

# Hazardous Waste and Toxics Reduction Program

Quality Assurance Project Plan (QAPP) for \_\_\_\_\_

SAMPLE OF OPPORTUNITY

## Plantation Rifle Range, Bellingham WA

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**Approved by:**

Signature: \_\_\_\_\_

Mindy Collins

Project Lead/Project Manager

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Samuel Iwenofu

HWTR Quality Assurance Officer

Date: \_\_\_\_\_

**This plan must be distributed to the following:**

Distribution List	
Program QA Officer (Name, MS#) Samuel Iwenofu	Compliance Unit Team Lead (Name, MS#) Matt Quarterman
Compliance Inspector (Name, MS#) Mindy Collins	Central Files Contact (Name, MS#) Linsay Albin/Becky Fitzgearld

**Quality Assurance Project Plan (QAPP) for SAMPLE OF OPPORTUNITY**

Site Name Plantation Rifle Range	EPA ID # None	Plan Prepared By: Mindy Collins	
Site Contact Christ Thomsen	Contact Phone # (360) 778-5850	Plan Prep Date: January 13, 2020	Sample Date: January 9, 2020
Site Address  5102 Samish Way Bellingham, WA 98226		Sample Team:  Mindy Collins Chris Teske	
NOTE: Sampling activities must be conducted following the HWTR Program Plan, including implementation of the recommended practices for sample collection, documentation and records, Quality Assurance and Quality Control, and Data Verification and Validation.  HWTR Quality Assurance Project Plan Reviewed: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			

**Background and Problem Definition**

**REASON FOR SAMPLING**

Pertinent Background (Compliance History, process information, etc.)

Plantation Rifle Range has been operating at this site since 1971. They received their first hazardous waste compliance inspection in 2017. The indoor range was inspected, but not outdoor. Following the inspection, the site submitted a “Plantation Range Lead Management Plan for Outdoor Ranges,” dated March 2018. This plan describes how they would monitor soil pH, apply lime, maintain vegetation, and assess overall lead contamination with a consultant who would then develop a plan for lead removal and recycling.

Ecology HWTR received ERTS #695524 on January 8, 2020 (submitted January 7). This ERTS stated “Poorly maintained outdoor shooting range has flooded and may be transporting lead and other heavy metals from spent ammunition into a nearby creek. Possible contaminated soil migration as well due to runoff and failing earth berms.” At the time of submittal, Bellingham weather included heavy rainfall. Pictures submitted with the ERTS showed wetlands flooded and water sheet flowing across the range and into the wetlands contiguous to a creek that runs through and adjacent to the high power range. Visible in the photos was lead shot covered by water and the creek which above its normal banks connecting it to the wetlands.

Reason for sampling:  Designation  Release or Spill  Other: Unmaintained range, 49 years worth of lead and other metals deposited on the ground, concerns about contaminants being conveyed off-site.

**GENERAL SAMPLE DESCRIPTION**

Matrix:  Waste  Soil  Surface Water  Other:

Location:  Drum  Tank  Pile  Other: creek

Composition:  Liquid  Solid  Sludge  Homogeneous  Heterogeneous  Mixed

Multiple Samples will be required:  Yes  No

**Training & Competency**

Are there any deviations from the recommendations of the HWTR QAPP:  Yes  No

If YES, define: Upstream sample was collected prior to downstream but creek was not disturbed during collection of the upstream sample, and we were careful not to enter the creek or cause contamination downstream, so it is felt that we did not compromise the downstream sample.

Is a respirator required:  Yes  No

If so, are all samplers certified:  Yes  No

**Documentation and Records**

Are there any deviations from the recommendations of the HWTR QAPP:  Yes  No

If YES, define:  
Upstream sample was collected prior to downstream but creek was not disturbed during collection of the upstream sample, and we were careful not to enter the creek or cause contamination downstream, so it is felt that we did not compromise the downstream sample.

Field Forms will be used?  Yes  No



A Photo Log will be used?  Yes  No

<b>Sampling Process</b>			
<b>Sampling Equipment (check all that apply):</b> <input type="checkbox"/> Coliwasa <input type="checkbox"/> Drum Thief <input type="checkbox"/> Bailer <input type="checkbox"/> Spoon		<b>Support Equipment (check all that apply):</b> <input type="checkbox"/> Sorbent Pads <input checked="" type="checkbox"/> Labels <input checked="" type="checkbox"/> Pens <input checked="" type="checkbox"/> Cooler & Ice	
<input type="checkbox"/> Swing Arm Sampler <input type="checkbox"/> Bacon Bomb <input checked="" type="checkbox"/> Other: grab samples collected with lab provided bottles		<input type="checkbox"/> Decon Equipment <input checked="" type="checkbox"/> PPE <input type="checkbox"/> Zip Lock Bags <input checked="" type="checkbox"/> Custody Seals	
<b>Sample Jar Summary:</b> NOTE: The attached Bottle Worksheet and Sample Summary must be compiled to define the type and number of sample bottles.			
<b>Site Safety: You MUST</b> complete a <a href="#">Health and Safety Checklist</a> and attach it to this plan.			
<b>Other Sampling Concerns and any Specialized Equipment:</b>			
<b>Analytical Summary:</b> NOTE: The attached Bottle Worksheet and Sample Summary must be compiled to define the type of analysis to be completed per sample. Other analytical notes:			
Are there any deviations from the recommendations of the HWTR QAPP: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  If YES, define:		Will Custody Tape be used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  Will Ecology Maintain Samples? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Quality Assurance and Quality Control</b>			
Are there any deviations from the recommendations of the HWTR QAPP: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  If YES, define: We did not collect any duplicates or use blanks. We only collected two grab samples and did not feel it was necessary. We are looking for indications of impacts, not designation, so concentrations detected are not as critical.		Equipment Blanks? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Trip Blanks? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Field Blanks? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Field Split Samples? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

<b>Data Verification and Validation</b>	
Are there any deviations from the recommendations of the HWTR QAPP: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  If YES, define:	Name and Address of Analytical Lab:  Edge Analytical 1620 S Walnut St, Burlington, WA 98233

# Hazardous Waste and Toxics Reduction Program

## SAMPLE EVENT FIELD NOTES

Site Name Plantation Rifle Range		EPA ID # none	Inspector's Name Mindy Collins
Site Contact Christ Thomsen		Contact Phone # (360) 778-5850	Inspector's Phone Number (360) 255-4383
Site Address 5102 Samish Way, Bellingham WA 98226		Inspector's e-mail address Minc461@ecy.wa.gov	
Date January 9, 2020	Time On-Site 1:30	Time Off-Site 3:30	Back-up Inspector's Name Chris Teske
Site Health & Safety Plan Prepared : <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Quality Assurance Project Plan Prepared : <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Sample # 20200109Plant 1	Time: 2:50 p.m.	Grab: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Composite: <input type="checkbox"/> Yes <input type="checkbox"/> No	Sample Location Photo <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Jar Type: 1 liter poly and amber 40 ml TOC bottle		Sample Equipment Used: Samples collected directly into bottles.	
Location: 150 yards from shooting platform, between first and second target areas and adjacent to wetland. Sample collected by standing on creek bank and reaching into flowing water, upstream of where I was standing.			
Matrix: (Liquid, Solid, Sludge) Liquid		Homogenous: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Heterogeneous <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Mixed <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Characteristics (Color, Sheen, Viscosity, Odor):  Water appeared fairly clear – not very turbid. Adjacent wetland had standing water in it and silt deposited on grasses, evident of recent flooding of the adjacent creek. Upstream the creek receives some runoff from the 300 -yard berm/backstop.			
Field pH: Not checked		Test Strip Used <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No pH Meter Use <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Note any deviations from QAPP:			
			
			

Sample on Ice <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Final Photo <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Sample # 20200109 Plant2	Time: 3:05 p.m.	Grab: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Composite: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sample Jar Type: 1 liter poly and amber 40 ml TOC bottle		Sample Equipment Used: Samples collected directly into bottles.

Sample Location Photo  Yes  No



Location:  
50 yards from shooting platform, downstream of first target area and adjacent to wetland but below a steep forested bank.  
Sample collected by standing in creek and reaching into flowing water, upstream of where I was standing. Water and sediment upstream were not disturbed (sample not compromised).



Matrix: (Liquid, Solid, Sludge)  Liquid	Homogenous: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	Heterogeneous <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	Mixed <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Characteristics (Color, Sheen, Viscosity, Odor):  
  
Water appeared clear – not turbid. Adjacent wetland had standing water in it and silt deposited on grasses, evident of recent flooding of the adjacent creek. Upstream the creek receives some runoff from the 300 -yard berm/backstop.

Field pH:

Not checked

Test Strip Used   
Yes   No

pH Meter Use  Yes  
 No

Note any deviations from QAPP:

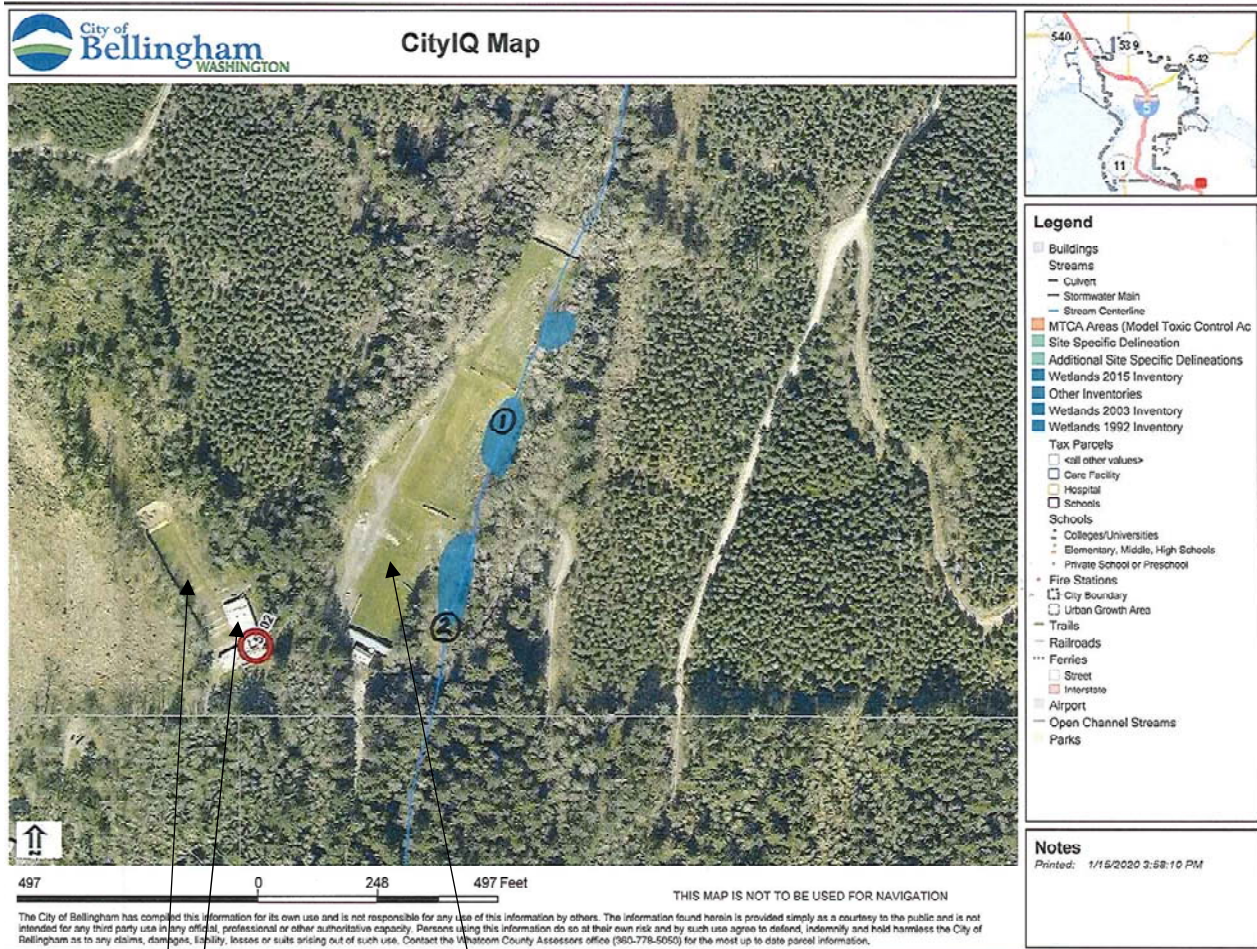
Sample on Ice   
Yes  No

Final Photo  Yes  
 No





# Plantation Rifle Range



Indoor Range and Small-Bore/Rim-fire Range

High Power Range

Sample Location	Sample ID	Reason for Sampling (e.g. designation, spill/release)	Analytical Method	Matrix (e.g. solid, liquid)	% Solids	Number and Type of Sample (e.g. grab, composite)	Sampling Equipment Used (e.g. COLIWASA)	Container Type1	# of Containers per Sample
<b>-150 yards in creek</b>	20200109Plant1	Flooding of range causing potential release of HW to creek	6010 – RCRA 8 plus Cu, Zn TOC	Liquid	<0.5%	Grab – two	1 L poly 40 ml amber glass vial	1 L poly 40 ml amber glass vial	2
<b>-50 yards in creek</b>	20200109Plant2	Flooding of range causing potential release of HW to creek	6010 – RCRA 8 plus Cu, Zn TOC	Liquid	<0.5%	Grab – two	1 L poly 40 ml amber glass vial	1 L poly 40 ml amber glass vial	2

1 Refer to analysis and bottle charts

Analysis Chart

TCLP Metals:

% Solids	Analytical Method	Bottle # <sup>1</sup>	Nr. needed	Sample Amt	Minimum Amt <sup>2</sup>	Holding Times
<b>100 % solids</b> (no free liquids)	<b>1311/6000 series</b>	<b>5</b>	<b>2</b>	<b>700 g</b>	<b>500 g</b>	<b>180 days/Hg 28</b>
<b>50-100 % solids</b> (solids with some free liquids)	<b>1311/6000 series</b>	<b>2</b>	<b>2</b>	<b>900 g</b>	<b>700 g</b>	<b>180 days/Hg 28</b>
<b>0.5-50% solids</b> (free liquids w/ some solids)	<b>1311/6000 series</b>	<b>15</b>	<b>2</b>	<b>2 Liters</b>	<b>1 Liter</b>	<b>180 days/Hg 28</b>
<b>&lt;0.5% solids</b> (liquids w/no observable solids) <sup>3</sup>	<b>6000 series</b>	<b>15</b>	<b>2</b>	<b>2 Liters</b>	<b>1 Liter</b>	<b>180 days/Hg 28</b>
<b>Non-standard</b> (paper, cloth, metal, etc.)	<b>1311/6000 series</b>	<b>1</b>	<b>1</b>	<b>1000 grams</b>	<b>500 g, more if multiphasic</b>	<b>180 days/Hg 28</b>

TCLP Semi-Volatile Organics (Semi-VOAs):

<b>100 % solids</b> (no free liquids)	<b>1311/8760</b>	<b>5</b>	<b>2</b>	<b>600 g</b>	<b>500 g</b>	<b>7 days</b>
<b>50-100 % solids</b> (solids with some free liquids)	<b>1311/8270</b>	<b>5</b>	<b>2</b>	<b>1100 g</b>	<b>900 g</b>	<b>7 days</b>
<b>0.5-50% solids</b> (free liquids with some solids)	<b>1311/8270</b>	<b>2</b>	<b>3</b>	<b>2 Liters</b>	<b>1 Liter</b>	<b>7 days</b>
<b>&lt;0.5% solids</b> (liquids w/no observable solids) <sup>3</sup>	<b>8270</b>	<b>2</b>	<b>2</b>	<b>2 Liters</b>	<b>1 Liter</b>	<b>7 days</b>
<b>Non-standard</b> (paper, cloth, metal, etc.)	<b>1311/8270</b>	<b>1</b>	<b>1</b>	<b>1000 g</b>	<b>500 g, more if multiphasic</b>	<b>7 days</b>

TCLP Volatile Organics (VOAs): (Note: all containers must be completely full and have zero headspace)

<b>20-100 % solids</b> (mostly solids with some liquid)	<b>1311/8260</b>	<b>13</b>	<b>2</b>	<b>200 g</b>	<b>100 g</b>	<b>14 days<sup>4</sup></b>
<b>5-20 % solids</b> (some solids with liquid)	<b>1311/8260</b>	<b>15</b>	<b>2</b>	<b>2 Liters</b>	<b>1 Liter</b>	<b>14 days<sup>4</sup></b>
<b>0.5-5% solids</b> (free liquids with some solids)	<b>1311/8260</b>	<b>11 &amp; 15</b>	<b>3 &amp; 1</b>	<b>120 mL &amp; 1 L</b>	<b>240 mL (6-40 mL VOA vials)</b>	<b>14 days<sup>4</sup></b>
<b>&lt;0.5% solids</b> (liquids with no observable solids) <sup>3</sup>	<b>8260</b>	<b>11 &amp; 15</b>	<b>3 &amp; 1</b>	<b>120 mL &amp; 1 L</b>	<b>240 mL (6-40 mL VOA vials)</b>	<b>14 days<sup>4</sup></b>
<b>Non-standard</b> (paper, cloth, metal, etc.)	<b>1311/8260</b>	<b>1</b>	<b>1</b>	<b>1000 g</b>	<b>500 g, more if multiphasic</b>	<b>14 days</b>

Other Analyses:

Analysis	Matrix	Analytical Method	Bottle # <sup>1</sup>	Nr. needed	Sample Amt <sup>2</sup>	Minimum Amt	Holding Times
<b>Fish Bioassay</b>	<b>Solid</b>	<b>80-12</b>	<b>5</b>	<b>1</b>	<b>200 g</b>	<b>200 g</b>	









<b>pH</b>	<b>Solid</b>	<b>9045</b>	<b>13</b>	<b>1</b>	<b>200 g</b>	<b>100 g</b>	<b>28 days</b>
<b>Total Metals</b>	<b>Solid</b>	<b>6010</b>	<b>8</b>	<b>1</b>	<b>100 g</b>	<b>50 g</b>	<b>180 days/Hg 28</b>
<b>Ignitability</b>	<b>Solid</b>	<b>1030</b>	<b>5</b>	<b>1</b>	<b>200 g (500 mL)</b>	<b>100 g (250 mL)</b>	<b>7 days</b>
<b>PAHs</b>	<b>Solid</b>	<b>8270</b>	<b>5</b>	<b>2</b>	<b>500 g</b>	<b>250 g</b>	<b>14 days</b>
<b>Extractable Organic Halides</b>	<b>Solid</b>	<b>9023</b>	<b>5</b>	<b>1</b>	<b>250 g</b>	<b>100 g</b>	<b>28 days<sup>4</sup></b>
<b>VOAs (volatile organics)</b>	<b>Solid</b>	<b>8260</b>	<b>11 &amp; 13</b>	<b>2 &amp; 2</b>	<b>80 mL &amp; 100 g</b>	<b>40 mL )</b>	<b>14 days<sup>4</sup></b>
<b>VOAs (EnCore samplers)</b>	<b>Solid</b>	<b>5035/8260</b>	<b>EnCore &amp; 13</b>	<b>3 &amp; 1</b>	<b>15 g &amp; 100 g</b>	<b>10 g &amp; 50 g</b>	<b>48 hours<sup>4</sup></b>
<b>Semi-VOAs (aka BNAs)</b>	<b>Solid</b>	<b>8270</b>	<b>5</b>	<b>2</b>	<b>500 g</b>	<b>250 g</b>	<b>14 days</b>
<b>Chlor-d-tects</b>	<b>Liquid</b>	<b>9077</b>	<b>n/a</b>	<b>2</b>	<b>n/a</b>	<b>n/a</b>	<b>Expiration date</b>
<b>Fish Bioassay</b>	<b>Liquid</b>	<b>80-12</b>	<b>5</b>	<b>1</b>	<b>200 mL</b>	<b>100 mL</b>	
<b>pH</b>	<b>Liquid</b>	<b>9040</b>	<b>22</b>	<b>1</b>	<b>500 mL</b>	<b>100 mL</b>	<b>24 hours<sup>4</sup></b>
<b>Total Metals</b>	<b>Liquid</b>	<b>6010</b>	<b>16</b>	<b>2</b>	<b>1 Liter</b>	<b>350 mL (700 mL if Hg)</b>	<b>180 days/Hg 28</b>
<b>Ignitability</b>	<b>Liquid</b>	<b>1010 or 1020</b>	<b>5</b>	<b>1</b>	<b>500 mL</b>	<b>250 mL</b>	<b>7 days</b>
<b>PAHs</b>	<b>Liquid</b>	<b>8270</b>	<b>1</b>	<b>2</b>	<b>2 gal</b>	<b>1 gal</b>	<b>7 days</b>
<b>Total Organic Halides</b>	<b>Liquid</b>	<b>9020</b>	<b>15</b>	<b>3</b>	<b>1 Liter</b>	<b>100 mL</b>	<b>28 days<sup>4</sup></b>
<b>VOAs (volatile organics)</b>	<b>Liquid</b>	<b>8260</b>	<b>11</b>	<b>3</b>	<b>120 mL</b>	<b>40 mL</b>	<b>14 days<sup>4</sup></b>
<b>Semi-VOAs (aka BNAs)</b>	<b>Liquid</b>	<b>8270</b>	<b>1</b>	<b>2</b>	<b>2 gal</b>	<b>1 gal</b>	<b>7 days</b>

<sup>1</sup> This refers to the Manchester bottle number as found on their Sample Container Request Form. <sup>4</sup>Fill completely. May need to use smaller jar to guarantee no headspace


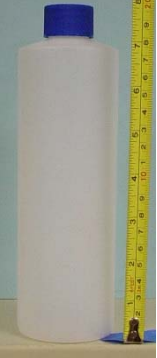

<sup>2</sup> Laboratory can conduct analyses with less than the MINIMUM amount. Contact laboratory if there is less than the MINIMUM sample available.

<sup>3</sup> A TCLP extract does **not** need to be made for these cases. Laboratory **must** do a % Solids analysis to verify the waste meets this criteria. If not, a standard TCLP extraction (1311) is done

## Bottle Chart

			
<p>#1: 1 gallon jar</p>	<p># 2: ½ gallon (2 L) jar</p>	<p>#3: 1 Liter jar</p>	<p>#4: 1 L jar (oil &amp; grease)</p>
<ul style="list-style-type: none"> <li>▪ All TCLP Non-standard</li> <li>▪ PAHs (Liquid)</li> <li>▪ Total Semi-VOAs (Liquid)</li> </ul>	<ul style="list-style-type: none"> <li>▪ TCLP Metals 50-100% solids</li> <li>▪ TCLP Semi-VOAs 0.5-50% solids</li> <li>▪ TCLP Semi-VOAs &lt; 0.5% solids</li> <li>▪ Total Semi-VOAs</li> </ul>	<ul style="list-style-type: none"> <li>▪ Use in place of #1 or #2 if needed</li> </ul>	
			
<p># 5: 8 oz short jar</p>	<p>#8: 4 oz short jar</p>	<p>#11: 40 mL Vial w/septum</p>	<p>#13: 2 oz short jar w/septum</p>
<ul style="list-style-type: none"> <li>▪ TCLP Metals 100% solids</li> <li>▪ TCLP Semi-VOAs 100% solids</li> </ul>	<ul style="list-style-type: none"> <li>▪ Total Metals (soil/sed)</li> <li>▪ Ignitability (soil/sed)</li> </ul>	<ul style="list-style-type: none"> <li>▪ TCLP VOAs 0.5-5% solids</li> <li>▪ TCLP VOAs &lt; 0.5% solids</li> </ul>	<ul style="list-style-type: none"> <li>▪ TCLP VOAs 20-100% solids</li> <li>▪ Total VOAs (soil/sed)</li> </ul>

<ul style="list-style-type: none"> <li>▪ TCLP Semi-VOAs &gt;50% solids</li> <li>▪ Total Semi-VOAs</li> <li>▪ PAHs (soil/sed)</li> <li>▪ Extractable Organic Halides (Liq.)</li> <li>▪ Ignitability (soil/sed)</li> <li>▪ Fish Bioassay</li> </ul>		<ul style="list-style-type: none"> <li>▪ Total VOAs (Liquid)</li> <li>▪ Total VOAs (soil/sed)</li> </ul>	<ul style="list-style-type: none"> <li>▪ pH (soil/sed)</li> </ul>
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<p>#15: 1 L Amber</p>	<p>#16: 500 mL HDPE</p>	<p>#22: 500 mL poly</p>	
<ul style="list-style-type: none"> <li>▪ TCLP Metals 0.5-50% solids</li> <li>▪ TCLP Metals &lt; 0.5% solids</li> <li>▪ TCLP VOAs 5-20% solids</li> <li>▪ TCLP VOAs 0.5-5% solids</li> <li>▪ TCLP VOAs &lt; 0.5% solids</li> <li>▪ Total Organic Halides (Liquid)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Total Metals (Liquid)</li> </ul>	<ul style="list-style-type: none"> <li>▪ pH (Liquid)</li> </ul>	