

WP 02-EM1006

Revision 8

Serial and Final Sample Collection

Technical Procedure

EFFECTIVE DATE: 02/01/11

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APPROVED FOR USE

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CHANGE HISTORY SUMMARY

REVISION NUMBER	DATE ISSUED	DESCRIPTION OF CHANGES
7	09/15/10	<p>Simplified procedure title to reflect actual sampling order and eliminate redundant words</p> <p>Corrected order of References per WP 15-PS.2, Section 4.2 and added AJHA reference</p> <p>Added Note concerning certified bottles requirements and reorganized entire Equipment section</p> <p>Corrected laboratory terminology throughout entire document</p> <p>Clarified information presented in Precautions and Limitations /Prerequisite Actions sections</p> <p>Under Performance section:</p> <ul style="list-style-type: none"> • Deleted Section 1.0 Collection of Water Samples from Private Wells and subsection 1.1 and 1.2. No longer performing sample collections from private wells • Moved Section 1.3 (Water Sample Preservation) to Section 2.0 (Collection Techniques and Preserving Final Groundwater Samples) • Added steps describing sampling techniques for VOA, TOX and non-volatile samples • Added Notes before Section 1.1, Section 1.1.8, Section 1.2.4 • Clarified instructions for sample collection. • Added and deleted Notes throughout Section 3.0 • Clarified instruction for sample shipping (Section 4.0) <p>Revised Attachment 2</p> <p>Added Attachment 3</p>
8	02/01/11	<p>Eliminated duplicate unfiltered sampled</p> <p>Eliminated sample collection end time</p> <p>Revised Attachments 2 and 3</p>

INTRODUCTION ¹

This procedure describes the steps for collecting groundwater samples from the Water Quality Sampling Program (WQSP) wells near the Waste Isolation Pilot Plant (WIPP). Serial samples are collected and analyzed at the Field Laboratory until stabilization of the field parameters occurs. Final samples for Resource Conservation and Recovery Act (RCRA) analyses are collected and analyzed by a contract laboratory in accordance with WP 02-1.

Each task listed under the Performance section is independent and can be performed as a stand-alone process. The sample team shall determine the order of sample collection.

Performance of this procedure generates the following record(s), as applicable. Any records generated are handled in accordance with departmental Records Inventory and Disposition Schedules.

- Final Sample Checklist (Attachment 2 of this procedure)
- Numbered Chain of Custody (COC; WP 02-EM3001, Attachment 2)
- Numbered Request for Analysis (RFA; WP 02-EM3001, Attachment 3)
- Shipping Authorization, if required
- Carrier Waybill
- WQSP Data Package

REFERENCES

BASELINE DOCUMENTS

- DOE/EH-0173T, *Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance*
- DOE/EP-0023, *A Guide for Environmental Radiological Surveillance at U.S. Department of Energy Installations*
- DOE/WIPP 96-2162, *Groundwater Protection Management Program Plan*
- DOE/WIPP 99-2194, *WIPP Environmental Monitoring Plan*
- WP 02-1, *WIPP Groundwater Monitoring Program Plan*

- WP 12-IH.01, WIPP Chemical Hygiene Plan
- WP 13-1, Washington TRU Solutions LLC Quality Assurance Program Description

REFERENCED DOCUMENTS

- WP 02-EM1005, Groundwater Serial Sample Analysis
- WP 02-EM3001, Administrative Processes for Environmental Monitoring and Hydrology Programs
- WP 15-RM, WIPP Records Management Program
- Automated Job Hazard Analysis (AJHA), PROD-163 Final Sample and Serial Sample Collection
- Hazardous Waste Facility Permit issued to the Waste Isolation Pilot Plant, Permit # NM4890139088-TSDF, issued by New Mexico Environment Department

EQUIPMENT

CONSUMABLE MATERIALS

- 0.45- μm filters, cellulose nitrate
- Deionized water (DI-H₂O), ASTM Type I, >18.0 megaohms-cm
- Packing materials (butcher paper, bubble wrap, sample container cushion sleeves, clear packing tape, duct tape)
- Paper towels (WypAlls™ or Kimwipes™)
- Custody seals, tamper-proof
- Zip-seal plastic bags
- Crushed ice and/or ice packs

TEST EQUIPMENT AND SUPPLIES

- Dedicated sampling line
- Dedicated filter housing, 47-mm (millimeter) and support frame

NOTE

Level 1 certified sample containers meet U.S. Environmental Protection Agency (EPA) quality assurance (QA) washing and treatment standards (Procedures A through D). Certified containers will have a traceable bar code affixed to each container. **There is no need to pre-rinse these containers with sample.**

Non-certified sampling containers (Level 3) require pre-rinsing with sample before use (2 times).

- EPA-certified (Level 1, Procedures A through D) or non-certified (Level 3) sample containers; purchased or provided by contract laboratory:
 - 1-Liter amber bottles (wide- or narrow-mouth Boston Round bottles) or equivalent
 - 2-Liter high-density polyethylene (HDPE) jug or equivalent
 - 1-Liter HDPE bottles (wide- or narrow-mouth) or equivalent
 - 500-mL HDPE bottles (wide- or narrow-mouth) or equivalent
 - 40-mL volatile organic analyte (VOA) glass vials with Teflon septa or equivalent
- Timepiece
- Tweezers
- Glass stir rods or disposable transfer pipets
- Plastic (disposable) or glass beakers
- EMD ColorpHast pH Strips (full range, 0 to 14 pH) or equivalent
- Waterproof, insulated coolers (may be supplied by contract laboratory)
- Portable eyewash/safety shower station
- Safety glasses (with side shields) or chemical safety goggles
- Chemical-resistant gloves (nitrile, latex, vinyl), powder-free
- Lab coat

REAGENTS

- Hydrochloric acid (HCl), 1:1 Vialservatives™, trace-metal grade or equivalent
- Nitric acid (HNO₃), 1:1 or 70% Vialservatives™, trace-metal grade or equivalent
- Sulfuric acid (H₂SO₄), 1:1 Vialservatives™, trace-metal grade or equivalent

PRECAUTIONS AND LIMITATIONS

- Only personnel with a current EM09, Final Sampling qualification are authorized to perform activities specified in this procedure. Trainees may perform sample collection activities specified in this procedure ONLY if operating under the direct supervision of qualified staff.
- Contact Environmental Monitoring and Hydrology (EM&H) Manager if this procedure cannot be performed as written or if abnormal conditions are observed while performing this procedure.
- Material Safety Data Sheet (MSDS) binder and a copy of the WIPP Chemical Hygiene Plan (WP 12-IH.01) shall be current and readily available in the Field Laboratory.
- Minimum personnel protective equipment (PPE) required to perform tasks (sampling and preserving) contained within this procedure are safety glasses with side shields, closed-toe leather shoes and chemical resistant gloves, with the following exceptions:
 - Chemical-resistant gloves can be removed when labeling sample bottles (applying labels and protective tape only).
 - Lab coats are required **ONLY** when working with concentrated acids.
- Concentrated acids shall be handled inside the fume hood.
- Sample containers shall be new and discarded after one use.
- Pre-preserved sample containers (from contract laboratory or vendor) shall not be rinsed with sample before filling.

PREREQUISITE ACTIONS

- Notify laboratories of sample collection plans and shipping/delivery dates in advance.
 - Record manufacturer, lot #, expiration date (if applicable) and date opened for acids used to preserve samples on Attachment 2 Final Sample Checklist (items 20, 21, 22, and 23).
 - If acid contamination is suspected or known, obtain new lot or container of acid, and dispose of contaminated acid in accordance with laboratory policy.
 - Prepare or acquire trip blanks to satisfy the frequency criteria of one (1) sample per sample set.
 - Trip blanks apply **ONLY** to samples designated for volatile organic compounds (VOC) and total organic halogens (TOX) analyses.
 - Trip blanks shall be prepared in accordance with U.S. EPA guidelines.
 - Trip Blanks **MUST** remain with sample containers/coolers throughout entire sampling event.
 - Always ship Trip Blanks in the same cooler as VOC and TOX samples.
 - Verify well purging criterion has been met as defined in WP 02-EM1005 before collecting final samples.
 - Well stabilization occurs when the majority of field-analyzed parameters are within $\pm 5\%$ of the average baseline values established in Rounds 1 through 10 for each well.
- OR**
- When a minimum of three (3) well bore volumes (WBV) have been purged from the well.
 - Record serial sample field-indicator parameters results daily in the Hydrology Field Log Book (HFLB) Comparison Report (electronic version).
 - Comparison report(s) determine if field parameters are within $\pm 5\%$ of the average baseline values obtained in Rounds 1 through 10.

- Provide a discussion of which parameter(s) did not meet stabilization criteria in Final Summary report.

PERFORMANCE

1.0 COLLECTION OF SERIAL GROUNDWATER SAMPLES

NOTE

Sections 1.1 and 1.2 (collection of filtered vs. non-filtered groundwater samples) can be performed in any sequence.

1.1 Collection of Filtered Groundwater

1.1.1 Perform the following prior to sampling:

- Inspect dedicated sampling line and filter housing for contaminants and damage.
- Rinse the filter housing with DI-H₂O.

1.1.2 Assemble bottom section of filter housing (frit support on bottom, screen frit on top).

1.1.3 Place a 0.45- μ m filter on screen frit using clean tweezers.

1.1.4 Wet filter thoroughly with DI-H₂O (prevents air locks).

1.1.5 Assemble top and bottom section of filter housing.

1.1.6 Clamp filter housing assembly onto support frame.

1.1.7 Divert groundwater flow through dedicated sampling line and filter housing.

1.1.8 If sample containers meet Level 1 EPA-certified cleaning standards (Procedure C), omit Step 1.1.9 and go to Step 1.1.10.

1.1.9 Rinse two (2) HDPE sample bottles, two (2) times each, with filtered groundwater.

1.1.10 Fill two (2) HDPE bottles with filtered groundwater. Collect samples by alternating sampling stream between sample containers.

1.1.11 Label bottles with the following information:

- Well name
- Round number
- Formation
- Serial sample number
- Date/Time sampled
- Sample purpose/type

1.1.12 Analyze filtered groundwater samples in accordance with WP 02 EM1005 (Serial Samples Day #1, Day #2, and Day #3) and WP 02-EM1007 (Serial Sample Day #3) as soon as possible.

1.1.13 Disassemble filter housing.

1.1.14 Discard used 0.45- μ m filter.

1.1.15 Rinse filter housing thoroughly with DI-H₂O; air dry.

1.2 Serial Sample Collection of Unfiltered Groundwater

1.2.1 Perform the following prior to sampling:

- Inspect dedicated sampling line and filter housing for contaminants and damage.
- Rinse the filter housing with DI H₂O.

1.2.2 Assemble filter housing (without screen frit and filters) and clamp to support frame.

1.2.3 Divert groundwater flow through dedicated sampling and filter housing.

1.2.4 If sample containers meet Level 1 EPA-certified cleaning standards (Procedure C), omit Step 1.2.5 and go to Step 1.2.6.

1.2.5 Rinse one (1) HDPE sample bottle twice with unfiltered groundwater.

1.2.6 Label bottles with the following information:

- Well name
- Round number
- Formation
- Serial sample number
- Date/Time sampled
- Sample purpose/type

1.2.7 Analyze unfiltered samples according to WP 02-EM1005.

1.2.8 Rinse filter housing thoroughly with DI-H₂O; air dry.

2.0 PRESERVING FINAL GROUNDWATER SAMPLES

WARNING

Chemical-resistant gloves and safety glasses (with side shields) are required during sampling and preserving samples. Exceptions to the use of chemical resistant gloves are listed under Precautions and Limitations.

NOTE

Sample container preservatives should be added before or during sample collection, depending on source of sample container (contract laboratory vs. in house purchase).

- 2.1 Consult Final Sample Checklist for sample containers and preserving requirements (Attachment 2, Items 9, 10, 14, 15, and 17). Volatile organic compounds (VOC) and total organic halogens (TOX) require special handling when preserving and will be addressed separately (refer to Section 2.6) from other analytical parameters.
- 2.2 Perform one of the following techniques, depending on parameter of interest, for samples requiring acid preservation:
- Add 1 premeasured Vialservative™ (approximately 2.0 mL) of required acid into each sample container.

- Add 2 mL of required trace-metal grade acid (H_2SO_4 , HNO_3 , or HCl) into each sample container.
 - VOA vials **ONLY**. Add contents of one (1) Vialservative™ (0.5 mL) or approximately 5 drops (0.5 mL) of trace-metal grade acid required into each vial.
- 2.3 Cap and gently invert container(s) several times to mix acid and samples.
- 2.4 Uncap a random sample for each parameter requiring preservation and verify that pH requirements have been met.
- 2.5 Cap, label and prepare sample containers for shipping.
- 2.6 Fill VOA vial and TOX Bottles as follows:

NOTE

Bottles or vials should be filled in a single process and should not be opened once sealed. Therefore, checking the pH of VOA Vial and TOX bottles (preserved sample containers) is not required and should be avoided to maintain sample integrity.

- 2.6.1 Fill sample containers slowly to the top rim of the container so that a dome or convex meniscus is present.
- 2.6.2 Ensure that the cap makes contact with the sample when sealing so that air is not trapped inside the sample container.
- 2.6.3 Turn vial or bottle upside down and verify that no air bubble exists.
- 2.6.4 Label bottles and prepare for shipping.
- 2.7 Fill the first bottle of the remaining parameters to shoulder with groundwater sample and cap container.
- 2.8 Invert container gently several times to mix acid and sample, if required.
- 2.9 Uncap sample bottle.
- 2.10 Check pH of sample using a pH test strip.
- **DO NOT IMMERSE** pH test strip into sample container.
 - Use a clean glass stir rod or transfer pipet to obtain sample.
 - Check pH on at least one (1) bottle for each parameter requiring preservation.

- If sample pH is above 2.0 standard units, add one (1) mL of required preservative to adjust pH.
- 2.11 Cap sample container and gently invert to mix sample and acid.
- 2.12 Repeat Step 2.10 through Step 2.11 until sample pH is below 2.0 standard units.
- 2.13 Add the same amount of preservative (relative) to each remaining sample requiring acid preservation as indicated by the Final Sample Checklist (Attachment 2, Items 9, 10, 13, and 17).

3.0 COLLECTION OF FINAL SAMPLES

NOTE

Final samples are collected semiannually from each well in the WIPP Groundwater Detection Monitoring Program. Wells are identified in the Hazardous Waste Facility Permit (HWFP). Split samples will be provided to WIPP oversight agencies upon request.

NOTE

Samples for VOC and TOX should be collected with zero headspace (no air bubbles observed). For remaining sample parameters, containers are filled to shoulder height.

- 3.1 Unfiltered Final Sample Collection
- 3.1.1 Rinse filter housing with DI-H₂O.
- 3.1.2 Assemble filter housing (without frits) and clamp to support frame.
- 3.1.3 Direct water flow through filter housing.
- 3.1.4 If sample containers are pre-preserved and/or meet Level 1 EPA-certified cleaning standards (Procedures A through D), omit Step 3.1.5 and go to Step 3.1.6.
- 3.1.5 Rinse sample collection bottle two (2) times with unfiltered groundwater.
- 3.1.6 Fill containers with final groundwater sample (consult Final Sample Checklist). Collect duplicate samples by alternating sampling stream between primary and duplicate sample bottles.

- 3.1.7 Record time (24-hour format) that each sample parameter collection began on Final Sample Checklist (Attachment 2, Item 18).

NOTE

Final Sample Checklist indicates which samples to preserve and the acid required.

- 3.1.8 If samples require preserving, refer to Section 2.0 for guidance and then go to Step 3.1.10.
- 3.1.9 If sample does not require preserving, secure lid of sample bottle.
- 3.1.10 Label sample with the following (Attachment 3):
- Project name
 - Sample number
 - Sample location (zone sampled)
 - Well number
 - Samplers
 - Sample Date/Sample time
 - Sample matrix/type (DI-H₂O or groundwater)
 - Acid wash (yes or no)
 - Parameter or destination
 - Type of preservative
 - Bottle number (1 of 6, 2 of 6, etc.)
 - Method of collection (filtered vs. unfiltered)
 - Temperature requirements
- 3.1.11 Affix label to dry sample container.
- 3.1.12 Protect sample labels with clear packing tape.

NOTE

Sample matrix for preparing field or trip blanks is DI-H₂O. Trip blanks are generally supplied by contract laboratory.

- 3.2 Collection of Final Samples and Field/Trip Blank Samples
- 3.2.1 Rinse filter housing with DI-H₂O.

- 3.2.2 Assemble bottom section of filter housing (frit support on bottom, screen frit on top).
- 3.2.3 Place one (1) 0.45- μ m filter on screen frit.
- 3.2.4 Wet 0.45- μ m filter with DI-H₂O (prevents air locks).
- 3.2.5 Assemble top and bottom portions of filter housing and secure to support frame.
- 3.2.6 Divert water through dedicated sampling line and filter housing.
- 3.2.7 IF sample containers are pre-preserved and/or meet Level 1 EPA-certified cleaning standards (Procedures A through D), OMIT Step 3.2.8 and GO TO Step 3.2.9.
- 3.2.8 Rinse sample containers twice (2 times) with filtered groundwater sample.
- 3.2.9 Fill sample containers (including HOLD sample) to shoulder with final groundwater sample (consult Final Sample Checklist). Collect duplicate samples by alternating sampling stream between primary and duplicate sample bottles.
- 3.2.10 Prepare field or trip blanks using filtered DI-H₂O in accordance with EPA guidelines. Field/Trip blanks should meet the following criteria:
- Contain zero headspace.
 - Collect one (1) field blank per 20 samples (5% of samples collected) or one per batch, (i.e., one primary and one duplicate groundwater sample).
- 3.2.11 Record time (24 hour format) each sample parameter collection began on Final Sample Checklist (Attachment 2, Item 18).
- 3.2.12 Refer to Attachment 2, Final Sample Checklist for sample preserving guidance.
- If sample requires preserving, perform Steps 2.1 through 2.13 and then go to Step 3.2.15.
- 3.2.13 If sample does not require preserving, secure lid of sample bottle.
- 3.2.14 Label final sample as described in Step 3.1.10.

- 3.2.15 Affix label to dry sample container.
- 3.2.16 Protect sample label with clear packing tape.
- 3.2.17 Disassemble filter assembly and discard used filter.
- 3.2.18 Rinse filter housing thoroughly with DI-H₂O; air dry.

4.0 SHIPPING AND STORAGE OF FINAL SAMPLES

NOTE

Custody seals shall have adhesive backs that are destroyed when removed or the container is opened.

- 4.1 Sign and date custody seals with an indelible pen or marker.
- 4.2 Affix custody seals around or across sample container caps. **NEVER** place custody seals over septa on VOA vials.
- 4.3 Package samples for shipping as follows:
 - Place HDPE sample bottles in zip-seal plastic bags of an appropriate size.
 - Wrap glass sample containers with bubble wrap or other cushioning materials.
- 4.4 Place sample containers **UPRIGHT** in shipping cooler. Position and secure with packing material (paper, bubble wrap, clean rags, etc) so that containers do not move (or tip) during transit. Cool samples to 4°C ± 2°C by placing bags of crushed ice, freezer packs or both inside cooler.
 - Pack cooler to maintain temperature until arrival at laboratory for analysis.
- 4.5 Verify sample numbers on bottles correspond to sample numbers listed on the Chain-of-Custody (COC) and Request for Analysis (RFA) forms.
- 4.6 If samples are shipped to contract laboratory, perform the following:
 - 4.6.1 Enter signature, date, and time on the COC and RFA forms to relinquish custody of samples.
 - 4.6.2 Retain “pink” copies from the COC and RFA forms.

- 4.6.3 Place signed COC and RFA forms (white and yellow copies) in a zip-seal plastic bag and tape to inner cooler lid.
- 4.6.4 Seal cooler with duct tape on both ends. Wrap duct tape completely around cooler bottom for added security.
- 4.6.5 Record the well ID and sampling round on carrier's waybill.

NOTE

Samples must ship "priority overnight" to ensure samples remain properly cooled and arrive at contract laboratory before analyses hold times are exceeded.

- 4.6.6 Transport samples to carrier's drop-off location.
- 4.6.7 Retain original copy of carrier's waybill.
- 4.7 If samples are hand-delivered to contract or WIPP laboratory, perform the following:
 - 4.7.1 Complete COC and RFA forms and leave both forms outside transportation container (cooler, box, etc.). **DO NOT** sign or date forms.
 - 4.7.2 Place samples in suitable transportation container based on their storage requirements (cooled vs. room temperature).
 - 4.7.3 Transport samples to contract laboratory.
 - 4.7.4 Sign COC and RFA forms in the presence of person receiving samples.
 - 4.7.5 Obtain signature of contract laboratory's representative receiving samples.
 - 4.7.6 Retain "pink" copies from the COC and RFA forms.
- 4.8 If sample parameter equals HOLD Sample, perform the following:
 - 4.8.1 Complete COC, enter "HOLD Sample" under the Special Instructions section and leave the following fields blank:
 - Lab Destination
 - Carrier/Waybill No.
 - Relinquished By

- 4.8.2 Place HOLD sample in lockable storage cabinet.
- 4.8.3 Complete RFA and leave the following fields blank:
- Date Samples Shipped
 - Lab Destination
 - Laboratory Contact
 - Date Report Required
 - Required (Req'd) Testing Program
 - Special Instructions
- 4.8.4 Enter date, time, sample number, and name of person handling; retain in the WQSP Data Package.
- 4.8.5 File COC and RFA for HOLD sample in the WQSP Data Package.
- 4.8.6 Retain HOLD samples for at least one (1) year.
- 4.8.7 Examine HOLD samples periodically for damage or deterioration of labels and custody seals.
- 4.8.8 HOLD samples with damaged custody seals or illegible labels shall be segregated and marked "**NONCONFORMING SAMPLE/DO NOT USE.**"
- 4.8.9 Legible but deteriorating labels on HOLD samples shall have old labels replaced with new identical labels.
- 4.9 Record disposition of HOLD samples in WQSP Data Package. Sign and date entry.
- 4.10 Place copies of all forms (COC, RFA, carrier waybill, etc.) in WQSP Data Package under the Sample Tracking section.
- 5.0 FIELD TEAM REVIEW
- 5.1 Verify the Final Sample Checklist is complete.
- 5.2 Verify that project records are complete and appropriately stored in the project files.

Attachment 1 – Definitions

Final Sample - A sample of groundwater collected after it has been determined that the chemical and physical parameters of the water being sampled have stabilized.

HOLD Sample – A final groundwater sample that is preserved and stored in a controlled location. Sample is used for re-analysis (metals and radionuclides), if required. HOLD samples are also referred to as RETAINS.

Serial Sample - A serial sample is a sample of groundwater taken at periodic intervals to establish stabilization of chemical and physical parameters, based on consistency of analysis results prior to final sampling.

Field Team Leader (FTL) - Person responsible for assuring that the WIPP Groundwater Monitoring Program is conducted in accordance with applicable plans and procedures.

Field Blank - A sample of analyte-free DI-H₂O obtained from the sampling site and returned to the laboratory unopened. A field blank is used to document contamination attributable to sampling environment, field handling procedures and shipping. This type of blank is useful in documenting contamination of volatile organics samples.

Trip Blank - A sample of analyte-free DI-H₂O taken from the laboratory to the sampling site and returned to the laboratory unopened. A trip blank is used to document contamination attributable to shipping and field handling procedures. This type of blank is useful in documenting contamination of volatile organics samples.

Duplicate Samples - Independent samples collected as close as possible to the same point in space and time. They are two separate samples taken from the same source, stored in separate containers, and analyzed independently. These duplicates are useful in documenting the precision of the sampling process.

Split Samples - Aliquots of sample taken from the same container and analyzed independently. Split samples are used to document intra- or inter-laboratory precision.

Meniscus – The curvature that is exhibited at the surface of a liquid that has been confined to a narrow space.

Zero Headspace- Condition achieved when container cap is in contact with the sample and the inside of the sample container is void of air bubble.

Attachment 2 – Example of Final Sample Checklist

Attachment 2 – Example of Final Sample Checklist

FINAL SAMPLES CHECKLIST

(1) Project Name: WIPP/DMP	(2) Well Number: WQSP -1	Filter Type: Whatman	(4) Sample Team: _____
	(5) Zone: CULEBRA	(6) Round: 30	Pore Size: 0.45µm
		(3) Lot # _____	_____

			Date Collected: _____

(9) Sample Number	(10) Parameters	(11) Sample Matrix	(12) Destination	(13) No. Of Bottles	(14) Volume	(15) Container Type	(16) Sample Filtered	(17) Preservative	(18) Collection Time (Start)
GW-WQ1-C-R30-N1	Volatiles	GW	Lab Name	6	40 mL	VOA	No	HCl pH<2	
GW-WQ1-C-R30-N1D	Volatiles	GW	Lab Name	4	40 mL	VOA	No	HCl pH<2	
GW-WQ1-C-R30-N2	VOC Trip Blank (w/DI H ₂ O)	DI-H ₂ O	Lab Name	4	40 mL	VOA	No	HCl pH<2	
GW-WQ1-C-R30-N3	VOC Field Blank (w/DI H ₂ O)	DI-H ₂ O	Lab Name	4	40 mL	VOA	No	HCl pH<2	
GW-WQ1-C-R30-N4	TOX	GW	Lab Name	3	1 Liter	Amber Glass	No	H ₂ SO ₄ pH<2	
GW-WQ1-C-R30-N4D	TOX	GW	Lab Name	1	1 Liter	Amber Glass	No	H ₂ SO ₄ pH<2	
GW-WQ1-C-R30-N5	TOC	GW	Lab Name	4	40 mL	VOA	No	HCl pH<2	
GW-WQ1-C-R30-N 5D	TOC	GW	Lab Name	2	40 mL	VOA	No	HCl pH<2	
GW-WQ1-C-R30-N6	Semi-Volatiles	GW	Lab Name	6	1 Liter	Amber Glass	No	None	
GW-WQ1-C-R30-N 6D	Semi-Volatiles	GW	Lab Name	2	1 Liter	Amber Glass	No	None	
GW-WQ1-C-R30-N7	Metals	GW	Lab Name	2	500 mL	Plastic	No	HNO ₃ pH<2	

Attachment 2 – Example of Final Sample Checklist

(9) Sample Number	(10) Parameters	(11) Sample Matrix	(12) Destination	(13) No. Of Bottles	(14) Volume	(15) Container Type	(16) Sample Filtered	(17) Preservative	(18) Collection Time (Start)
GW-WQ1-C-R30-N7D	Metals	GW	Lab Name	2	500 mL	Plastic	No	HNO ₃ pH<2	
GW-WQ1-C-R30-N8	General Chemistry	GW	Lab Name	1	1 Liter	Plastic	No	None	
GW-WQ1-C-R30-N8D	General Chemistry	GW	Lab Name	1	1 Liter	Plastic	No	None	
GW-WQ1-C-R30-N9	Radionuclides	GW	Lab Name	2	2 Liters	Plastic	Yes	HNO ₃ pH<2	
GW-WQ1-C-R30-N9D	Radionuclides	GW	Lab Name	2	2 Liters	Plastic	Yes	HNO ₃ pH<2	
GW-WQ1-C-R30-N10	Radionuclides (w/DI H ₂ O)	GW	Lab Name	2	2 Liters	Plastic	Yes	HNO ₃ pH<2	
GW-WQ1-C-R30-N11	HOLD	GW	Lab Name	1	2 Liters	Plastic	Yes	HNO ₃ pH<2	
GW-WQ1-C-R30-N12	Nitrate Backup	GW	Lab Name	1	250 mL	Plastic	No	H ₂ SO ₄ , pH<2	
ACID/REAGENT BLANKS									
GW-WQ1-C-R30-N13	Metals (w/DI H ₂ O)	DI-H ₂ O	Lab Name	1	1 Liter	Plastic	No	HNO ₃ pH<2	
GW-WQ1-C-R30-N14	Metals (w/DI H ₂ O)	DI-H ₂ O	Lab Name	1	1 Liter	Plastic	No	None	

PRESERVATIVES

(19) Preservative	(20) Manufacturer	(21) Lot #	(22) Expiration Date	(23) Date Opened
Nitric Acid (HNO ₃):	Vendor Name			
Sulfuric Acid (H ₂ SO ₄):	Vendor Name			
Hydrochloric Acid (HCl):	Vendor Name			

Attachment 3 – Example of Final Sample Labels

Sample No.:	GW-WQ1-C-R30-N1
Project Name: WIPP-DMP	Sample Location: Culebra
Well No: WQSP-1	Sample Type: Groundwater
Samplers: <u>Spoon / Jimenez / Watterson</u>	
Sample Time: <u>08:00</u>	Sample Date: <u>11/11/2009</u>
Sample Filtered: NO	Acid Wash: NO
Parameter: VOC	Preservative: HCl, pH < 2
Bottle Number:	2 of 6
Temperature Requirements:	4°C ± 2°C

Sample No.:	GW-WQ1-C-R30-N1D
Project Name: WIPP-DMP	Sample Location: Culebra
Well No: WQSP-1	Sample Type: Groundwater
Samplers: <u>Spoon / Jimenez / Watterson</u>	
Sample Time: <u>08:00</u>	Sample Date: <u>11/11/2009</u>
Sample Filtered: NO	Acid Wash: NO
Parameter: VOC	Preservative: HCl, pH < 2
Bottle Number:	1 of 4
Temperature Requirements:	4°C ± 2°C

Sample No.:	GW-WQ1-C-R30-N11
Project Name: WIPP-DMP	Sample Location: Culebra
Well No: WQSP-1	Sample Type: Groundwater
Samplers: <u>Spoon / Jimenez / Watterson</u>	
Sample Time: <u>12:00</u>	Sample Date: <u>11/11/2009</u>
Sample Filtered: YES	Acid Wash: YES
Parameter: HOLD	Preservative: HCl, pH < 2
Bottle Number:	1 of 1
Temperature Requirements:	NONE