

Rocky Flats Environmental Technology Site

PRO-488-BLCR

BULK SOLIDS AND LIQUIDS CHARACTERIZATION PROCEDURE

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USE CATEGORY 3

This procedure is performed as written and need not be in hand for the performance of the described tasks The procedure SHALL be available at a known location for reference

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1.0 PURPOSE

This procedure describes the collection of bulk media and liquid samples and is specifically designed to provide waste management and occupational hazard assessment information in support of decommissioning activities. In some cases, these results may be used to support a final status survey.

2.0 SCOPE

This procedure applies to characterization of bulk media and liquid in support of decommissioning activities at the Rocky Flats Environmental Technology Site (RFETS). The Data Quality Objectives (DQOs) and sampling plans given in the Reconnaissance Level Characterization Plan (RLCP) SHALL determine the number, location, and type of samples collected. Sampling needs that are not specifically addressed here SHALL be addressed individually by a separate procedure tailored to the specific application. The requirements cited in Section 11.0 SHALL be consulted prior to initiating any sampling activity.

3.0 DEFINITIONS

COLIWASA (COMposite Liquid WASTE SAMPLE) A device employed to sample free-flowing liquids, slurries, and heterogeneous waste streams. It is a two-piece glass sampling rod that consists of a hollow outside tube with a second rod or tube inside of it. Liquid sampling using the COLIWASA often involves taking relatively large samples (about 250 ml), and gives a complete vertical profile through a heterogeneous waste.

Drum thief A small bore glass tube, typically 7, 12, or 18 mm internal diameter that corresponds to full volumes of 25, 75, or 150 ml respectively. When a sampling event involves the taking of smaller sample volumes (relative to those drawn by a COLIWASA), particularly volatile organic compounds, a drum thief is used to draw these smaller volumes.

4.0 LIMITATIONS AND PRECAUTIONS

- All requirements and controls provided in the RFETS Occupational Safety and Industrial Hygiene Program Manual in the sampling operation SHALL be followed.
- This procedure document is written to address unique sampling needs for characterization of RFETS buildings in preparation for deactivation and decommissioning (D&D) activities. Sampling needs that are not specifically addressed here SHALL be addressed individually by a separate procedure appropriate for the specific application.

5.0 PREREQUISITE ACTIONS

1. **Develop the Work Authorization Package** Consult the IWCP Manual (MAN-071-IWCP) for guidance. The requirements include, but are not limited to:
 - a) Complete an Activity Screening Form,
 - b) Conduct a Job Hazard Analysis,
 - c) Ensure that an Activity Hazard Analysis and a Health and Safety Plan are completed,
 - d) Determine where pre- and/or post-sampling radiological surveys must be performed,
 - e) Determine required controls and requirements for PPE use (including safety shoes,

safety glasses, and bump caps or hard hats) for each sampling activity to be performed

IMPORTANT *Additional actions may be necessary per IWCP other than those listed above. The Work Authorization Package must be approved and signed by all required personnel prior to initiation of sampling activities*

- 2 Perform a building walkdown** This is the appropriate time to begin to carry out the following
 - a) Begin the Job Hazard Analysis,**
 - b) Assess locations of samples** based upon the sampling map provided by the field supervisor, or if precise sampling locations are not yet determined, designate them in cooperation with the field manager,
 - c) Determine whether any impediments to easy access exist**, such as radiation contamination areas, equipment location and storage, personal protective equipment requirements, Radiological Work Permit requirements, etc , and decide how to proceed (i e , choose alternate sample location, obtain required permits, etc),
 - d) Ensure that the sampler, industrial hygiene representative, radiological engineer, field manager, and other appropriate personnel understand and agree to sample locations and manner in which the samples are to be collected** For example, fire protection engineering must approve fire wall penetrations, and a criticality safety officer must approve introduction of water into any location
- 3 Submit a completed Sample Analysis Request Form (SARF) to Analytical Services Division (ASD)** ASD will then assign RIN numbers to the samples and provide uniquely numbered, pre-printed sample labels
- 4 Note the RIN number for the set of samples in the Bulk and Liquids Sample Log**
- 5 Obtain a chain of custody form from Analytical Services Division (RSFORM-16-03-2)** Complete the form, noting unique sample number, type of analysis (i e , TCLP metal, total metal, PCB), media, and any notes about the sample location or collection

NOTE For IH samples, a Safety and Hygiene Chain of Custody Record and Analysis Request form (RFP F 3791 32, 7/95) may be used

- 6 Coordinate with building management for Plan of the Day (POD) authorization** Obtain *written* authorization for all work to be performed
- 7 Obtain all required permits and complete all required forms** This includes
 - **Job Hazard Assessment (JHA) and Activity Hazard Assessment (AHA)** (available from IWCP coordinator),
 - **Activity Screening Form** (available from IWCP coordinator),
 - **Radiological Work Permit (RWP)**, if required (requested from Radiological Operations),
 - **Property Release Evaluation (PRE) Form (RSFORMS-09 01-01)**, completed in accordance with 3-PRO-141-RSP-09 01 *Unrestricted Release of Property, Maternal, Equipment, and Waste*

Consult with Industrial Hygiene and Radiological Operations to determine any other permits or notifications required

8. **Arrange for a Radiological Control Technician** to assess radiological contamination of sampling locations and of samples before they are removed from the sampling area if this is deemed necessary by Radiological Operations or Radiological Engineering. In this case, the RCT **SHALL** carry out the survey and record results per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*, 3-PRO-141-RSP-09 01, *Unrestricted Release of Property, Material, Equipment, and Waste*, and the appropriate PRE
- 9 **Inspect all equipment for safe operation before use**
- 10 Along with unique sampling locations, each type of sample may have **unique requirements** for
 - amount of sample collected (mass or volume),
 - amount of headspace allowed in sample container,
 - maximum hold time,
 - storage conditions (i.e., temperature, preservation techniques, etc.)
 - other unique considerations, depending upon the type of sample and analysis

Consult the individual work instruction and if necessary, consult the project manager or field supervisor to ensure that these requirements are understood and met

- 11 **Ensure that any material to be drilled or cored does not contain asbestos**. This may be done using process and historical knowledge, or through inspection by a CDPHE-certified asbestos inspector
- 12 **If hydrofluoric acid (HF) is suspected, consult IH&S prior to initiation of sampling activities**
- 13 **Determine the training requirements for job performance and area access**. Refer to the Training Users' Manual (PADC-1991-00793) for this information. Ensure that personnel are properly trained prior to performing work

6 0 MATERIALS AND EQUIPMENT

6 1 Sampling of Liquids Using a COLIWASA

- COLIWASA
- Precleaned sample jars of appropriate size
- Bulk and Liquid Sample Log
- ASD Chain of custody form
- Tamper-proof seals
- Preprinted, uniquely numbered labels for each sampling location
- Sharpie or other marking pen
- Disposable gloves
- Map of predetermined sampling locations
- List of predetermined sampling locations
- Camera, photo identification card, and camera pass, if photos are required

6 2 Sampling of Liquids Using a Drum Thief

- Drum Thief
- Precleaned sample jars of appropriate size

- Bulk and Liquid Sample Log
- ASD Chain of custody form
- Tamper-proof seals
- Preprinted, uniquely numbered labels for each sampling location
- Sharpie or other marking pen
- Disposable gloves
- Map of predetermined sampling locations
- List of predetermined sampling locations
- Camera, photo identification card, and camera pass, if photos are required

6 3 Sampling of Bulk Media Using a Spade Bit (Paddle Bit)

- Power drill with spade bit
- Misting bottle containing water
- Precleaned sample jars of appropriate size
- Sample bags
- Adhesive tape
- Bulk and Liquid Sample Log
- ASD Chain of custody form
- Phosphate free, lab-grade detergent (e g Liquinox)
- Tamper-proof seals
- Preprinted, uniquely numbered labels for each sampling location
- Sharpie or other marking pen
- Disposable gloves
- Map of area
- List of predetermined sampling locations **including required depth of core sample**
- Tape measure or laser measuring device
- Camera, photo identification card, and camera pass, if photos are required
- Mass balance or scale

6 4 Sampling of Bulk Media Using a Power Coring Device, Drill and Hole Saw Bit (Coring Bit), or other Coring/ Chipping Tools

- Power drill with hole saw bit (coring bit)
- Power coring device
- Appropriate pry bar to remove sample from substrate (**NOTE** A screwdriver or other tool not designed for prying may **NOT** be used to pry samples, since it may break and cause injury)
- "Wondermaker™" sampling tool
- Chisel
- Hammer
- Razor knife
- Misting bottle containing water
- Wet/dry vacuum cleaner
- Precleaned sample jars of appropriate size
- Sample bags
- Adhesive tape
- Bulk and Liquid Sample Log
- Phosphate free, lab-grade detergent (e g Liquinox)
- ASD Chain of custody form
- Tamper-proof seals
- Preprinted, uniquely numbered labels for each sampling location

- Sharpie or other marking pen
- Disposable gloves
- Stainless steel forceps
- Map of area
- List of predetermined sampling locations **including required depth of core sample**
- Tape measure or laser measuring device
- Camera, photo identification card, and camera pass, if photos are required
- Mass balance or scale

6 5 Grab Sampling of Bulk Media

- Scoop, trowel, or appropriate sample collection tool
- Precleaned sample jars of appropriate size
- Bulk and Liquid Sample Log
- ASD Chain of custody form
- Tamper-proof seals
- Preprinted, uniquely numbered labels for each sampling location
- Sharpie or other marking pen
- Disposable gloves
- Map of predetermined sampling locations
- List of predetermined sampling locations
- Camera, photo identification card, and camera pass, if photos are required
- Mass balance or scale

6 6 Grab Sampling of Bulk Liquids

- Bellows sampler, scoop, peristaltic pump, or other appropriate sample collection tool
- Precleaned sample jars of appropriate size
- Bulk and Liquid Sample Log
- ASD Chain of custody form
- Tamper-proof seals
- Preprinted, uniquely numbered labels for each sampling location
- Sharpie or other marking pen
- Disposable gloves
- Map of predetermined sampling locations
- List of predetermined sampling locations
- Camera, photo identification card, and camera pass, if photos are required
- Mass balance or scale

7 0 INSTRUCTIONS

7 1 Sampling of Liquids using a COLIWASA

NOTE *Pre- and post-sampling surveys may be conducted at the discretion of Radiological Operations and Radiological Engineering. Any required surveys will be conducted in a manner appropriate to the unique situation per 3-PRO-165-RSP 07 02, Contamination Monitoring Requirements, and 3-PRO-141-RSP-09 01, Unrestricted Release of Property, Material, Equipment, and Waste, and the appropriate PRE. If any radiological measurement exceeds contamination limits stated in the Radiological Work Permit or in Table 2-2 in the Radiological Controls Manual **cease operations and consult with Radiological Operations and with Radiological Engineering before proceeding***

NOTE This procedure does not apply to sampling of environmental media containers. It is to be used for sampling of sumps and pooled liquids for characterization in preparation for D&D.

7.1.1 Sampling

Sampler

- 1 Ensure that all required materials listed in Section 6.1, including a list of predetermined sampling areas, are in hand before proceeding to the survey area, as well as any required PPE (consult with IH&S for assistance with air sampling equipment)

NOTE Don disposable gloves before initiation of sampling. If at any time a glove comes in contact with the liquid being sampled, dispose of it in accordance with section 7.1.4 below, and don a fresh glove.

- 2 Visually verify sample location against written descriptions on sample map. Confirm that the appropriate pre-numbered label exists for each sample location.
- 3 Remove a new COLIWASA from its packaging, handling it with clean gloves and Kimwipes.
- 4 Inspect the COLIWASA to ensure it is functioning properly.
- 5 Remove the cover from the liquid waste container's opening.
- 6 Slowly lower the outer COLIWASA into the liquid waste at a rate that permits the levels of the liquid inside and outside the COLIWASA to be about the same, otherwise the sample can become non-representative.

NOTE. A new COLIWASA glass sampling-rod must be used for each sample. These rods are difficult to clean and are therefore disposed of after each use in order to maintain sample integrity.

IMPORTANT If a reaction is observed when the glass COLIWASA is inserted into the liquid being sampled (violent agitation, smoke, heat, etc.), leave the area immediately, inform others in the area, and notify Building Management, Project Management, and IH&S.

If the glass tube becomes cloudy or smoky after insertion into a liquid sample container, hydrofluoric acid (HF) is likely to be present. In this case, a comparable length of rigid plastic tubing should be used to collect the sample.

- 7 Slowly withdraw the COLIWASA from the liquid with one hand while wiping the outside of the COLIWASA with a Kimwipe in the other hand.
- 8 Carefully discharge the sample into the appropriate sample bottle/container by slowly pulling the inside rod or tube up thus breaking the seal with the outside tube.

NOTE At no time should the sample come into contact with the gloved hand when transferring the sample into the sample bottle to prevent cross contamination.

NOTE The sample is considered to be representative only if the entire contents of the COLIWASA are transferred to the bottle/container.

- 9 Repeat Steps 6 through 8 until the required sample volume has been collected **Be sure to collect a 40 ml sample for Radscreen**
- 10 Tightly cap the sample bottle
- 11 Apply the sample label with the proper RIN number and the Custody Seals to the sample bottle
- 12 Double bag the sample bottle
- 13 Record the sampling details in the Bulk and Liquids Sampling Log, and the ASD Chain of Custody form
- 14 Place the sample bottles in a protected location
- 15 *If the preservation and 4°C is required, immediately place the sample bottles into a cooler containing blue ice*

Radiological Control Technician (RCT)

- 16 Survey the outside of the sample containers per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*, and 3-PRO-141-RSP-09 01, *Unrestricted Release of Property, Maternal, Equipment, and Waste*
- 17 Perform surveys of sampling equipment before removal from a potentially contaminated area per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

NOTE If any radiological measurement exceeds contamination limits stated in the Radiological Work Permit or in Table 2-2 in the Radiological Controls Manual, **cease operations and consult with Radiological Operations and with Radiological Engineering before proceeding**

Sampler

- 18 Photograph the sample identification area with photo identification card (*This step is optional If photographs are required, a camera pass must first be obtained from the Photography Department, 966-2658 Alternatively, an individual already possessing a camera pass may be contacted to take the photo*)
- 19 Provide the project representative with the Bulk and Liquid Sampling Log (see Appendix A), associated maps, photos, and other relevant documentation for the samples collected

Radiological Operations Supervisor

- 20 Review the survey package in accordance with 3-PRO-165-RSP-07 02, *Contamination Monitoring Requirements*, and 3-PRO-141-RSP-09 01 *Unrestricted Release of Property, Maternal, Equipment, and Waste* Provide a copy of the approved survey package to the field supervisor or project manager for sample disposition

Sampler

- 21 Provide the field supervisor or project manager with all log books, associated maps, photos, and other documentation relevant to the samples collected

Field Supervisor

- 22 Record the following information in the Project Field Logbook on a daily basis

- Date and time of sampling
- Name of person recording the entries
- Field team members (including subcontractors and visitors)
- Activity description (including building number, sampling locations)
- PPE Level
- Instruments including serial numbers and calibration data (unless recorded in separate log)
- Weather conditions (if applicable)
- Any deviations or special considerations

Reference the sample collection forms that are specified within the procedure (i.e. Sample Log, etc.)

- 19 Review Sample Log, Chain of Custody, and other documentation for completeness and accuracy. Record any deviations or special considerations in the Project Field Log.

7.1.2 Packaging

Sampler

- 1 Place a tamper proof custody seal over the lid and the jar such that the seal will be broken if the jar is opened. Sign and date the tamper-proof seal.
- 2 Complete the specific packaging requirements specified in 1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*, and 1-T97-Traffic-112, *Sample Packaging and Transfer*.
- 3 Complete the chain of custody form.

NOTE If samples are to be transported to the laboratory by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples. **Samples must be under chain of custody at all times.**

7.1.3 Transfer and Shipment

Sampler

- 1 Transport the samples in the manner specified in 1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*, and 1-T97-Traffic-112, *Sample Packaging and Transfer* to Site Building T891R and transfer custody of the samples to the Commodore Advanced Sciences (CAS) representative.
- 2 Have the CAS representative sign the Safety and Hygiene Chain of Custody Record. Retain the Safety and Hygiene Chain of Custody Record.

NOTE If samples are to be transported by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples. **Samples must be under chain of custody at all times.**

- 3 Give copies of the completed Radiological Survey Form and Property Release Evaluation form to the CAS representative.
- 4 Advise the CAS representative of the analytical laboratory to which the samples are to be

shipped

- 5 Transport samples for radscreen to Site Building T886D and formally transfer custody of the radscreen samples to the Thermo NuTech representative **Samples must be under chain of custody at all times**

7.1.4 Investigation-derived Waste

- 1 All PPE will be disposed of or laundered as per the requirements of the area under survey, in accordance with any applicable RWP's or other requirements
- 2 Collect the COLIWASA and used contaminated material for disposal (the RFETS Process Specialist/Generator, in conjunction with the Waste Coordinator, disposes of the waste generated by Sample Team personnel)

7.2 Sampling of Liquids using a Drum Thief

NOTE Pre- and post-sampling surveys may be conducted at the discretion of Radiological Operations and Radiological Engineering. Any required surveys will be conducted in a manner appropriate to the unique situation, per 3-PRO-165-RSP 07 02, Contamination Monitoring Requirements, and 3-PRO-141-RSP-09 01, Unrestricted Release of Property, Material, Equipment, and Waste, and the appropriate PRE. If any radiological measurement exceeds contamination limits stated in the Radiological Work Permit or in Table 2-2 in the Radiological Controls Manual, **cease operations and consult with Radiological Operations and with Radiological Engineering before proceeding**

7.2.1 Sampling

NOTE Two samplers are needed for the release of the sample from the drum thief into the sample bottle

Sampler

- 1 Ensure that all required materials listed in Section 6.2, including a list of predetermined sampling areas, are in hand before proceeding to the survey area, as well as any required PPE (consult with IH&S for assistance with air sampling equipment)

NOTE. Don disposable gloves before initiation of sampling. If at any time a glove comes in contact with the liquid being sampled, dispose of it in accordance with section 7.2.4 below, and don a fresh glove

- 2 Visually verify sample location against written descriptions on sample map. Confirm that the appropriate pre-numbered label exists for each sample location
- 3 Remove a new drum thief from its packaging while handling it with clean gloves and Kimwipes
- 4 Inspect the drum thief for sharp edges that might cut the sampler's finger or glove. The ends of the drum thief should be fire polished so that neither sampler's finger nor the sampler's glove is cut. If a sharp cutting edge is found, discard the drum thief and select another
- 5 Slowly lower the drum thief into the liquid to be sampled

NOTE Lower the drum thief at a rate that permits the levels of the liquid inside and outside the drum thief to be about the same, otherwise the sample can become non-representative

NOTE A new drum thief must be used for each sample. Drum thieves are difficult to clean and are therefore disposed of after each use in order to maintain sample integrity.

IMPORTANT: If a reaction is observed when the glass drum thief is inserted into the liquid sample container (violent agitation, smoke, heat, etc.), leave the area immediately, inform others in the area, and notify Building Management, Project Management, and IH&S.

If the glass drum thief becomes cloudy or smoky after insertion into a liquid sample container, hydrofluoric acid (HF) is likely to be present. In this case, a comparable length of rigid plastic tubing should be used to collect the sample.

- 6 When the drum thief contacts the bottom of the area being sampled, slightly moisten the gloved fingertip with water that will be used to make a seal at the top end of the drum thief
- 7 Place the fingertip over the top end opening securely but not with great force and the seal is made
- 8 Slowly withdraw the drum thief from the liquid being sampled
- 9 Transfer the sample into the sample bottle by slowly breaking the seal between the fingertip and the end of the drum thief

NOTE The sample can be considered representative only if the entire contents of the drum thief are transferred into the sample bottle.

- 10 Repeat Steps 5 through 9 until the required volume has been collected. **Be sure to collect a 40 ml sample for Radscreen**
- 11 Tightly cap the sample bottle, and apply the sample label with the proper RIN number and the Custody Seals to the sample bottle
- 12 Double bag the sample bottle
- 13 Record the sampling details in the Bulk and Liquids Sample Log, and the ASD Chain of Custody form
- 14 Place the sample bottles in a protected location
- 15 If the preservation and 4°C is required, immediately place the sample bottles into a cooler containing blue ice

Radiological Control Technician (RCT)

- 16 Assay the outside of the sample vials per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*, and 3-PRO-141-RSP-09 01 *Unrestricted Release of Property, Material, Equipment, and Waste*. If the results of the assay indicate that radiological contamination exists, consult with Radiological Operations before proceeding
- 17 Perform assays of sampling equipment before removal from a potentially contaminated area per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

NOTE If any radiological measurement exceeds contamination limits stated in the Radiological Work Permit or in Table 2-2 in the Radiological Controls Manual, **cease operations and consult with Radiological Operations and with Radiological Engineering before proceeding**

Sampler

- 18 Photograph the sample identification area with photo identification card (*This step is optional. If photographs are required, a camera pass must first be obtained from the Photography Department, 966-2658. Alternatively, an individual already possessing a camera pass may be contacted to take the photo.*)
- 19 Provide the project representative with the Bulk and Liquid Sampling Log (see Appendix A), associated maps, photos, and other relevant documentation for the samples collected

Radiological Operations Supervisor

- 20 Review the survey package in accordance with 3-PRO-165-RSP-07 02, *Contamination Monitoring Requirements*, and 3-PRO-141-RSP-09 01, *Unrestricted Release of Property, Material, Equipment, and Waste*. Provide a copy of the approved survey package to the field supervisor or project manager for sample disposition

Sampler

- 21 Provide the field supervisor or project manager with all log books, associated maps, photos, and other documentation relevant to the samples collected

Field Supervisor

- 22 Record the following information in the Project Field Logbook on a daily basis

- Date and time of sampling
- Name of person recording the entries
- Field team members (including subcontractors and visitors)
- Activity description (including building number, sampling locations)
- PPE Level
- Instruments including serial numbers and calibration data (unless recorded in separate log)
- Weather conditions (if applicable)
- Any deviations or special considerations

Reference the sample collection forms that are specified within the procedure (i.e. Sample Log, etc.)

- 19 Review Sample Log, Chain of Custody and other documentation for completeness and accuracy. Record any deviations or special considerations in the Project Field Log

7.2.2 Packaging

Sampler

- 1 Place a tamper proof custody seal over the lid and the jar such that the seal will be broken if the jar is opened. Sign and date the tamper-proof seal
- 2 Complete the specific packaging requirements specified in 1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*, and 1-T97-Traffic-112, *Sample Packaging and Transfer*

3 Complete the chain of custody form

NOTE If samples are to be transported to the laboratory by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples **Samples must be under chain of custody at all times**

7 2 3 Transfer and Shipment

Sampler

- 1 Transport the samples in the manner specified in 1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*, and 1-T97-Traffic-112, *Sample Packaging and Transfer* to Site Building T891R and transfer custody of the samples to the Commodore Advanced Sciences (CAS) representative
- 2 Have the CAS representative sign the Safety and Hygiene Chain of Custody Record Retain the Safety and Hygiene Chain of Custody Record

NOTE If samples are to be transported by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples **Samples must be under chain of custody at all times**

- 3 Give copies of the completed Radiological Survey Form and Property Release Evaluation form to the CAS representative
- 4 Advise the CAS representative of the analytical laboratory to which the samples are to be shipped
- 5 Transport samples for radscreen to Site Building T886D and formally transfer custody of the radscreen samples to the Thermo NuTech representative **Samples must be under chain of custody at all times**

7 2 4 Investigation-derived Waste

- 1 All PPE will be disposed of or laundered as per the requirements of the area under survey, in accordance with any applicable RWP's or other requirements
- 2 Collect the drum thief and used contaminated material for disposal (the RFETS Process Specialist/Generator, in conjunction with the Waste Coordinator, disposes of the waste generated by Sample Team personnel)

7 3 Sampling with a Spade Bit (Paddle Bit)

Whenever practical and when composite samples are required a spade bit will be used to collect sample material from painted or preserved wood materials The spade bit is preferable for many situations because

- it allows for easy removal of sample material without complete penetration of the object being sampled,
- sample material comes out in relatively uniform shavings which will assist the laboratory in performing the TCLP test,

- it supports compositing of sample material from numerous locations

NOTE The bits shall be free of paints or coatings

NOTE It is anticipated that a battery powered cordless portable drill will be used, however, this is not required

IMPORTANT. If penetrating (i.e. drilling) work is to proceed to a depth of 2 inches or more, consult and follow RMRS Operations Directive-006, *Safety Requirements for Work Involving Penetration of Walls, Floors, Ceilings, and Concrete, Asphalt or Masonry Pads* to minimize potential of accidental contact with energized circuits

7 3 1 Sampling

Sampler

- 1 Ensure that all required materials listed in Section 6 3, including a list of predetermined sampling areas, are in hand before proceeding to the survey area, as well as any required PPE
- 2 Visually verify sample location against written descriptions on sample map. Confirm that the appropriate pre-numbered label exists for each sample location

Radiological Control Technician (RCT)

- 3 Obtain pre-media sampling 100 cm² total measurements at each sampling location within the sample area per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*
- 4 Obtain pre-media sampling 100 cm² removable swipes at each sampling location within the sample area per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

IMPORTANT If any radiological measurement exceeds contamination limits stated in the Radiological Work Permit or in Table 2-2 in the Radiological Controls Manual, **STOP WORK** and consult with Radiological Operations and with Radiological Engineering before proceeding

NOTE Steps 3 and 4 may be waived at the discretion of Radiological Engineering when process knowledge is documented in the radiological record. All requirements of the PRE must be satisfied

- 5 If the surface contains removable radioactivity, then the surface **SHALL** be decontaminated prior to media sampling

Sampler

- 6 Based upon the depth to which sampling is to proceed, place a mark on the spade bit with a marking pen to allow depth of penetration to be estimated
- 7 Attach the bit to a drill
- 8 Tape a sealable "Ziplock"-type plastic bag approximately 3 inches below the area to be cored. To avoid possible sources of cross contamination, be sure that the tape bonding material does not come in contact with the inside of the plastic bag
- 9 Mist the sampling area with water in order to avoid dust generation, but **do not saturate** the

area, since this will affect sample weight

IMPORTANT If using electric equipment (i.e., drill) that is not cordless, ensure that GFI circuitry is in place and is located at the end of the power cord **closest to the electrical outlet**

IMPORTANT If dust generation is not preventable, **STOP WORK** and consult with an IH&S representative before proceeding

- 10 Begin collecting the sample such that the chips fall into the ziplock bag
- 11 If sample is collected as a composite, remove and zip close bag between sub-sample locations. When finished sampling, homogenize the sample by turning over the bag several times and using hand movement to agitate the material, as practical. The homogenization activity should take between one and two minutes to ensure thoroughly homogenized sample material
- 12 Transfer at least 60 grams of media to the properly labeled, appropriately sized pre-cleaned glass jar for Rad Screen

NOTE If a single hole does not provide sufficient sample mass as required by the specific work instruction, collect additional sample from holes closely offset from the original hole

- 13 Transfer the remaining sample (see the individual work instruction for the amount of material to be collected) to the properly labeled, appropriately sized pre-cleaned glass jar
- 14 **IMMEDIATELY** record the sample number, the weight of the sample, and a detailed description of the sample in the Bulk and Liquids Sample Log. Ensure that the description is provided in sufficient detail that another individual could easily locate the sampling site at a later time. If required, photograph the sample identification area with photo identification card (*If photographs are required, a camera pass must first be obtained from the Photography Department, 966-2658. Alternatively, an individual already possessing a camera pass may be contacted to take the photo.*)
- 15 Decontaminate sampling equipment before moving to the next sample utilizing water, Liquinox™, or other appropriate cleaning materials
- 16 If required by the work instruction, collect rinsate samples from sampling equipment **after decontamination**
 - **For samples collected for metals analysis**, pour deionized water over sampling equipment and collect both a 4 liter rinsate sample and a 40 ml radscreen sample from the same event into separate, appropriately sized and labeled containers

Radiological Control Technician (RCT)

- 17 Obtain post-media sampling 100 cm² total measurements at each sampling location within the sample area per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*
- 18 Obtain post-media sampling 100 cm² removable swipes at each sampling location within the sample area per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*
- 19 Carry out surveys of sampling equipment as appropriate before removal from a potentially contaminated area per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

- 20 Carry out surveys of outside of all sample vials per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

IMPORTANT If any radiological measurement exceeds contamination limits stated in the Radiological Work Permit or in Table 2-2 in the Radiological Controls Manual, **STOP WORK** and consult with Radiological Operations and with Radiological Engineering before proceeding

- 21 Complete a Radiological Survey Form and give a copy to the sampler

NOTE Steps 17 through 21 may be waived at the discretion of Radiological Engineering when process knowledge is documented in the radiological record All requirements of the PRE must be satisfied

Sampler

- 22 Write the sample number for each sample on the ASD chain of custody form

NOTE If samples are to be transported by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples **Samples must be under chain of custody at all times**

Radiological Operations Supervisor

- 23 Review the survey package in accordance with 3-PRO-165-RSP-07 02, *Contamination Monitoring Requirements*, and 3-PRO-141-RSP-09 01, *Unrestricted Release of Property, Material, Equipment, and Waste* Provide a copy of the approved survey package to the field supervisor or project manager for sample disposition

Sampler

- 24 Provide the field supervisor or project manager with all log books, associated maps, photos, and other documentation relevant to the samples collected

Field Supervisor

- 25 Record the following information in the Project Field Logbook on a daily basis

- Date and time of sampling
- Name of person recording the entries
- Field team members (including subcontractors and visitors)
- Activity description (including building number, sampling locations)
- PPE Level
- Instruments including serial numbers and calibration data (unless recorded in separate log)
- Weather conditions (if applicable)
- Any deviations or special considerations

Reference the sample collection forms that are specified within the procedure (i.e. Sample Log, etc.)

- 26 Review Sample Log, Chain of Custody, and other documentation for completeness and accuracy Record any deviations or special considerations in the Project Field Log

7 3 2 Packaging

Sampler

- 1 Place a tamper proof custody seal over the lid and the jar such that the seal will be broken if the jar is opened Sign and date the tamper-proof seal
- 2 Complete the specific packaging requirements specified in 1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*, and 1-T97-Traffic-112, *Sample Packaging and Transfer*
- 3 Complete the chain of custody form

NOTE If samples are to be transported to the laboratory by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples **Samples must be under chain of custody at all times**

7 3 3 Transfer and Shipment

Sampler

- 1 Transport the samples in the manner specified in 1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*, and 1-T97-Traffic-112, *Sample Packaging and Transfer* to Site Building T891R and transfer custody of the samples to the Commodore Advanced Sciences (CAS) representative
- 2 Have the CAS representative sign the Safety and Hygiene Chain of Custody Record Retain the Safety and Hygiene Chain of Custody Record

NOTE: If samples are to be transported by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples **Samples must be under chain of custody at all times**

- 3 Give copies of the completed Radiological Survey Form and Property Release Evaluation form to the CAS representative
- 4 Advise the CAS representative of the analytical laboratory to which the samples are to be shipped
- 5 Transport samples for radscreen to Site Building T886D and formally transfer custody of the radscreen samples to the Thermo NuTech representative **Samples must be under chain of custody at all times.**

7 3 4 Investigation-derived Waste

- 1 All PPE and rinsate water will be disposed of (or laundered, if PPE) as per the requirements of the area under survey, in accordance with any applicable RWP's or other requirements
- 2 The RFETS Process Specialist/Generator, in conjunction with the Waste Coordinator, disposes of the waste generated by Sample Team personnel

7 4 Sampling with a Power Coring Device, Drill and Hole Saw Bit (Coring Bit), or other Coring/ Chipping Tools

A power coring device (generally diamond tipped and water lubricated) is used to collect core samples from concrete or asphalt

A drill with a hole saw bit is used to collect sample material through an object such as a wood beam or sheet of plywood

A "Wondermaker™", chisel and hammer, or other coring/chipping tools may be appropriate in some instances

IMPORTANT If penetrating (i.e. drilling) work is to proceed to a depth of 2 inches or more, consult and follow RMRS Operations Directive-006, *Safety Requirements for Work Involving Penetration of Walls, Floors, Ceilings, and Concrete, Asphalt or Masonry Pads* to minimize potential of accidental contact with energized circuits

IMPORTANT Obtain approval of the Criticality Safety Officer prior to initiating use of a water-lubricated coring device, or any other device that will release water

7.4.1 Sampling

Sampler

- 1 Ensure that all required materials listed in Section 6.4, including a list of predetermined sampling areas, are in hand before proceeding to the survey area, as well as any required PPE
- 2 Visually verify sample location against written descriptions on sample map. Confirm that the appropriate pre-numbered label exists for each sample location

Radiological Control Technician (RCT)

- 3 Obtain pre-media sampling 100 cm² total measurements at each sampling location within the sample area per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*
- 4 Obtain pre-media sampling 100 cm² removable swipes at each sampling location within the sample area per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

IMPORTANT If any radiological measurement exceeds contamination limits stated in the Radiological Work Permit or in Table 2-2 in the Radiological Controls Manual, **STOP WORK** and consult with Radiological Operations and with Radiological Engineering before proceeding

NOTE Steps 3 and 4 may be waived at the discretion of Radiological Engineering when process knowledge is documented in the radiological record. All requirements of the PRE must be satisfied

- 5 If the surface contains removable radioactivity then the surface **SHALL** be decontaminated prior to media sampling

Sampler

- 6 If the hole saw bit or coring device is capable of penetrating more than 2", place a mark on the bit or device no more than 2" from the point that contacts the media to be sampled
- 7 Attach the bit to the drill

- 8 Mist the sampling area with water in order to avoid dust generation, unless using a water lubricated power coring device

IMPORTANT: If using electric equipment (i.e., drill) that is not cordless, ensure that GFI circuitry is in place and is located at the end of the power cord **closest to the electrical outlet**

IMPORTANT If dust generation is not preventable, **STOP WORK** and consult with an IH&S representative before proceeding

- 9 Begin collecting the sample using either the power coring device, drill, or the alternate tools ("Wondermaker™", chisel and hammer, etc.) If using a hammer and chisel, collect the sample such that the chips fall into a ziplock bag taped about 3 inches below the sample location
- 10 **IF** using a water lubricated power coring device, and **IF** the use of a wet-dry vacuum satisfies the applicable health and safety plan requirements for control of excess water, **THEN** collect excess water using a wet-dry vacuum to preclude the migration of potentially contaminated water into adjacent media. Any water collected **SHALL** be placed with the used decontamination water and disposed according to the requirements of the building/ area being characterized
- 11 After the desired depth is reached, or the object being sampled is penetrated, back out the drill bit
- 12 If the object sampled was penetrated the cored sample material will likely be in the bit. The material may be extracted by turning the cored material opposite of the directional turn of the center guide bit. If the object being cored was not penetrated, a metal leverage bar may be used to break loose and pry the sample core out of the core hole
- 13 Transfer at least 60 grams of media to the properly labeled, appropriately sized pre-cleaned glass jar for Rad Screen

NOTE If a single core does not provide sufficient sample mass as required by the specific work instruction, collect additional cores closely offset from the original core hole

- 14 Transfer the remaining sample (see the individual work instruction for the amount of material to be collected) to the properly labeled, appropriately sized, pre-cleaned glass jar
- 15 **IMMEDIATELY** record the sample number, the weight of the sample, and a detailed description of the sample in the Bulk and Liquids Sampling Log. Ensure that the description is provided in sufficient detail that another individual could easily locate the sampling site at a later time. If required, photograph the sample identification area with photo identification card (*If photographs are required, a camera pass must first be obtained from the Photography Department, 966-2658. Alternatively, an individual already possessing a camera pass may be contacted to take the photo.*)
- 16 Decontaminate sampling equipment before moving to the next sample utilizing water, Liquinox™, or other appropriate cleaning materials
- 17 If required by the work instruction, collect rinse samples from sampling equipment **after decontamination.**

- For samples collected for metals analysis, pour deionized water over sampling

equipment and collect both a 4 liter rinsate sample and a 40 ml radscreen sample from the same event into separate, appropriately sized and labeled containers

Radiological Control Technician (RCT)

- 18 Obtain post-media sampling 100 cm² total measurements at each sampling location within the sample area per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*
- 19 Obtain post-media sampling 100 cm² removable swipes at each sampling location within the sample area per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

NOTE. Steps 18 and 19 may be waived at the discretion of Radiological Engineering

- 20 Carry out surveys of sampling equipment as appropriate before removal from a potentially contaminated area per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*
- 21 Carry out surveys of outside of all sample vials per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

IMPORTANT If any radiological measurement exceeds contamination limits stated in the Radiological Work Permit or in Table 2-2 in the Radiological Controls Manual, **STOP WORK and consult with Radiological Operations and with Radiological Engineering before proceeding**

- 22 Complete a Radiological Survey Form and give a copy to the sampler

NOTE Steps 18 through 22 may be waived at the discretion of Radiological Engineering when process knowledge is documented in the radiological record. All requirements of the PRE must be satisfied

Sampler

- 23 Write the sample number for each sample on the ASD chain of custody form

NOTE: If samples are to be transported by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples. **Samples must be under chain of custody at all times**

- 24 Dispose of all PPE as per the requirements of the area under survey

Radiological Operations Supervisor

- 25 Review the survey package in accordance with 3-PRO-165-RSP-07 02, *Contamination Monitoring Requirements*, and 3-PRO-141-RSP-09 01, *Unrestricted Release of Property, Material, Equipment and Waste*. Provide a copy of the approved survey package to the field supervisor or project manager for sample disposition

Sampler

- 26 Provide the field supervisor or project manager with all log books, associated maps, photos, and other documentation relevant to the samples collected

Field Supervisor

- 27 Record the following information in the Project Field Logbook on a daily basis
 - Date and time of sampling

- Name of person recording the entries
- Field team members (including subcontractors and visitors)
- Activity description (including building number, sampling locations)
- PPE Level
- Instruments including serial numbers and calibration data (unless recorded in separate log)
- Weather conditions (if applicable)
- Any deviations or special considerations

Reference the sample collection forms that are specified within the procedure (i.e. Sample Log, etc.)

28 Review Sample Log, Chain of Custody, and other documentation for completeness and accuracy. Record any deviations or special considerations in the Project Field Log.

7.4.2 Packaging

Sampler

- 1 Place a tamper proof custody seal over the lid and the jar such that the seal will be broken if the jar is opened. Sign and date the tamper-proof seal.
- 2 Complete the specific packaging requirements specified in 1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*, and 1-T97-Traffic-112, *Sample Packaging and Transfer*.
- 3 Complete the chain of custody form.

NOTE If samples are to be transported to the laboratory by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples. **Samples must be under chain of custody at all times.**

7.4.3 Transfer and Shipment

Sampler

- 1 Transport the samples in the manner specified in 1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*, and 1-T97-Traffic-112, *Sample Packaging and Transfer* to Site Building T891R and transfer custody of the samples to the Commodore Advanced Sciences (CAS) representative.
- 2 Have the CAS representative sign the Safety and Hygiene Chain of Custody Record. Retain the Safety and Hygiene Chain of Custody Record.

NOTE If samples are to be transported by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples. **Samples must be under chain of custody at all times.**

- 3 Give copies of the completed Radiological Survey Form and Property Release Evaluation form to the CAS representative.
- 4 Advise the CAS representative of the analytical laboratory to which the samples are to be shipped.

- 5 Transport samples for radscreen to Site Building T886D and formally transfer custody of the radscreen samples to the Thermo NuTech representative **Samples must be under chain of custody at all times**

7 4 4 Investigation-derived Waste

- 1 All PPE and rinsate water will be disposed of (or laundered, if PPE) as per the requirements of the area under survey, in accordance with any applicable RWP's or other requirements
- 2 The RFETS Process Specialist/Generator, in conjunction with the Waste Coordinator, disposes of the waste generated by Sample Team personnel

7 5 Grab Sampling of Bulk Media

7 5 1 Sampling

Sampler

- 1 Ensure that all required materials listed in Section 6 5, including a list of predetermined sampling areas, are in hand before proceeding to the survey area, as well as any required PPE
- 2 Visually verify sample location against written descriptions on sample map Confirm that the appropriate pre-numbered label exists for each sample location

Radiological Control Technician (RCT)

- 3 Obtain pre-media sampling 100 cm² total measurements at each sampling location within the sample area per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*
- 4 Obtain pre-media sampling 100 cm² removable swipes at each sampling location within the sample area per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

IMPORTANT If any radiological measurement exceeds contamination limits stated in the Radiological Work Permit or in Table 2-2 in the Radiological Controls Manual, **STOP WORK and consult with Radiological Operations and with Radiological Engineering before proceeding**

NOTE Steps 3 and 4 may be waived at the discretion of Radiological Engineering when process knowledge is documented in the radiological record All requirements of the PRE must be satisfied

Sampler

- 5 **IF** the medium being sampled is dry enough such that particles might become airborne during sampling, **THEN** spray a water mist onto the sample area first before beginning to dig a sample
- 6 Transfer at least 60 grams of media to the properly labeled, appropriately sized pre-cleaned glass jar for Rad Screen
- 7 Transfer the remaining sample (see the individual work instruction for the amount of material to be collected) to the properly labeled, appropriately sized, pre-cleaned glass jar

- 8 **IMMEDIATELY** record the sample number, the weight of the sample, and a detailed description of the sample in the Bulk and Liquids Sampling Log. Ensure that the description is provided in sufficient detail that another individual could easily locate the sampling site at a later time. If required, photograph the sample identification area with photo identification card *(If photographs are required, a camera pass must first be obtained from the Photography Department, 966-2658. Alternatively, an individual already possessing a camera pass may be contacted to take the photo)*
- 9 Decontaminate sampling equipment before moving to the next sample utilizing water, Liquinox™, or other appropriate cleaning materials
- 10 If required by the work instruction, collect rinse samples from sampling equipment **after decontamination.**

Radiological Control Technician (RCT)

- 11 Obtain post-media sampling 100 cm² total measurements at each sampling location within the sample area per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*
- 12 Obtain post-media sampling 100 cm² removable swipes at each sampling location within the sample area per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*
- 13 Carry out surveys of sampling equipment as appropriate before removal from a potentially contaminated area per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*
- 14 Carry out surveys of outside of all sample vials per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

IMPORTANT If any radiological measurement exceeds contamination limits stated in the Radiological Work Permit or in Table 2-2 in the Radiological Controls Manual, **STOP WORK and consult with Radiological Operations and with Radiological Engineering before proceeding**

- 15 Complete a Radiological Survey Form and give a copy to the sampler

NOTE Steps 11 through 15 may be waived at the discretion of Radiological Engineering when process knowledge is documented in the radiological record. All requirements of the PRE must be satisfied

Sampler

- 16 Write the sample number for each sample on the ASD chain of custody form

NOTE If samples are to be transported by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples. **Samples must be under chain of custody at all times.**

- 17 Dispose of all PPE as per the requirements of the area under survey

Radiological Operations Supervisor

- 18 Review the survey package in accordance with 3-PRO-165-RSP-07 02, *Contamination Monitoring Requirements*, and 3-PRO-141-RSP-09 01, *Unrestricted Release of Property, Material, Equipment, and Waste*. Provide a copy of the approved survey package to the field supervisor or project manager for sample disposition

Sampler

- 19 Provide the field supervisor or project manager with all log books, associated maps, photos, and other documentation relevant to the samples collected

Field Supervisor

- 20 Record the following information in the Project Field Logbook on a daily basis

- Date and time of sampling
- Name of person recording the entries
- Field team members (including subcontractors and visitors)
- Activity description (including building number, sampling locations)
- PPE Level
- Instruments including serial numbers and calibration data (unless recorded in separate log)
- Weather conditions (if applicable)
- Any deviations or special considerations

Reference the sample collection forms that are specified within the procedure (i.e. Sample Log, etc.)

- 21 Review Sample Log, Chain of Custody, and other documentation for completeness and accuracy. Record any deviations or special considerations in the Project Field Log

7 5 2 Packaging

Sampler

- 1 Place a tamper proof custody seal over the lid and the jar such that the seal will be broken if the jar is opened. Sign and date the tamper-proof seal
- 2 Complete the specific packaging requirements specified in 1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*, and 1-T97-Traffic-112, *Sample Packaging and Transfer*
- 3 Complete the chain of custody form

NOTE: If samples are to be transported to the laboratory by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples. **Samples must be under chain of custody at all times**

7 5 3 Transfer and Shipment

Sampler

- 1 Transport the samples in the manner specified in 1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*, and 1-T97-Traffic-112, *Sample Packaging and Transfer* to Site Building T891R and transfer custody of the samples to the Commodore Advanced Sciences (CAS) representative
- 2 Have the CAS representative sign the Safety and Hygiene Chain of Custody Record. Retain the Safety and Hygiene Chain of Custody Record

NOTE If samples are to be transported by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples. **Samples must be under chain of custody at all times**

- 3 Give copies of the completed Radiological Survey Form and Property Release Evaluation form to the CAS representative
- 4 Advise the CAS representative of the analytical laboratory to which the samples are to be shipped
- 5 Transport samples for radscreen to Site Building T886D and formally transfer custody of the radscreen samples to the Thermo NuTech representative. **Samples must be under chain of custody at all times.**

7 5 4 Investigation-derived Waste

- 1 All PPE and rinse water will be disposed of (or laundered, if PPE) as per the requirements of the area under survey, in accordance with any applicable RWP's or other requirements
- 2 The RFETS Process Specialist/Generator, in conjunction with the Waste Coordinator, disposes of the waste generated by Sample Team personnel

7 6 Grab Sampling of Liquids

These steps will be used when the liquid is too shallow or otherwise inappropriate for sampling with a drum thief or COLIWASA

NOTE Pre- and post-sampling surveys may be conducted at the discretion of Radiological Operations and Radiological Engineering. Any required surveys will be conducted in a manner appropriate to the unique situation, per 3-PRO-165-RSP 07 02, Contamination Monitoring Requirements. If any radiological measurement exceeds contamination limits stated in the Radiological Work Permit or in Table 2-2 in the Radiological Controls Manual, cease operations and consult with Radiological Operations and with Radiological Engineering before proceeding

7 6 1 Sampling

Sampler

- 1 Ensure that all required materials listed in Section 6 6, including a list of predetermined sampling areas, are in hand before proceeding to the survey area, as well as any required PPE
- 2 Visually verify sample location against written descriptions on sample map. Confirm that the appropriate pre-numbered label exists for each sample location
- 3 Using a bellows sampler, tubing attached to a peristaltic pump, or other appropriate method, transfer at least 40 ml to the properly labeled, appropriately sized pre-cleaned glass jar for Rad Screen
- 5 Transfer the remaining sample (see the individual work instruction for the amount of material to be collected) to the properly labeled, appropriately sized, pre-cleaned glass jar

- 6 **IMMEDIATELY** record the sample number, the weight of the sample, and a detailed description of the sample in the Bulk Sampling Log. Ensure that the description is provided in sufficient detail that another individual could easily locate the sampling site at a later time. If required, photograph the sample identification area with photo identification card. (If photographs are required, a camera pass must first be obtained from the Photography Department 966-2658. Alternatively, an individual already possessing a camera pass may be contacted to take the photo)
- 7 Decontaminate sampling equipment before moving to the next sample utilizing water, Liquinox™, or other appropriate cleaning materials
- 8 If required by the work instruction, collect rinsate samples from sampling equipment **after decontamination**

Radiological Control Technician (RCT)

- 9 Carry out surveys of sampling equipment as appropriate before removal from a potentially contaminated area per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*
- 10 Carry out surveys of outside of all sample vials per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

IMPORTANT If any radiological measurement exceeds contamination limits stated in the Radiological Work Permit or in Table 2-2 in the Radiological Controls Manual, **STOP WORK and consult with Radiological Operations and with Radiological Engineering before proceeding**

- 11 Complete a Radiological Survey Form and give a copy to the sampler

Sampler

- 12 Write the sample number for each sample on the ASD chain of custody form

NOTE If samples are to be transported by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples. **Samples must be under chain of custody at all times**

Radiological Operations Supervisor

- 13 Review the survey package in accordance with 3-PRO-165-RSP-07 02, *Contamination Monitoring Requirements*, and 3-PRO-141-RSP-09 01, *Unrestricted Release of Property, Material, Equipment, and Waste*. Provide a copy of the approved survey package to the field supervisor or project manager for sample disposition

Sampler

- 14 Provide the field supervisor or project manager with all log books, associated maps, photos, and other documentation relevant to the samples collected

Field Supervisor

- 15 Record the following information in the Project Field Logbook on a daily basis
 - Date and time of sampling
 - Name of person recording the entries
 - Field team members (including subcontractors and visitors)
 - Activity description (including building number, sampling locations)

- PPE Level
- Instruments including serial numbers and calibration data (unless recorded in separate log)
- Weather conditions (if applicable)
- Any deviations or special considerations

Reference the sample collection forms that are specified within the procedure (i.e. Sample Log, etc.)

- 16 Review Sample Log, Chain of Custody, and other documentation for completeness and accuracy. Record any deviations or special considerations in the Project Field Log.

7.6.2 Packaging

Sampler

- 1 Place a tamper proof custody seal over the lid and the jar such that the seal will be broken if the jar is opened. Sign and date the tamper-proof seal.
- 2 Complete the specific packaging requirements specified in 1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*, and 1-T97-Traffic-112, *Sample Packaging and Transfer*.
- 3 Complete the chain of custody form.

NOTE If samples are to be transported to the laboratory by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples. **Samples must be under chain of custody at all times.**

7.6.3 Transfer and Shipment

Sampler

- 1 Transport the samples in the manner specified in 1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*, and 1-T97-Traffic-112, *Sample Packaging and Transfer* to Site Building T891R and transfer custody of the samples to the Commodore Advanced Sciences (CAS) representative.
- 2 Have the CAS representative sign the Safety and Hygiene Chain of Custody Record. Retain the Safety and Hygiene Chain of Custody Record.

NOTE If samples are to be transported by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples. **Samples must be under chain of custody at all times.**

- 3 Give copies of the completed Radiological Survey Form and Property Release Evaluation form to the CAS representative.
- 4 Advise the CAS representative of the analytical laboratory to which the samples are to be shipped.
- 5 Transport samples for radscreen to Site Building T886D and formally transfer custody of the radscreen samples to the Thermo NuTech representative. **Samples must be under chain of**

custody at all times.

7 6 4 Investigation-derived Waste

- 1 All PPE will be disposed of or laundered as per the requirements of the area under survey, in accordance with any applicable RWP's or other requirements
- 2 The RFETS Process Specialist/Generator, in conjunction with the Waste Coordinator, disposes of the waste generated by Sample Team personnel

8.0 ANALYTICAL REQUIREMENTS

Samples will be analyzed pursuant to general ASD requirements by EPA SW-846 methods or equivalent, depending upon the specific contaminant of concern

9 0 REPORTING

The number of measurements and the applicable statistical distribution will be presented in tabular form, with additional graphical representation if applicable, to the Project Manager
Statistical analysis of the data will be carried out as described in the Reconnaissance Level Characterization Plan (RLCP)

10.0 DISPOSITION OF RECORDS

The following records are generated as a result of the implementation of this procedure

- Bulk and Liquid Sample Log (sample page shown in Appendix A)
- Property Release Evaluation Form (PRE) (sample shown in Appendix B)
- Sampling and Analysis Request Form (SARF)
- ASD Chain of Custody Form (COC) (RSFORM-16-03-2)
- Project Field Logbook

The Bulk and Liquids Sample Log and the Project Field Logbook **SHALL** each be assigned a unique document control number and be treated as a controlled document. Specifically, the Bulk and Liquids Sample Log and the Project Field Logbook **SHALL** each be considered an In-process Quality Assurance (QA) Document until the corresponding project is completed, at which point they each **SHALL** be handled and controlled as a QA Record (Non-WIPP/LL/LLM), in accordance with 1-V41-RM-001, Records Management Guidance for Records Sources, and 1-F78-ER-ARP 001, CERCLA Administrative Record Program. Both the PRE and the COC **SHALL** be handled and controlled as QA Records (Non-WIPP/LL/LLM), and the SARF **SHALL** be handled and controlled as a Non-QA Record (Non-WIPP/LL/LLM)

These records shall be managed in accordance with 1-V41-RM-001, Records Management Guidance for Records Sources and 1-F78-ER-ARP 001, CERCLA Administrative Record Program

Sampling data will be entered into the RFETS Soil and Water Database (SWD) utilizing the FieldCap menu, following the procedure in Sections 2, 3, and 4 of "SWD As-Built Detailed Design," RF/RMRS-98-203, Rev 2 1, Draft A, pp 4-13

11 0 REQUIREMENTS

All work **SHALL** be performed in accordance with

- MAN-071-IWCP, *RFETS IWCP Manual*
- PADC-96-00042, *RFETS Quality Assurance Manual*
- MAN-066-COOP, *RFETS Conduct of Operations Manual*
- Occupational Safety and Industrial Hygiene Program Manual (OS&IHPM)
- Radiological Safety Practices Manual (RSP 1 0)
- RFETS Radiological Controls Manual
- 94-ALARA-PLAN-0003, *RFETS ALARA Program Plan*

All workers **SHALL** be trained in accordance with

- PADC-1991-00793, *RFETS Training Users' Manual*

All records **SHALL** be managed in accordance with

- 1-V41-RM-001, *Records Management Guidance for Records Sources*
- 1-F78-ER-ARP 001, *CERCLA Administrative Record Program (40 CFR 800-825)*
- Kaiser-Hill Team Quality Assurance Program

All sample transportation, transfer, and packaging **SHALL** be in accordance with

- 1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*
- 1-T97-Traffic-112, *Sample Packaging and Transfer*

All PCB sampling and analysis **SHALL** be done in accordance with

- 1-10000-EWQA-1 5, *RFETS TSCA PCB Management Plan*

Documentation that each of these requirements has been met **SHALL** be included in the Project File

Minor deviations from this procedure that do not impact the regulations noted above are subject to the approval of the project manager and will be recorded on the sample log without modification to the procedure. The ARAR process will select those requirements which are either applicable or appropriate and relevant, or alternatively, administrative versus substantive

12.0 REFERENCES

EPA, June 1997 Test Methods for Evaluating Solid Waste, Laboratory Manual, SW-846, 3rd Edition, Update III

RFETS Integrated Work Control Program Manual, MAN-071-IWCP

RFETS Occupational Safety and Industrial Hygiene Program Manual

RFETS SWD As-Built Detailed Design, RF/RMRS-98-203, Rev 2 1, Draft A

1-V41-RM-001, Records Management Guidance for Records Sources

1-F78-ER-ARP 001, CERCLA Administrative Record Program

1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*

1-T97-Traffic-112, *Sample Packaging and Transfer*

CAS SOP-003, *Commodore Advanced Sciences, Sampling for Waste Characterization*

RSFORMS-09 01-01

RELEASE EVALUATION FORM
Page 1 of 2

Release Evaluation No _____ REV ONE EXTENDED YES EXPIRES _____

Charge No _____

PART I SENDER/CUSTODIAN ACKNOWLEDGMENT

Description of Property/Waste/Sample To Be Released/Transferred LAPEL AIR SAMPLES AND SWIPES

Current Location

Destination

New Recipient/Custodian _____

History/Process Knowledge

Has the specified material ever been in an RMMA/RBA/CA or contacted DOE controlled radioactive materials?

- 1) By signing below, I certify information provided in Part I of this release evaluation to be true and accurate
- 2) By signing below, I agree to comply with the specific requirements noted in Part II of this release evaluation

Sender/Custodian _____ Emp No _____ Date _____ Ext _____

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