



## **Non-Radioactive and Organics Sample Packaging Checklist**

**Use this checklist to properly pack your AAA sample cooler**

- During sample collection, use caution to avoid flushing away preservative from preserved bottles by over filling. The chain of custody (COC) should be completed with sample IDs, dates, and times as well as the sample labels affixed to the containers during collection. Ensure the COC and the information on the sampling containers match.
- Complete a chain-of-custody (COC) form which includes unique identification of each sample container being delivered; the date, time and location of each sample; the name of the sampler; the analytical testing requested for each sample. The signature; date and time in the **relinquished by section at the bottom of the COC**.
- Prior to packing, verify the COC has been completed including analyses requested, expected turnaround time, potential sample hazards, project name, PO or quote reference.
- Insert absorbent pad and then insert a plastic liner when packaging aqueous samples or using wet ice for temperature preservation.
- Ensure all lids are securely tightened. If samples were collected in glass containers, place container inside plastic bubble wrap bag. Place all containers inside cooler. When possible, try to alternate glass and plastic containers to prevent breakage.
- Surround all samples with wet ice within the plastic liner. We recommend using double re-sealable bags to contain the ice. Make sure the ice is distributed throughout the cooler and sufficient enough to cool all samples during transit. Blue ice can also be used if samples are already cold. Refer to our sample analysis guide below to ensure you are shipping your sample containers per analysis requirements. If in doubt, contact your project manager for support.
- Add more bubble wrap or padding to fill the remaining space inside the cooler to prevent breakage.
- Relinquish the hardcopy COC, place inside ziplock bag with any other supporting documentation including data on chemical, biological, radioactive or other potential hazards. Contact your project manager with any hazard or radioactive information prior to shipping as approval must be granted for these shipments from AAA. Place COC and supporting document on top of samples or tape to the lid.
- If the shipping container is to be returned, ensure the correct address is written on the container itself.
- Close cooler. Tape around the cooler, top and bottom, several times to prevent the cooler from leaking. Affix any shipping labels required for transport in accordance with the Department of Transportation regulation.



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Parameter	Container <sup>1</sup>	Preservation	Holding Time <sup>2</sup>	Min. Volume <sup>5</sup>
<b>INORGANICS</b>				
Acidity	P,G	0 ≤ 6° C	14 days	25 mL / NA
Adsorbable Organic Halides (AOX)	G, amber	0 ≤ 6° C, HNO <sub>3</sub> to pH < 2, zero headspace	>3 days and < 6 months from collection	50 mL / 1 g
Alkalinity	P,G	0 ≤ 6° C	14 days	50 mL / NA
<b>Biochemical Oxygen Demand (BOD) and Carbonaceous Oxygen Demand (CBOD)</b>	<b>P,G</b>	<b>0 ≤ 6° C</b>	<b>48 hours</b>	<b>500 mL / NA</b>
Bromide	P,G	None required	28 days	10 mL / 4 g
<b>Carbon Dioxide</b>	<b>P,G</b>	<b>0 ≤ 6° C</b>	<b>Immediate</b>	<b>50 mL / NA</b>
Chemical Oxygen Demand (COD)	P,G	0 ≤ 6° C, H <sub>2</sub> SO <sub>4</sub> to pH < 2	28 days	2 mL / NA
Chlorine by Bomb Calorimeter	P,G	0 ≤ 6° C	None	NA / 0.5 g
Chloride	P,G	None required	28 days	10 mL / 4 g
<b>Color</b>	<b>P,G</b>	<b>0 ≤ 6° C</b>	<b>48 hours</b>	<b>50 mL / NA</b>
Conductivity	P,G	0 ≤ 6° C	28 days	25 mL / NA
<b>Corrosivity by pH</b>	<b>P,G</b>	<b>None</b>	<b>Immediate</b>	<b>25 mL / 5 g</b>
Corrosivity to Steel	P,G	None	None	290 mL / NA
Cyanide amenable to chlorination	P,G	0 ≤ 6° C, NaOH to pH > 12, 0.6 g ascorbic acid <sup>3</sup>	14 days <sup>4</sup>	50 mL / NA
Cyanide, Reactive Releasable	G, amber	Zero headspace	7 days liquids, 28 days solids	10 mL / 10 g
Cyanide, total, available, free or Weak Acid Dissociable	P,G	0 ≤ 6° C, NaOH to pH > 12, 0.6 g ascorbic acid <sup>3</sup>	14 days <sup>4</sup>	50 mL / 1 g
Density	P,G	0 ≤ 6° C	7 days	NA / 10 g
<b>Dissolved Oxygen</b>	<b>G (bottle and top)</b>	<b>None, Zero headspace</b>	<b>Immediate</b>	<b>300 mL / NA</b>
<b>Extractable Organic Halides (EOX)</b>	G, amber	Zero headspace, 0 ≤ 6° C	<b>28 days</b>	<b>25 mL</b>
Flashpoint	Metal, G	None	None	25 mL / 2 g
Fluoride	P,G	None Required	28 days	25 mL / 4 g
Fluorine by Bomb	P,G	0 ≤ 6° C	None	NA/ 0.5 g
Hardness (EDTA titration)	P,G	0 ≤ 6° C, HNO <sub>3</sub> to pH < 2	6 months	50 mL / NA
Hardness (calculation)	P,G	HNO <sub>3</sub> to pH < 2	6 months	50 mL / NA
Heating Value	P,G	0 ≤ 6° C	None	1 mL / 0.5 g
Nitrogen-Ammonia	P,G	0 ≤ 6° C, H <sub>2</sub> SO <sub>4</sub> to pH < 2	28 days	20 mL / 5 g
<b>Nitrate – Liquids</b>	<b>P,G</b>	<b>0 ≤ 6° C</b>	<b>48 hours</b>	<b>10 mL</b>
Nitrate – Solids	P,G	0 ≤ 6° C	28 days for extraction, 48 hrs from extraction to analysis	4 g
<b>Nitrite - Liquids</b>	<b>P,G</b>	<b>0 ≤ 6° C</b>	<b>48 hours</b>	<b>10 mL</b>



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Nitrite - Solids	P,G	0 ≤ 6° C	28 days for extraction, 48 hrs from extraction to analysis	4 g
Nitrate/Nitrite	P,G	0 ≤ 6° C, H <sub>2</sub> SO <sub>4</sub> to pH < 2	28 days	4 mL / 4 g
Nitrogen - Total Kjeldahl and Organic	P,G	0 ≤ 6° C, H <sub>2</sub> SO <sub>4</sub> to pH < 2	28 days	20 mL / 5 g
Oil and Grease	G	0 ≤ 6° C, HCl or H <sub>2</sub> SO <sub>4</sub> to pH < 2	28 days	1000 mL
<b>Orthophosphate-Liquids</b>	<b>P,G</b>	<b>Field filter immediately, 0 ≤ 6° C</b>	<b>48 hours</b>	<b>10 mL</b>
Orthophosphate – Solids	P,G	0 ≤ 6° C	28 days for extraction, 48 hrs from extraction to analysis	4 g
Paint Filter Liquids Test	Any	None	None	100 g
Percent (%) Moisture	P,G	0 ≤ 6° C	None	2 mL / 5 g
Perchlorate by Ion Chromatography	P,G	0 ≤ 6° C	28 days	10 mL / 4g
Total Phenols	G,	0 ≤ 6° C, H <sub>2</sub> SO <sub>4</sub> to pH < 2	28 days	50 mL / 1 g
<b>pH</b>	<b>P,G</b>	<b>None if within 15 mins of collection, 0 ≤ 6° C when shipped to lab</b>	<b>Immediate</b>	<b>25 mL / 5 g</b>
Total Phosphorus	P,G	0 ≤ 6° C, H <sub>2</sub> SO <sub>4</sub> to pH < 2	28 days	20 mL / 1 g
<b>Residual Chlorine</b>	<b>P,G</b>	<b>None Required</b>	<b>Immediate</b>	<b>25 mL / NA</b>
Residue, Total	P,G	0 ≤ 6° C	7 days	100 mL / NA
Residue, Filterable (TDS)	P,G	0 ≤ 6° C	7 days	70 mL / NA
Residue, NonFilterable (TSS)	P,G	0 ≤ 6° C	7 days	1000 mL
Residue, Volatile and Fixed (% Ash)	P,G	0 ≤ 6° C	7 days	25 mL / 1 g
Salinity	P,G	0 ≤ 6° C	28 days	25 mL / NA
Specific Gravity	P,G	0 ≤ 6° C	7 days	50 mL / NA
Sulfate	P,G	0 ≤ 6° C	28 days	10 mL / 4 g
Sulfide	P,G	0 ≤ 6° C, add ZnAc and NaOH to pH > 9	7 days	200 mL / 20 g
Sulfide, Reactive Releasable	G, amber	Zero headspace, 0 ≤ 6° C	7 days liquids, 28 days solids	10 mL / 10 g
Sulfide, Acid-Soluble	P,G	Zero headspace, 0 ≤ 6° C Liquids: ZnAc and NaOH to pH > 9. Solids: Fill surface with 2N ZnAc	7 days liquids, 365 days solids	200 mL / 20 g
<b>Sulfite</b>	<b>P,G</b>	<b>EDTA<sup>9</sup></b>	<b>Immediate</b>	<b>50 mL / NA</b>
Sulfur by Bomb	P,G	0 ≤ 6° C	None	NA / 0.5 g
<b>Surfactants</b>	<b>P,G</b>	<b>0 ≤ 6° C</b>	<b>48 hours</b>	<b>100 mL / NA</b>
Total Organic Carbon (TOC), also applies Dissolved Organic Carbon (DOC), Total Carbon (TC) and Total Inorganic Carbon (TIC)	G, amber	0 ≤ 6° C, HCl or H <sub>2</sub> SO <sub>4</sub> to pH < 2	28 days	50 mL / 5 g



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Total Organic Halides (TOX)	G	0 ≤ 6° C, H <sub>2</sub> SO <sub>4</sub> to pH < 2, Zero headspace	28 days	50 mL / 1 g
Total Petroleum Hydrocarbons	G	0 ≤ 6° C, H <sub>2</sub> SO <sub>4</sub> to pH < 2	28 days	1000 mL / NA
TCLP (Toxicity Characteristic leaching Procedure) and Synthetic Precipitation Leaching Procedure (SPLP)	P,G depending on test	0 ≤ 6° C, depends on test	14 days, VOA 14 days, SVOA 28 days Mercury 180 days non-Hg metals	105 g or 130 g for full TCLP list
<b>Turbidity</b>	<b>P,G</b>	<b>0 ≤ 6° C</b>	<b>48 hours</b>	<b>50 mL / NA</b>
Viscosity	P,G	0 ≤ 6° C	None	7 mL
Metals – Liquids (except chromium VI, Boron, Silica and mercury)	P, (G as long as no B or Si is required)	HNO <sub>3</sub> to pH < 2	6 months	20 mL
Boron-Liquids	P, Teflon or Quartz	HNO <sub>3</sub> to pH < 2	6 months	50 mL
Silica- Liquids	P or Quartz	0 ≤ 6° C	28 days	50 mL
Metals – Solids <sup>8</sup> (except chromium VI and mercury)	P, (G as long as no B or Si is required)	None	6 months	2 g
<b>Chromium VI – Liquids</b>	<b>P,G</b>	<b>0 ≤ 6° C</b>	<b>24 hours</b>	<b>25 mL</b>
Chromium VI - Liquids	P,G	0 ≤ 6° C, (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> , pH = 9.3 to 9.7	28 days	25 mL
Chromium VI - Solids <sup>8</sup>	P,G	0 ≤ 6° C	30 days to digestion, 7 days from digestion to analysis	1 g
Mercury - Liquids	P,G	HNO <sub>3</sub> to pH < 2	28 days	50 mL
Mercury - Solids <sup>8</sup>	P,G	0 ≤ 6° C	28 days	2 g
Mercury – Low Level Liquids	P,G	HCl or BrCl	90 days when preserved w/in 48 hrs or oxidized w/in 28 days	50 mL
<b>ORGANICS</b>				
Method AK101-Solids <sup>7</sup>	Amber G	4 ± 2 °C, zero headspace, methanol	14 days	4 oz <sup>7</sup>
Method AK101-Liquids	Amber G	4 ± 2 °C, HCl < 2	14 days	3x40 mL
Method AK102-Liquids	Amber G	4 ± 2 °C, HCl or H <sub>2</sub> SO <sub>4</sub> to pH < 2	14 days	1000 mL
Method AK102/103-Solids	Amber G	4 ± 2 °C	14 days for extraction 40 days after extraction for analysis	4 oz
MADEP EPH - Liquids	Amber G	4 ± 2 °C, HCl < 2	14 days	4 oz
MADEP EPH – Solids	Amber G	4 ± 2 °C	14 days	1000 mL
MADEP VPH – Liquids (ambient purge) Trip Blank Required	G, teflon-lined septum	4 ± 2 °C, HCl < 2	14 days	3x40 mL



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MADEP – VPH Liquids (Heated Purge) Trip Blank Required	G, teflon-lined septum	4 ± 2 °C, Add 0.40 – 0.44g trisodium phosphate dodecahydrate to pH>11	14 days	3x40 mL
MADEP VPH – Solids Trip Blank Required	G, Teflon-lined septum	1mL MeOH/g sample at sampling or within 48 hrs, 4 ± 2 °C	28 days	60mL vials add 25g sample, 40 mL vials add 15 g sample
BTEX – Liquids	G, Teflon-lined septum	0 ≤ 6° C, zero headspace, HCl to pH < 2, 0.008% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> <sup>3</sup>	14 days <sup>6</sup>	3x40 mL
<b>BTEX - Solids<sup>8</sup></b>	<b>G, Teflon-lined septum</b>	<b>0 ≤ 6° C</b>	<b>48 hours for preservation and 14 days for analysis</b>	<b>3x5 g EnCores or 2 low and 1 high level vials</b>
Volatiles - Drinking Water, Wastewater/groundwater (except 2-CLEVE, acrolein, and acrylonitrile)	G, Teflon-lined cap	0 ≤ 6° C, zero headspace, HCl to pH < 2	14 days	3x40 mL
Volatiles (including 2 CLEVE) - Wastewater	G, Teflon-lined cap	0 ≤ 6° C, zero headspace, unpreserved	7 days <sup>6</sup>	3x40 mL
Volatiles - (acrolein and acrylonitrile)	G, Teflon-lined cap	0 ≤ 6° C, zero headspace, unpreserved	3 days <sup>6</sup> by EPA 624.1 7 days <sup>6</sup> by EPA 8260	3x40 mL
<b>Volatiles - Solids<sup>8</sup></b>	<b>EnCore Sampler</b>	<b>0 ≤ 6° C</b>	<b>48 hours for preservation 14 days for analysis</b>	<b>3x5 g EnCores</b>
Volatiles - Concentrated Waste	G, teflon-lined septum	None	14 days	1x40 mL
Base/Neutral and Acid Extractables and 1,4-Dioxane – Liquids	Amber G, Teflon-lined cap	0 ≤ 6° C, 0.008% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> <sup>3</sup>	7 days for extraction 40 days after extraction for analysis	1000 mL / 50 g
Base/Neutral and Acid Extractables and 1,4-Dioxane-Solids <sup>8</sup>	G, Teflon-lined cap	0 ≤ 6° C	14 days for extraction 40 days after extraction for analysis	1000 mL / 50 g
Base/Neutral and Acid Extractables - Concentrated Waste	G, Teflon-lined cap	None	7 days for extraction 40 days after extraction for analysis	1000 mL / 50 g
TPH-GRO	G, Teflon-lined cap	0 ≤ 6° C, HCl to pH < 2, zero headspace	14 days	3x40 mL
TPH-DRO	G, Teflon-lined cap	0 ≤ 6° C, HCl to pH < 2	7 days for extraction (Liquids) 14 days for extraction (Solids) 40 days after extraction to analysis	1000 mL / 50 g



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Chlorinated Herbicides - Liquids	Amber G, Teflon-lined cap	0 ≤ 6° C, 0.008% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> <sup>3</sup>	7 days for extraction 40 days after extraction for analysis	1000 mL
Chlorinated Herbicides - Solids <sup>8</sup>	G, Teflon-lined cap	0 ≤ 6° C	14 days for extraction 40 days after extraction	50 g
Organochlorine Pesticides by SW-846 EPA 8081 Liquids	Amber G, Teflon-lined cap	0 ≤ 6° C, 0.008% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	7 days for extraction 40 days after extraction for analysis	1000 mL
Organochlorine Pesticides by SW-846 EPA 8081 Solids	G, Teflon-lined septum	0 ≤ 6° C	14 days for extraction 40 days after extraction for analysis	50g
<b>Organochlorine Pesticides and PCBS by EPA 608.3 only</b>	Amber G, Teflon-lined cap	0 ≤ 6° C, 0.008% , Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> <sup>3</sup> , NaOH and H <sub>2</sub> SO <sub>4</sub> preserve to pH 5.0 -9.0 ( for prep >72 hrs and < 7 days)	<b>Unpreserved Prep within 72 hrs</b> Preserved prep within 7 days 40 days after extraction for analysis	<b>1000 mL / NA</b>
PCBs- Liquids	Amber G, Teflon-lined cap	0 ≤ 6° C, 0.008% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> <sup>3</sup>	365 days for extraction 40 days after extraction for analysis	1000 mL
PCBs- Solids	Wide-mouth glass	0 ≤ 6° C	365 days for extraction 40 days after extraction for analysis	50g
PCBs in Oil	G, Teflon-lined cap	None	365 days for extraction 40 days after extraction for analysis	1x40 mL
Solvents, Glycols, Alcohols and Acetates -- Liquid	G, Teflon-lined septum	0 ≤ 6° C, zero headspace or 0 ≤ 6° C, zero headspace HCl to pH < 2	7 days unpreserved 14 days preserved	1 x 40mL
Solvents, Glycols, Alcohols and Acetates -- Solids	G, Teflon-lined septum	0 ≤ 6° C	14 days	10g
Industrial Solvents	G, Teflon-lined septum	0 ≤ 6° C	14 days	1x40 mL
1,4-Dioxane in Drinking Water by EPA 522	G, Teflon-lined septum	<10°C during transport, Sodium sulfite (50mg/L), sodium bisulfate (1g/L)	28 days for extraction at 0 ≤ 6° C (not frozen) and 28 days after extraction for analysis at -5° C, protected from light	100 mL to 500 mL



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Dioxin Screen	G, Teflon-lined cap	0 ≤ 6° C	7 days for extraction 40 days after extraction for analysis	1000 mL / 50 g
EDB and DBCP	G, Teflon-lined septum	0 ≤ 6° C, 0.4% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	14 days	3x40 mL / NA
Polynuclear Aromatic Hydrocarbons	Amber G, Teflon-lined septum (Liquids), Teflon-lined cap (Solids)	0 ≤ 6° C	7 days for extraction (Liquids) 14 days to extraction (Solids) 40 days to analysis after extraction	1000 mL / 30 g
Nitroaromatics and Nitroamines	Amber G, Teflon-lined septum	0 ≤ 6° C	7 days for extraction 40 days after extraction for analysis	1000 mL / 2 g
Nitroaromatics and Nitroamines by MIS Prep (solid samples)	Protect from light	0 ≤ 6° C until air drying 22 ± 4° C (or cooler) after drying	14 days for extraction, 40 days after extraction for analysis	Entire Sample
RDX Breakdown	Amber G, Teflon-lined septum for liquids and Teflon-lined cap for solids	0 ≤ 6° C	7 days to extraction for liquids 14 days to extraction for solids 40 days to analysis after extraction	1000 mL / 2 g
Low Level Perchlorate	P	0 ≤ 6° C , headspace required	28 days	10 mL / 2 g
Haloacetic Acids	G, amber, Teflon-lined septum	0 ≤ 6° C , zero headspace, ammonium chloride	14 days to extraction, 7 days after extraction for analysis	3x40 mL
Dissolved Gases	G, Teflon-lined septum	0 ≤ 6° C, HCl to pH < 2, zero headspace	7 days if unpreserved, 14 days if preserved	2x40 mL
Perfluorinated Alkyl Acids PFAS	HDPE Bottle - unlined polyethylene screw cap	0 ≤ 10° C for liquids, 0 ≤ 6° C for solids, 1.25g Trizma® (Drinking Water only)	14 days from collection to extraction, 28 days from extraction to analysis (liquids) 28 days from collection to extract and analyze (solids)	250 mL/10 g
<b>RADIOCHEMISTRY</b>				
Americium – Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	1000 mL
Americium – Solids <sup>8</sup>	P,G	None	6 months	20 g
Calcium-45 – Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	500 mL



ARS Aleut Analytical

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Calcium-45 - Solids <sup>8</sup>	P,G	None	6 months	20 g
Carbon-14 Liquids & Solids <sup>8</sup>	P,G	None	6 months	500 mL / 20 g
Cesium 134 – Drinking Water	P,G	HCl to pH < 2	6 months	2000 mL
Chlorine-36 Liquids & Solids <sup>8</sup>	P,G	None	6 months	500 mL / 20 g
Curium - Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	1000 mL
Curium - Solids <sup>8</sup>	P,G	None	6 months	20 g
Gamma Isotopes - Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	2000 mL
Gamma Isotopes - Solids <sup>8</sup>	P,G	None	6 months	200 g
Gross Alpha & Beta – Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	500 mL
<b>Gross Alpha &amp; Beta, Rapid - Liquids</b>	<b>P,G</b>	<b>HNO<sub>3</sub> or HCl to pH &lt; 2</b>	<b>48 – 72 hrs</b>	<b>500 mL</b>
Gross Alpha & Beta - Solids <sup>8</sup>	P,G	None	6 months	20 g
Iodine-129 - Liquids & Solids <sup>8</sup>	P,G	None	6 months	1000 mL / 50 g
<b>Iodine -131 - Liquids</b>	<b>P,G</b>	<b>None</b>	<b>8 days</b>	<b>1000 mL</b>
Iron 55 -Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	500 mL
Iron 55 - Solids <sup>8</sup>	P,G	None	6 months	20 g
Lead-210 – Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	1000 mL
Lead-210 - Solids <sup>8</sup>	P,G	None	6 months	200 g
Neptunium - Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	1000 mL
Neptunium - Solids <sup>8</sup>	P,G	None	6 months	20 g
Nickel-59 – Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	1000 mL
Nickel-59 – Solids <sup>8</sup>	P,G	None	6 months	20 g
Nickel-63 - Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	1000 mL
Nickel-63 - Solids <sup>8</sup>	P,G	None	6 months	20 g
Phosphorus-32 –Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	1000 mL
Phosphorus-32 - Solids <sup>8</sup>	P,G	None	6 months	20 g
Plutonium – Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	1000 mL
Plutonium - Solids <sup>8</sup>	P,G	None	6 months	20 g
Polonium - Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	1000 mL
Polonium - Solids <sup>8</sup>	P,G	None	6 months	20 g
Promethium-147/Samarium-151 – Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	1000 mL
Promethium-147/Samarium-151 - Solids <sup>8</sup>	P,G	None	6 months	20 g
Radium-223 – Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	2000 mL
Radium-224 – Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	2000 mL
Radium-226 – Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	1000 mL
Radium-228 – Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	1000 mL
<b>Radon-222 – Liquids</b>	<b>G</b>	<b>None, Zero headspace</b>	<b>4 days</b>	<b>2x40 mL</b>
Selenium-79 – Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	500 mL
Selenium-79 - Solids <sup>8</sup>	P,G	None	6 months	20 g
Strontium-89/90 – Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	1000 mL
Strontium-89/90 - Solids <sup>8</sup>	P,G	None	6 months	20 g
Sulfur-35 - Liquids	P,G	None	6 months	500 mL
Sulfur-35 - Solids <sup>8</sup>	P,G	None	6 months	20 g
Technetium-99 – Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	1000 mL





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**STORAGE AND PRESERVATION**

*Appendix J, QAP Rev 33, March 2019*

<b>Parameter</b>	<b>Container<sup>1</sup></b>	<b>Preservation</b>	<b>Holding Time<sup>2</sup></b>	<b>Min. Volume<sup>5</sup></b>
Technetium-99 – Solids <sup>8</sup>	P,G	None	6 months	20 g
Thorium – Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	1000 mL
Thorium - Solids <sup>8</sup>	P,G	None	6 months	20 g
Total Activity Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	100 mL
Total Activity - Solids <sup>8</sup>	P,G	None	6 months	20 g
Total Alpha Radium – Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	500 mL
Total Alpha Radium - Solids <sup>8</sup>	P,G	None	6 months	20 g
Total Uranium - Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	100 mL
Total Uranium - Solids <sup>8</sup>	P,G	None	6 months	20 g
Tritium – Drinking Water	G	None	6 months	250 mL
Tritium – Liquids & Solids <sup>8</sup>	P,G	None	6 months	250 mL / 20 g
Uranium – Liquids	P,G	HNO <sub>3</sub> or HCl to pH < 2	6 months	1000 mL
Uranium - Solids <sup>8</sup>	P,G	None	6 months	20 g

<sup>1</sup> P = Polyethylene; G = Glass

<sup>2</sup> Samples should be analyzed as soon as possible after collection. The holding times listed are maximum times that samples may be held before analysis and be considered valid.

<sup>3</sup> Used only in the presence of residual chlorine.

<sup>4</sup> Maximum holding time is 24 hours when sulfide is present. All samples may be tested with lead acetate paper before pH adjustments in order to determine if sulfide is present. If present, remove by adding cadmium nitrate powder until a negative spot test is obtained. Filter sample and add NaOH to pH 12.

<sup>5</sup> Minimum amount of sample needed to prepare and analyze for the parameter. Some parameters may be combined into one analysis, others may need additional amount if quality control is being requested for site-specific samples. Please check with GELs Project Manager for proper sample amounts based on project specific requirements.

<sup>6</sup> Volatiles Groundwater/Wastewater: If samples are to be analyzed for vinyl chloride, styrene, or 2-chloroethylvinyl ether (2-CLEVE) for soil or water, separate samples must be collected without acid preservation and analyzed within 7 days. For aqueous samples to be analyzed for acrolein and acrylonitrile, by EPA Method 624.1, the samples are not to be acidified and must be analyzed within 3 days of collection.

<sup>7</sup> Solids Method AK101 2-4 oz amber wide-mouth jars tared and labeled, 1-4 oz amber wide-mouth jar labeled (evaporative loss), 2-25 mL 2.5 ppm surrogated P/T methanol tubes.

<sup>8</sup> Solids matrix typically applies to soils, sludges and sediments. Some tests have been developed for filters, miscellaneous solid waste, plant and animal tissue, also referred to as solids. Contact GEL to verify a particular matrix for the test of interest.

<sup>9</sup> 1mL of 2.5% EDTA solution per 100mL sample