobenzene-d ₅	88.36%
2-Fluorobiphenyl	65.40%
Terphenyl-d ₁₄	115.19%
Phenol-d ₆	25.06%
2-Fluorophenol	29.42%
2,4,6-Tribromophenol	35.55%

QUALITY CONTROL OFFICER: *grae R. ...*

DATE: 9/19/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 100 PROJECT NO.: 1438

SAMPLE TYPE: WATER SAMPLE METHOD NO.: EPA 3010

ANALYSIS PERFORMED: Total Metals Analysis (7) DATE ANALYZED: 08-09-88

ANALYST: G. Luna/A. Sithe/N. Lac LAB NOTEBOOK NO.: SEE BELOW*

CUSTOMER SAMPLE NO.: INERT LANDFILL (880726-007) EHRT NO.: 12618

RESULTS (mg/L)*

Arsenic (As) - 0.013

Barium (Ba) - 0.099

Cadmium (Cd) - BDL

Chromium (Cr) - BDL

Lead (Pb) - BDL

Selenium (Se) - BDL

Silver (Ag) - BDL

*ALL ELEMENTS ANALYZED BY ICP METHOD 6010 (Notebook #89, Pg. 16)
ARSENIC ANALYZED BY GRAPHITE FURNACE METHOD 7060 (Notebook #87, Pg. 75)
SELENIUM ANALYZED BY GRAPHITE FURNACE METHOD 7740 (Notebook #87, Pg. 75)

QUALITY CONTROL OFFICER: 

DATE: 9/19/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS
SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY
WORK ORDER NO.: 100 PROJECT NO.: 1438
SAMPLE TYPE: WATER SAMPLE METHOD NO.: EPA 3005
ANALYSIS PERFORMED: Dissolved Metals Analysis (7) DATE ANALYZED: 08-09-88
ANALYST: G. Luna/A. Sithe/N. Lac LAB NOTEBOOK NO.: SEE BELOW*
CUSTOMER SAMPLE NO.: INERT LANDFILL (880726-008) EHRT NO.: 12619

RESULTS (mg/L)*

Arsenic (As) - BDL Barium (Ba) - BDL
Cadmium (Cd) - BDL Chromium (Cr) - BDL
Lead (Pb) - BDL Selenium (Se) - BDL
Silver (Ag) - BDL

*ALL ELEMENTS ANALYZED BY ICP METHOD 6010 (Notebook #89, Pg. 16)
ARSENIC ANALYZED BY GRAPHITE FURNACE METHOD 7060 (Notebook #87, Pg. 75)
SELENIUM ANALYZED BY GRAPHITE FURNACE METHOD 7740 (Notebook #87, Pg. 75)

QUALITY CONTROL OFFICER: *Joe Rich*
DATE: 9/19/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U. S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 100 PROJECT NO.: 1438

SAMPLE TYPE: WATER SAMPLE METHOD NO.: EPA 7470

ANALYSIS PERFORMED: Total Mercury Analysis DATE ANALYZED: 08-22-88

ANALYST: A. Sithe LAB NOTEBOOK NO.: 86, Pg. 69

CUSTOMER SAMPLE NO.: INERT LANDFILL (880726-009) EHRT NO.: 12620

RESULTS (mg/L)

Mercury (Hg) - BDL

QUALITY CONTROL OFFICER: *James R. [Signature]*

DATE: 9/19/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS
SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY
WORK ORDER NO.: 100 PROJECT NO.: 1438
SAMPLE TYPE: WATER SAMPLE METHOD NO.: EPA 7470
ANALYSIS PERFORMED: Dissolved Mercury Analysis DATE ANALYZED: 08-22-88
ANALYST: A. Sithe LAB NOTEBOOK NO.: 86, Pg. 69
CUSTOMER SAMPLE NO.: INERT LANDFILL (880726-010) EHRT NO.: 12621

RESULTS (mg/L)

Mercury (Hg) - 0.0004

QUALITY CONTROL OFFICER: *Joe R...*
DATE: 9/19/88

DEPARTMENT OF THE ARMY
Missouri River Division, Corps of Engineers
Division Laboratory
Omaha, Nebraska

Project: Iowa Army Ammunition Plant
Date Sample Taken: 25 Jul 88
Date Sample Received: 26 Jul 88
Sample Description: Water

Customer Sample No: Inert Landfill
Lab Sample No: 880726-011

Extraction Proc. No.	Analysis Proc. No.	Analysis	Result	Units	Detection Limits
-----	-----	-----	-----	-----	-----
	EPA-353.2	Nitrate/Nitrite	0.03	mg/L	0.01

BDL: Below Detection Limit

Date sample completed: 8/1/88

Approved by: *Loren M. Anna*

Date: *8/1/88*

DEPARTMENT OF THE ARMY
Missouri River Division, Corps of Engineers
Division Laboratory
Omaha, Nebraska

Project: Iowa Army Ammunition Plant
Date Sample Taken: 25 Jul 88
Date Sample Received: 26 Jul 88
Sample Description: Water

Customer Sample No: Inert Landfill
Lab Sample No: 880726-012
Container: 1 - 500 ml poly

Analysis Proc. No.	Analysis	Result	Units	Detection Limits	Date Completed
EPA-375.4	Sulfate	13	mg/L	10.00	9-12-88

BDL: Below Detection Limit

Approved by: *From N. Am*

Date: 9/14/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 100 PROJECT NO.: 1438

SAMPLE TYPE: WATER SAMPLE DATE ANALYZED: 08-16-88

ANALYSIS PERFORMED: Volatile Organics Analysis METHOD NO.: EPA 8240

ANALYST: J. Tobler LAB NOTEBOOK NO.: 82, Pg. 89

CUSTOMER SAMPLE NO.: INERT LANDFILL (880726-013) EHRT NO.: 12622

RESULTS (ug/L)

Chloromethane - BDL	Bromomethane - BDL
Vinyl Chloride - BDL	Chloroethane - BDL
Methylene Chloride - 7.22	Trichlorofluoromethane - BDL
1,1-Dichloroethylene - BDL	1,1-Dichloroethane - BDL
1,2-Dichloroethylene - BDL	Chloroform - BDL
1,2-Dichloroethane - BDL	1,1,1-Trichloroethane - BDL
Carbontetrachloride - BDL	Bromodichloromethane - BDL
1,2-Dichloropropane - BDL	Trans-1,3-Dichloropropene - BDL
Trichloroethylene - BDL	Cis-1,3-Dichloropropene - BDL
Benzene - BDL	Chlorodibromomethane - BDL
1,1,2-Trichloroethane - BDL	2-Chloroethylvinylether - BDL
Bromoform - BDL	1,1,2,2-Tetrachloroethane - BDL
Tetrachloroethylene - BDL	Toluene - BDL
Chlorobenzene - BDL	Ethylbenzene - BDL

SURROGATE STANDARDS - % RECOVERIES

1,2-Dichloroethane-d₄ - 85.68%
Toluene-d₈ - 103.64%
Bromofluorobenzene - 90.8%

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U. S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 100 PROJECT NO.: 1438

SAMPLE TYPE: WATER SAMPLE DATE ANALYZED: 08-16-88

ANALYSIS PERFORMED: Volatile Organics Analysis METHOD NO.: EPA 8240

ANALYST: J. Tobler LAB NOTEBOOK NO.: 82, Pg. 89

CUSTOMER SAMPLE NO.: INERT LANDFILL (880726-013) EHRT NO.: 12622

RESULTS (ug/L)

Acetone - BDL

Acrolein - BDL

Acrylonitrile - BDL

2-Butanone - BDL

Carbon Disulfide - BDL

Dibromomethane - BDL

1,4-Dichloro-2-Butene - BDL

Dichlorodifluoromethane - BDL

Ethanol - BDL

Ethylmethacrylate - BDL

2-Hexanone - BDL

Iodomethane - BDL

4-Methyl-2-Pentanone - BDL

Styrene - BDL

1,2,3-Trichloropropane - BDL

Vinyl Acetate - BDL

Xylene - BDL

QUALITY CONTROL OFFICER: 

DATE: 9/19/88

Part 002

Test results for water sample 'Trip Blank' (2 pages)

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U. S. ARMY CORPS OF ENGINEERS
SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY
WORK ORDER NO.: 100 PROJECT NO.: 1438
SAMPLE TYPE: WATER SAMPLE DATE ANALYZED: 08-17-88
ANALYSIS PERFORMED: Volatile Organics Analysis METHOD NO.: EPA 8240
ANALYST: J. Tobler LAB NOTEBOOK NO.: 82, Pg. 89
CUSTOMER SAMPLE NO.: TRIP BLANK (880726-014) EHRT NO.: 12623

RESULTS (ug/L)

Chloromethane - BDL	Bromomethane - BDL
Vinyl Chloride - BDL	Chloroethane - BDL
Methylene Chloride - BDL	Trichlorofluoromethane - BDL
1,1-Dichloroethylene - BDL	1,1-Dichloroethane - BDL
1,2-Dichloroethylene - BDL	Chloroform - BDL
1,2-Dichloroethane - BDL	1,1,1-Trichloroethane - BDL
Carbontetrachloride - BDL	Bromodichloromethane - BDL
1,2-Dichloropropane - BDL	Trans-1,3-Dichloropropene - BDL
Trichloroethylene - BDL	Cis-1,3-Dichloropropene - BDL
Benzene - BDL	Chlorodibromomethane - BDL
1,1,2-Trichloroethane - BDL	2-Chloroethylvinylether - BDL
Bromoform - BDL	1,1,2,2-Tetrachloroethane - BDL
Tetrachloroethylene - BDL	Toluene - BDL
Chlorobenzene - BDL	Ethylbenzene - BDL

SURROGATE STANDARDS - % RECOVERIES

1,2-Dichloroethane-d₄ - 91.08%
Toluene-d₈ - 98.32%
Bromofluorobenzene - 100.2%


W d - 2

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U. S. ARMY CORPS OF ENGINEERS
SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY
WORK ORDER NO.: 100 PROJECT NO.: 1438
SAMPLE TYPE: WATER SAMPLE DATE ANALYZED: 08-17-88
ANALYSIS PERFORMED: Volatile Organics Analysis METHOD NO.: EPA 8240
ANALYST: J. Tobler LAB NOTEBOOK NO.: 82, Pg. 89
CUSTOMER SAMPLE NO.: TRIP BLANK (880726-014) EHRT NO.: 12623

RESULTS (ug/L)

Acetone - BDL Acrolein - BDL
Acrylonitrile - BDL 2-Butanone - BDL
Carbon Disulfide - BDL Dibromomethane - BDL
1,4-Dichloro-2-Butene - BDL Dichlorodifluoromethane - BDL
Ethanol - BDL Ethylmethacrylate - BDL
2-Hexanone - BDL Iodomethane - BDL
4-Methyl-2-Pentanone - BDL Styrene - BDL
1,2,3-Trichloropropane - BDL Vinyl Acetate - BDL
Xylene - BDL

QUALITY CONTROL OFFICER: 
DATE: 9/19/88

Part 003

Test results for water sample 'Line 6 QA/QC #3' (8 pages)

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 104 PROJECT NO.: 1451

SAMPLE TYPE: WATER SAMPLE METHOD NO.: EPA 3010

ANALYSIS PERFORMED: Total Metals Analysis (7) DATE ANALYZED: 08-09-88

ANALYST: G. Luna/A. Sithe/N. Lac LAB NOTEBOOK NO.: SEE BELOW*

CUSTOMER SAMPLE NO.: LINE 6 (880728-015) EHRT NO.: 12659

RESULTS (mg/L)*

Arsenic (As) - BDL

Barium (Ba) - 0.095

Cadmium (Cd) - BDL

Chromium (Cr) - BDL

Lead (Pb) - BDL

Selenium (Se) - BDL

Silver (Ag) - BDL

*ALL ELEMENTS ANALYZED BY ICP METHOD 6010 (Notebook #89, Pg. 17)
ARSENIC ANALYZED BY GRAPHITE FURNACE METHOD 7060 (Notebook #87, Pg. 75)
SELENIUM ANALYZED BY GRAPHITE FURNACE METHOD 7740 (Notebook #87, Pg. 75)

QUALITY CONTROL OFFICER: 

DATE: 9/9/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 104 PROJECT NO.: 1451

SAMPLE TYPE: WATER SAMPLE METHOD NO.: EPA 3005

ANALYSIS PERFORMED: Dissolved Metals Analysis (7) DATE ANALYZED: 08-09-88

ANALYST: G. Luna/A. Sithe/N. Lac LAB NOTEBOOK NO.: SEE BELOW*

CUSTOMER SAMPLE NO.: LINE 6 (880728-016) EHRT NO.: 12660

RESULTS (mg/L)*

Arsenic (As) - BDL

Barium (Ba) - 0.063

Cadmium (Cd) - BDL

Chromium (Cr) - BDL

Lead (Pb) - BDL

Selenium (Se) - BDL

Silver (Ag) - BDL

*ALL ELEMENTS ANALYZED BY ICP METHOD 6010 (Notebook #89, Pg. 17)
ARSENIC ANALYZED BY GRAPHITE FURNACE METHOD 7060 (Notebook #87, Pg. 75)
SELENIUM ANALYZED BY GRAPHITE FURNACE METHOD 7740 (Notebook #87, Pg. 75)

QUALITY CONTROL OFFICER: 

DATE: 9/19/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS
SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY
WORK ORDER NO.: 104 PROJECT NO.: 1451
SAMPLE TYPE: WATER SAMPLE METHOD NO.: EPA 7470
ANALYSIS PERFORMED: Total Mercury Analysis DATE ANALYZED: 08-09-88
ANALYST: A. Sithe LAB NOTEBOOK NO.: 86, Pg. 69
CUSTOMER SAMPLE NO.: LINE 6 (880728-017) EHRT NO.: 12661

RESULTS (mg/L)

Mercury (Hg) - BDL

QUALITY CONTROL OFFICER: *Gene Rish*
DATE: 9/19/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 104 PROJECT NO.: 1451

SAMPLE TYPE: WATER SAMPLE METHOD NO.: EPA 7470

ANALYSIS PERFORMED: Dissolved Mercury Analysis DATE ANALYZED: 08-09-88

ANALYST: A. Sithe LAB NOTEBOOK NO.: 86, Pg. 69

CUSTOMER SAMPLE NO.: LINE 6 (880728-018) EHRT NO.: 12662

RESULTS (mg/L)

Mercury (Hg) - 0.0005

QUALITY CONTROL OFFICER: *Gene Rish*

DATE: 9/19/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 104 PROJECT NO.: 1451

SAMPLE TYPE: WATER SAMPLE METHOD NO.: Technicon 802-86T

ANALYSIS PERFORMED: Cyanide Analysis DATE ANALYZED: 09-16-88

ANALYST: K. Nusekabel LAB NOTEBOOK NO.: 84, Pg. 84

SAMPLE NOS. EHRT NO.	CUSTOMER NO.	RESULTS (mg/L)
12663	880728-019 LINE 6	0.023

DETECTION LIMIT: 0.010 mg/L

QUALITY CONTROL OFFICER: 

DATE: 9/19/88

DEPARTMENT OF THE ARMY
Missouri River Division, Corps of Engineers
Division Laboratory
Omaha, Nebraska

Project: Iowa Army Ammunition Plant
Date Sample Taken: 27 Jul 88
Date Sample Received: 28 Jul 88
Sample Description: Water

Customer Sample No: Line 6
Lab Sample No: 880728-020
Bottle used: 1 - 500 mL poly

Extraction Proc. No.	Analysis Proc. No.	Analysis	Result	Units	Detection Limits
	EPA-375.4	Sulfate	28	mg/L	10.0

BDL: Below Detection Limit

Date sample completed: 9-12-88

Approved by: *Freeman* Date: 9/14/88

DEPARTMENT OF THE ARMY
Missouri River Division, Corps of Engineers
Division Laboratory
Omaha, Nebraska

Project: Iowa Army Ammunition Plant
Date Sample Taken: 27 Jul 88
Date Sample Received: 28 Jul 88
Sample Description: Water

Customer Sample No: Line 6
Lab Sample No: 880728-021
Sample Container: 1 - 500 mL Poly

Analysis Proc. No.	Analysis	Result	Units	Detection Limits	Date Completed
EPA-350.1	Ammonia	9.89	mg/L	0.02	9-16-88
EPA-353.2	Nitrate	0.03	mg/L	0.01	8-01-88

BDL: Below Detection Limit

Approved by: Joseph Solohy

Date: 9/16/88

DEPARTMENT OF THE ARMY
Cold Regions Research and Engineering Laboratory, Corps of Engineers
Hanover, New Hampshire 03755-1290

Project: Iowa Army Ammunition Plant, Middletown, Iowa
Date Sample Taken: 27 July 88
Customer Sample No: Line 6 QA/QC #3
Sample Matrix: Water

280728-022

Results of Explosives and Nitro-aromatics Analysis

Compound	Result	Detection Limit
HMX	BDL	15.3 ug/L
RDX	BDL	13.9 ug/L
TNB	BDL	7.3 ug/L
DNB	BDL	4.0 ug/L
Tetryl	BDL	43.6 ug/L
NB	BDL	6.4 ug/L
TNT	BDL	6.9 ug/L
2,6-DNT	BDL	9.4 ug/L
2,4-DNT	BDL	5.7 ug/L
o-NT	BDL	11.7 ug/L
m-NT	BDL	7.9 ug/L
p-NT	BDL	8.5 ug/L

*** = Presence confirmed on LC-CN.

BDL = Below Detection Limit

Part 004

Test results for water sample 'Line 6' (8 pages)

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS
SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY
WORK ORDER NO.: 110 PROJECT NO.: 1467
SAMPLE TYPE: WATER SAMPLE METHOD NO.: EPA 3010
ANALYSIS PERFORMED: Total Metals Analysis (8) DATE ANALYZED: 08-16-88
ANALYST: G. Luna/A. Sithe/N. Lac LAB NOTEBOOK NO.: SEE BELOW*
CUSTOMER SAMPLE NO.: LINE 6 (880802-010) EHRT NO.: 12730

RESULTS (mg/L)*

Arsenic (As) - BDL Barium (Ba) - 0.082
Cadmium (Cd) - BDL Chromium (Cr) - BDL
Lead (Pb) - BDL Selenium (Se) - BDL
Silver (Ag) - BDL Sodium (Na) - 17.4

*ALL ELEMENTS ANALYZED BY ICP METHOD 6010 (Notebook #89, Pg. 26)
ARSENIC ANALYZED BY GRAPHITE FURNACE METHOD 7060 (Notebook #87, Pg. 77)
SELENIUM ANALYZED BY GRAPHITE FURNACE METHOD 7740 (Notebook #87, Pg. 78)

QUALITY CONTROL OFFICER: *Ray Rish*
DATE: 9/21/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 110 PROJECT NO.: 1467

SAMPLE TYPE: WATER SAMPLE METHOD NO.: EPA 3005

ANALYSIS PERFORMED: Dissolved Metals Analysis (8) DATE ANALYZED: 08-16-88

ANALYST: G. Luna/A. Sithe/N. Lac LAB NOTEBOOK NO.: SEE BELOW*

CUSTOMER SAMPLE NO.: LINE 6 (880802-011) EHRT NO.: 12731

RESULTS (mg/L)*

Arsenic (As) - BDL

Barium (Ba) - 0.142

Cadmium (Cd) - BDL

Chromium (Cr) - BDL

Lead (Pb) - BDL

Selenium (Se) - BDL

Silver (Ag) - BDL

Sodium (Na) - 32.8

*ALL ELEMENTS ANALYZED BY ICP METHOD 6010 (Notebook #89, Pg. 26)
ARSENIC ANALYZED BY GRAPHITE FURNACE METHOD 7060 (Notebook #87, Pg. 77)
SELENIUM ANALYZED BY GRAPHITE FURNACE METHOD 7740 (Notebook #87, Pg. 78)

QUALITY CONTROL OFFICER: 


DATE: 9/21/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS
SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY
WORK ORDER NO.: 110 PROJECT NO.: 1467
SAMPLE TYPE: WATER SAMPLE METHOD NO.: EPA 7470
ANALYSIS PERFORMED: Total Mercury Analysis DATE ANALYZED: 08-16-88
ANALYST: A. Sithe LAB NOTEBOOK NO.: 86, Pg. 69
CUSTOMER SAMPLE NO.: LINE 6 (880802-012) EHRT NO.: 12732

RESULTS (mg/L)*

Mercury (Hg) - BDL

QUALITY CONTROL OFFICER: 
DATE: 9/21/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 110 PROJECT NO.: 1467

SAMPLE TYPE: WATER SAMPLE METHOD NO.: EPA 7470

ANALYSIS PERFORMED: Dissolved Mercury Analysis DATE ANALYZED: 08-16-88

ANALYST: A. Sithe LAB NOTEBOOK NO.: 86, Pg. 69

CUSTOMER SAMPLE NO.: LINE 6 (880802-013) EHRT NO.: 12733

RESULTS (mg/L)*

Mercury (Hg) - BDL

QUALITY CONTROL OFFICER: *[Signature]*

DATE: 9/21/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA ARMY AMMUNITION PLANT - DR. JOE SOLSKY

WORK ORDER NO.: 110 PROJECT NO.: 1467

SAMPLE TYPE: WATER SAMPLE METHOD NO.: Technicon 802-86T

ANALYSIS PERFORMED: Cyanide Analysis DATE ANALYZED: 08-08-88

ANALYST: K. Nusekabel LAB NOTEBOOK NO.: 84, Pg. 77

SAMPLE NOS.		RESULTS
EHRT NO.	CUSTOMER NO.	

12734	880802-014 LINE 6	BDL (mg/L)
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DETECTION LIMIT: 0.010 mg/L

QUALITY CONTROL OFFICER: *Joe Risk*

DATE: 9/21/88

DEPARTMENT OF THE ARMY
Missouri River Division, Corps of Engineers
Division Laboratory
Omaha, Nebraska

Project: Iowa Army Ammunition Plant
Date Sample Taken: 01 Aug 88
Date Sample Received: 02 Aug 88
Sample Description: Water

Customer Sample No: Line 6
Lab Sample No: 880802-015
Sample Container: 1 - 500 mL Poly

Analysis Proc. No.	Analysis	Result	Units	Detection Limits	Date Completed
EPA-350.1	Ammonia	0.54	mg/L	0.02	9-16-88
EPA-353.2	Nitrate	0.28	mg/L	0.01	9-14-88

BDL: Below Detection Limit

Approved by: Joseph Solshy

Date: 9/16/88

DEPARTMENT OF THE ARMY
Missouri River Division, Corps of Engineers
Division Laboratory
Omaha, Nebraska

Project: Iowa Army Ammunition Plant
Date Sample Taken: 01 Aug 88
Date Sample Received: 02 Aug 88
Sample Description: Water

Customer Sample No: Line 6
Lab Sample No: 880802-016
Bottle used: 1 - 500 mL poly

Extraction Proc. No.	Analysis Proc. No.	Analysis	Result	Units	Detection Limits
	EPA-375.4	Sulfate	42	mg/L	10.0

BDL: Below Detection Limit

Date sample completed: 9-12-88

Approved by: *Robert A. King* Date: *9/14/88*

DEPARTMENT OF THE ARMY
Cold Regions Research and Engineering Laboratory, Corps of Engineers
Hanover, New Hampshire 03755-1290

Project: Iowa Army Ammunition Plant, Middletown, Iowa
Date Sample Taken: 01 Aug 88
Customer Sample No: Line 6
Sample Matrix: Water

Results of Explosives and Nitro-aromatics Analysis

Compound	Result	Detection Limit
-----	-----	-----
HMX	BDL	15.3 ug/L
RDX	BDL	13.9 ug/L
TNB	BDL	7.3 ug/L
DNB	BDL	4.0 ug/L
Tetryl	BDL	43.6 ug/L
NB	BDL	6.4 ug/L
TNT	BDL	6.9 ug/L
2,6-DNT	BDL	9.4 ug/L
2,4-DNT	BDL	5.7 ug/L
o-NT	BDL	11.7 ug/L
m-NT	BDL	7.9 ug/L
p-NT	BDL	8.5 ug/L

*** = Presence confirmed on LC-CN.

BDL = Below Detection Limit

IV

Laboratory QC results (21 pages)

V-1

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 100 PROJECT NO.: 1438

SAMPLE TYPE: QC - EPA WS #378 for Hg, As, Se - QC (0.05 ppm) For Others

ANALYSIS PERFORMED: INITIAL CAL. VERIFICATION DATE ANALYZED: 08-09-88

ANALYST: G. Luna/A. Sithe/N. Lac LAB NOTEBOOK NO.: SEE BELOW*

CUSTOMER SAMPLE NO.: N/A EHRT NO.: N/A

RESULTS (mg/L)*

Arsenic (As) - 0.0454 (91%)

Barium (Ba) - 0.0510 (102%)

Cadmium (Cd) - 0.0523 (105%)

Chromium (Cr) - 0.0532 (106%)

Lead (Pb) - 0.0527 (105%)

Selenium (Se) - 0.0387 (97%)

Silver (Ag) - 0.0500 (100%)

*ALL ELEMENTS ANALYZED BY ICP METHOD 6010 (Notebook #89, Pg. 16)

ARSENIC ANALYZED BY GRAPHITE FURNACE METHOD 7060 (Notebook #87, Pg. 75)

SELENIUM ANALYZED BY GRAPHITE FURNACE METHOD 7740 (Notebook #87, Pg. 75)

QUALITY CONTROL OFFICER: 

DATE: 9/19/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 100 PROJECT NO.: 1438

SAMPLE TYPE: QC - EPA WS #378 For Hg, As, & Se - QC (0.05 ppm) For Others

ANALYSIS PERFORMED: CONTINUOUS CAL. VERIFICATION DATE ANALYZED: 08-09-88

ANALYST: G. Luna/A. Sithe/N. Lac LAB NOTEBOOK NO.: SEE BELOW*

CUSTOMER SAMPLE NO.: N/A EHRT NO.: N/A

RESULTS (mg/L)*

Arsenic (As) - 0.0453 (91%)

Barium (Ba) - 0.0516 (103%)

Cadmium (Cd) - 0.0482 (96%)

Chromium (Cr) - 0.0467 (93%)

Lead (Pb) - 0.0470 (94%)

Selenium (Se) - 0.0379 (95%)

Silver (Ag) - 0.0545 (109%)

*ALL ELEMENTS ANALYZED BY ICP METHOD 6010 (Notebook #89, Pg. 16)
ARSENIC ANALYZED BY GRAPHITE FURNACE METHOD 7060 (Notebook #87, Pg. 75)
SELENIUM ANALYZED BY GRAPHITE FURNACE METHOD 7740 (Notebook #87, Pg. 75)

QUALITY CONTROL OFFICER: *Joe Rish*

DATE: 9/19/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS
SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY
WORK ORDER NO.: 100 PROJECT NO.: 1438
SAMPLE TYPE: QC BLANK METHOD NO.: EPA 3010
ANALYSIS PERFORMED: Metals Analysis (7) DATE ANALYZED: 08-09-88
ANALYST: G. Luna/A. Sithe/N. Lac LAB NOTEBOOK NO.: SEE BELOW*
CUSTOMER SAMPLE NO.: N/A EHRT NO.: N/A

RESULTS (mg/L)*

Arsenic (As) - BDL Barium (Ba) - BDL
Cadmium (Cd) - BDL Chromium (Cr) - BDL
Lead (Pb) - BDL Selenium (Se) - BDL
Silver (Ag) - BDL

*ALL ELEMENTS ANALYZED BY ICP METHOD 6010 (Notebook #89, Pg. 16)
ARSENIC ANALYZED BY GRAPHITE FURNACE METHOD 7060 (Notebook #87, Pg. 75)
SELENIUM ANALYZED BY GRAPHITE FURNACE METHOD 7740 (Notebook #87, Pg. 75)

QUALITY CONTROL OFFICER: *James Rish*
DATE: 9/19/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 100 PROJECT NO.: 1438

SAMPLE TYPE: QC - EPA WS #378 For Hg, As, Se, - QC (0.05 ppm) For Others

ANALYSIS PERFORMED: INITIAL CAL. VERIFICATION DATE ANALYZED: 08-22-88

ANALYST: A. Sithe LAB NOTEBOOK NO.: 86, Pg. 69

CUSTOMER SAMPLE NO.: N/A EHRT NO.: N/A

RESULTS (mg/L)

Mercury (Hg) - 0.0052 (104%)

QUALITY CONTROL OFFICER: 

DATE: 9/19/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 100 PROJECT NO.: 1438

SAMPLE TYPE: QC - EPA WS #378 For Hg, As, Se, - QC (0.05 ppm) For Others

ANALYSIS PERFORMED: CONTINUOUS CAL. VERIFICATION DATE ANALYZED: 08-22-88

ANALYST: A. Sithe LAB NOTEBOOK NO.: 86, Pg. 69

CUSTOMER SAMPLE NO.: N/A EHRT NO.: N/A

RESULTS (mg/L)

Mercury (Hg) - 0.0046 (93%)

QUALITY CONTROL OFFICER: 


DATE: 9/19/82

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS
SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY
WORK ORDER NO.: 100 PROJECT NO.: 1438
SAMPLE TYPE: QC BLANK METHOD NO.: EPA 7470
ANALYSIS PERFORMED: Mercury Analysis DATE ANALYZED: 08-22-88
ANALYST: A. Sithe LAB NOTEBOOK NO.: 86, Pg. 69
CUSTOMER SAMPLE NO.: N/A EHRT NO.: N/A

RESULTS (mg/L)

Mercury (Hg) - 0.0002

QUALITY CONTROL OFFICER: 
DATE: 9/19/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U. S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO. : 104 PROJECT NO. : 1451

SAMPLE TYPE: QC - EPA WS #378 for Hg, As, Se - QC (0.05 ppm) For Others

ANALYSIS PERFORMED: INITIAL CAL. VERIFICATION DATE ANALYZED: 08-09-88

ANALYST: G. Luna/A. Sithe/N. Lac LAB NOTEBOOK NO. : SEE BELOW*

CUSTOMER SAMPLE NO. : N/A EHRT NO. : N/A

RESULTS (mg/L)*

Arsenic (As) - 0.0454 (91%)

Barium (Ba) - 0.0493 (99%)

Cadmium (Cd) - 0.0478 (96%)

Chromium (Cr) - 0.0504 (101%)

Lead (Pb) - 0.0488 (98%)

Selenium (Se) - 0.0387 (97%)

Silver (Ag) - 0.0532 (106%)

*ALL ELEMENTS ANALYZED BY ICP METHOD 6010 (Notebook #89, Pg. 17)
ARSENIC ANALYZED BY GRAPHITE FURNACE METHOD 7060 (Notebook #87, Pg. 75)
SELENIUM ANALYZED BY GRAPHITE FURNACE METHOD 7740 (Notebook #87, Pg. 75)

QUALITY CONTROL OFFICER: 

DATE: 9/19/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 104 PROJECT NO.: 1451

SAMPLE TYPE: QC - EPA WS #378 For Hg, As, & Se - QC (0.05 ppm) For Others

ANALYSIS PERFORMED: CONTINUOUS CAL. VERIFICATION DATE ANALYZED: 08-09-88

ANALYST: G. Luna/A. Sithe/N. Lac LAB NOTEBOOK NO.: SEE BELOW*

CUSTOMER SAMPLE NO.: N/A EHRT NO.: N/A

RESULTS (mg/L)*

Arsenic (As) - 0.0453 (91%)	Barium (Ba) - 0.0500 (100%)
Cadmium (Cd) - 0.0528 (106%)	Chromium (Cr) - 0.0525 (105%)
Lead (Pb) - 0.0529 (106%)	Selenium (Se) - 0.0379 (95%)
Silver (Ag) - 0.0540 (108%)	

*ALL ELEMENTS ANALYZED BY ICP METHOD 6010 (Notebook #89, Pg. 17)
 ARSENIC ANALYZED BY GRAPHITE FURNACE METHOD 7060 (Notebook #87, Pg. 75)
 SELENIUM ANALYZED BY GRAPHITE FURNACE METHOD 7740 (Notebook #87, Pg. 75)

QUALITY CONTROL OFFICER: *[Signature]*

DATE: 9/19/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS
SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY
WORK ORDER NO.: 104 PROJECT NO.: 1451
SAMPLE TYPE: QC BLANK METHOD NO.: EPA 3010
ANALYSIS PERFORMED: Metals Analysis (7) DATE ANALYZED: 08-09-88
ANALYST: G. Luna/A. Sithe/N. Lac LAB NOTEBOOK NO.: SEE BELOW*
CUSTOMER SAMPLE NO.: N/A EHRT NO.: N/A

RESULTS (mg/L)*

Arsenic (As) - BDL Barium (Ba) - BDL
Cadmium (Cd) - BDL Chromium (Cr) - BDL
Lead (Pb) - BDL Selenium (Se) - BDL
Silver (Ag) - BDL

*ALL ELEMENTS ANALYZED BY ICP METHOD 6010 (Notebook #89, Pg. 17)
ARSENIC ANALYZED BY GRAPHITE FURNACE METHOD 7060 (Notebook #87, Pg. 75)
SELENIUM ANALYZED BY GRAPHITE FURNACE METHOD 7740 (Notebook #87, Pg. 75)

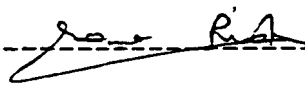
QUALITY CONTROL OFFICER: *Gene Risk*
DATE: 9/19/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS
SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY
WORK ORDER NO.: 104 PROJECT NO.: 1451
SAMPLE TYPE: QC - EPA WS #378 For Hg, As, Se, - QC (0.05 ppm) For Others
ANALYSIS PERFORMED: INITIAL CAL. VERIFICATION DATE ANALYZED: 08-09-88
ANALYST: A. Sithe LAB NOTEBOOK NO.: 86, Pg. 69
CUSTOMER SAMPLE NO.: N/A EHRT NO.: N/A

RESULTS (mg/L)

Mercury (Hg) - 0.0052 (104%)

QUALITY CONTROL OFFICER: 
DATE: 9/19/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U. S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 104 PROJECT NO.: 1451

SAMPLE TYPE: QC - EPA WS #378 For Hg, As, Se, - QC (0.05 ppm) For Others

ANALYSIS PERFORMED: CONTINUOUS CAL. VERIFICATION DATE ANALYZED: 08-09-88

ANALYST: A. Sithe LAB NOTEBOOK NO.: 86, Pg. 69

CUSTOMER SAMPLE NO.: N/A EHRT NO.: N/A

RESULTS (mg/L)

Mercury (Hg) - 0.0046 (93%)

QUALITY CONTROL OFFICER: *Joe Rist*


DATE: 9/19/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U. S. ARMY CORPS OF ENGINEERS
SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY
WORK ORDER NO.: 104 PROJECT NO.: 1451
SAMPLE TYPE: QC BLANK METHOD NO.: EPA 7470
ANALYSIS PERFORMED: Mercury Analysis DATE ANALYZED: 08-09-88
ANALYST: A. Sithe LAB NOTEBOOK NO.: 86, Pg. 69
CUSTOMER SAMPLE NO.: N/A EHRT NO.: N/A

RESULTS (mg/L)

Mercury (Hg) - 0.00017

QUALITY CONTROL OFFICER: 
DATE: 9/9/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U. S. ARMY CORPS OF ENGINEERS
SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY
WORK ORDER NO.: 110 PROJECT NO.: 1467
SAMPLE TYPE: QC - EPA WS #378 for Hg, As, Se - QC (0.05 ppm) For Others
ANALYSIS PERFORMED: INITIAL CAL. VERIFICATION DATE ANALYZED: 08-16-88
ANALYST: G. Luna/A. Sithe/N. Lac LAB NOTEBOOK NO.: SEE BELOW*
CUSTOMER SAMPLE NO.: N/A EHRT NO.: N/A

RESULTS (mg/L)*

Arsenic (As) - 0.0547 (109%) Barium (Ba) - 0.0492 (98%)
Cadmium (Cd) - 0.0498 (99%) Chromium (Cr) - 0.0501 (100%)
Lead (Pb) - 0.0496 (99%) Selenium (Se) - 0.0376 (94%)
Silver (Ag) - 0.0487 (97%) Sodium (Na) - 0.4981 (100%)

*ALL ELEMENTS ANALYZED BY ICP METHOD 6010 (Notebook #89, Pg. 26)
ARSENIC ANALYZED BY GRAPHITE FURNACE METHOD 7060 (Notebook #87, Pg. 77)
SELENIUM ANALYZED BY GRAPHITE FURNACE METHOD 7740 (Notebook #87, Pg. 78)

QUALITY CONTROL OFFICER: *Joe R. ...*
DATE: 9/21/88


ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS
SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY
WORK ORDER NO.: 110 PROJECT NO.: 1467
SAMPLE TYPE: QC - EPA WS #378 For Hg, As, & Se - QC (0.05 ppm) For Others
ANALYSIS PERFORMED: CONTINUOUS CAL. VERIFICATION DATE ANALYZED: 08-16-88
ANALYST: G. Luna/A. Sithe/N. Lac LAB NOTEBOOK NO.: SEE BELOW*
CUSTOMER SAMPLE NO.: N/A EHRT NO.: N/A

RESULTS (mg/L)*

Arsenic (As) - 0.0509 (102%) Barium (Ba) - 0.0511 (102%)
Cadmium (Cd) - 0.0547 (109%) Chromium (Cr) - 0.0501 (100%)
Lead (Pb) - 0.0527 (105%) Selenium (Se) - 0.040 (100%)
Silver (Ag) - 0.0489 (98%) Sodium (Na) - 0.5273 (105%)

*ALL ELEMENTS ANALYZED BY ICP METHOD 6010 (Notebook #89, Pg. 26)
ARSENIC ANALYZED BY GRAPHITE FURNACE METHOD 7060 (Notebook #87, Pg. 77)
SELENIUM ANALYZED BY GRAPHITE FURNACE METHOD 7740 (Notebook #87, Pg. 78)

QUALITY CONTROL OFFICER: 
DATE: 9/21/88


ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U.S. ARMY CORPS OF ENGINEERS
SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY
WORK ORDER NO.: 110 PROJECT NO.: 1467
SAMPLE TYPE: QC BLANK METHOD NO.: EPA 3010
ANALYSIS PERFORMED: Metals Analysis (B) DATE ANALYZED: 08-16-88
ANALYST: G. Luna/A. Sithe/N. Lac LAB NOTEBOOK NO.: SEE BELOW*
CUSTOMER SAMPLE NO.: N/A EHRT NO.: N/A

RESULTS (mg/L)*

Arsenic (As) - BDL Barium (Ba) - BDL
Cadmium (Cd) - BDL Chromium (Cr) - BDL
Lead (Pb) - BDL Selenium (Se) - BDL
Silver (Ag) - BDL Sodium (Na) - 0.071

*ALL ELEMENTS ANALYZED BY ICP METHOD 6010 (Notebook #89, Pg. 26)
ARSENIC ANALYZED BY GRAPHITE FURNACE METHOD 7060 (Notebook #87, Pg. 77)
SELENIUM ANALYZED BY GRAPHITE FURNACE METHOD 7740 (Notebook #87, Pg. 78)

QUALITY CONTROL OFFICER: 
DATE: 9/21/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U. S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 110 PROJECT NO.: 1467

SAMPLE TYPE: QC - EPA WS #378 For Hg - QC (0.05 ppm) For Others

ANALYSIS PERFORMED: INITIAL CAL. VERIFICATION DATE ANALYZED: 08-16-88

ANALYST: A. Sithe LAB NOTEBOOK NO.: 86, Pg. 69

CUSTOMER SAMPLE NO.: N/A EHRT NO.: N/A

RESULTS (mg/L)*

Mercury (Hg) - 0.0052 (104%)

QUALITY CONTROL OFFICER: *John Rish*

DATE: 9/21/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U. S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 110 PROJECT NO.: 1467

SAMPLE TYPE: QC - EPA WS #378 For Hg - QC (0.05 ppm) For Others

ANALYSIS PERFORMED: CONTINUOUS CAL. VERIFICATION DATE ANALYZED: 08-16-88

ANALYST: A. Sithe LAB NOTEBOOK NO.: 86, Pg. 71

CUSTOMER SAMPLE NO.: N/A EHRT NO.: N/A

RESULTS (mg/L)*

Mercury (Hg) - 0.00467 (93.4%)

QUALITY CONTROL OFFICER: *Joe Rich*

DATE: 9/21/88

ENVIRONMENTAL HEALTH RESEARCH AND TESTING, INC.
RESULT SHEET

CUSTOMER NAME: U. S. ARMY CORPS OF ENGINEERS

SAMPLE SOURCE: IOWA AAP - DR. JOE SOLSKY

WORK ORDER NO.: 110 PROJECT NO.: 1467

SAMPLE TYPE: QC BLANK METHOD NO.: EPA 7470

ANALYSIS PERFORMED: Mercury Analysis DATE ANALYZED: 08-16-88

ANALYST: A. Sithe LAB NOTEBOOK NO.: 86, Pg. 69

CUSTOMER SAMPLE NO.: N/A EHRT NO.: N/A

RESULTS (mg/L)*

Mercury (Hg) - BDL

QUALITY CONTROL OFFICER: 

DATE: 9/21/88

DEPARTMENT OF THE ARMY
Missouri River Division, Corps of Engineers
Division Laboratory
Omaha, Nebraska

Project: Iowa Army Ammunition Plant
Date Sample Taken: 25 Jul 88
Date Sample Received: 26 Jul 88
Sample Description: Water

Customer Sample No: Inert Landfill
Lab Sample No: 880726-011 (Duplicate)

Extraction Proc. No.	Analysis Proc. No.	Analysis	Result	Units	Detection Limits
	EPA-353.2	Nitrate/Nitrite	0.03	mg/L	0.01

BDL: Below Detection Limit

Date sample completed: 8/1/88

Approved by: *P. M. V. ...*

Date: *8/1/88*

DEPARTMENT OF THE ARMY
Missouri River Division, Corps of Engineers
Division Laboratory
Omaha, Nebraska

Project: Iowa Army Ammunition Plant
Date Sample Taken: 25 Jul 88
Date Sample Received: 26 Jul 88
Sample Description: Water

Customer Sample No: Inert Landfill
Lab Sample No: 880726-011 (Spike)

Extraction Proc. No.	Analysis Proc. No.	Analysis	Result	Units	Detection Limits
	EPA-353.2	Nitrate/Nitrite	0.40	mg/L	0.01

BDL: Below Detection Limit

Date sample completed: 8/1/88

% Recovery = $\frac{.40 - .03}{.40} \times 100 = 92.5\%$

Approved by: *P. M. N. [Signature]*

Date: *8/1/88*

V-21

DEPARTMENT OF THE ARMY
Missouri River Division, Corps of Engineers
Division Laboratory
Omaha, Nebraska

Project: Iowa Army Ammunition Plant
Date Sample Taken: 25 Jul 88
Date Sample Received: 26 Jul 88
Sample Description: Water

Customer Sample No: Inert Landfill
Lab Sample No: 880726-011 (Spike Duplicate)

Extraction Proc. No.	Analysis Proc. No.	Analysis	Result	Units	Detection Limits
	EPA-353.2	Nitrate/Nitrite	0.39	mg/L	0.01

DL: Below Detection Limit

Date sample completed: 8/1/88

$$\text{Recovery} = \frac{.39 - .03}{.40} \times 100 = 92.5\%$$

Approved by:

Lochin Arns

Date:

8/1/88