3 SAMPLE HANDLING, STORAGE AND DISPOSAL

3.1 Introduction

3.1.1 General

Complete documentation of the sample collection and handling process is an extremely important aspect of a regulatory monitoring effort. Formal chain-of-custody procedures provide for a written record of sample traceability, accountability, and serve to validate sample integrity. All samples received by ASB for chemical analysis are controlled by these procedures. Custody and handling procedures for field operations are detailed in the Standard Operating Procedures of the Enforcement and Investigations Branch (EIB) and the Ecological Assessment Branch(EAB).

3.1.2 Custody Room Housekeeping

It is the responsibility of the ASB Sample Custodian/Coordinator (ASBSCC) to monitor all areas of the custody room to insure that it is maintained in a clean, orderly and secure manner. Areas needing attention shall be brought to the attention of the Section Chief (Organic or Inorganic) for which the area is designated for use. Facility cleaning staff do not routinely enter the custody room. The custody room is cleaned only by special coordination and scheduling through the SESD Facilities Manager.

3.2 Sample Collection

3.2.1 Procedures

Samples are collected using standard field sampling techniques consistent with the parameter being determined. Sampling procedures are followed that minimize the possibility of sample adulteration by either the sample collector or sampling device. Field sample collection procedures are detailed in the Standard Operating Procedures and Quality Assurance Manuals of the EIB and the EAB. ASB staff do not routinely perform field sampling activities.

3.2.2 Containers and Holding Times

Selection of sample container types and preservation techniques are guided by the method being applied. Guidance is available in such references as Standard Methods for the Examination of Water and Wastewater, ASTM, EPA Methods for Chemical Analyses of Water and Waste, 40 CFR 136, and others. Figure 3-1 includes analysis, sample matrices, preservatives, and recommended holding times.

3.3 Sample Scheduling

3.3.1 Initial Scheduling

Projects requiring chemical analyses are routinely scheduled into the laboratory information management system (LIMS) directly by project leaders or, on occasion, the scheduling of the samples may be made directly with the ASBSCC. Each times samples are scheduled a project number is assigned automatically by the LIMS. Each time a group of samples is scheduled through ASB for analyses, it is assigned a unique project number, regardless of the source of the samples.

3.3.2 Acceptance and Analysis Support

The ASBSCC routinely checks the scheduled projects and coordinates with the Section Chiefs and/or designated technical staff to determine if there is internal lab capacity to accept the project or if the project should be contracted outside the laboratory through the national contracts such as the Superfund Contract Laboratory Program (CLP) or other available contracts. The LIMS shows the scheduled projects in blue in the projects report until the project has been officially accepted by ASB. The scheduling of the samples will generally include an estimate of numbers, matrices, requested analyses and turn around time requirements. Turn-around times other than the standard of 35 calendar days must also be included in the discussions with ASB mangers for acceptance. While it is important that the ASBSCC/designee communicate all issues that may arise concerning the samples for a specific project, it is especially critical that quick turn-around samples be monitored for receipt and communicated to managers and analysts so that analyses may begin as soon as possible in order to accommodate the turn-around time request. It is understood that on occasion sample numbers and tests may need to be changed from the original request. When this occurs the following must occur:

3.3.2.1 Project managers must communicate changes for project requests immediately to the appropriate ASB manager/ASBSCC in order to discuss issues that may arise as a result of the changes. It is the responsibility of the individual ASB person receiving the change request to insure that the change is communicated to all affected parties. Additionally, the ASB manager or ASBSCC will follow up with all communications of change to insure that any and all proper documentation for the change is submitted to ASB and filed as appropriate. Changes that result in increased workloads are often troublesome related to the capacity to accept the additional work.

3.3.2.2 The chain of custody must always reflect the analytical requests (including any changes made prior to or during the study) and will be the final authority used for the analytical work performed. In the instance where there are changes requested in parameters after receipt at the laboratory, the needs must be negotiated with the appropriate ASB manager and if the change can be accomplished, submitted in writing (email is acceptable) to the ASBSCC. The ASBSCC will insure that all the documentation is included in hard copy for the project files.

3.3.3 Canceled Projects

Projects that are scheduled and subsequently canceled are so noted in the LIMS by the ASBSCC and the electronic record tracks that the project was scheduled, then canceled.

3.4 Sample Receipt

3.4.1 Procedure

Samples are received by the ASBSCC or a designated alternate. Samples that are delivered after hours by EPA and/or ESAT field personnel will be secured in the custody room by the field personnel and the ASBSCC/designee will receive them the next business day. In the uncommon event that a sample delivery occurs after hours via commercial vendor or other shipment, the Facility Guard on duty will secure the samples within the custody room and will make provisions to notify the ASBSCC for receipt the next business day. At the time of receipt, the ASBSCC or designee will perform the following actions:

3.4.1.1 Sign the chain-of-custody form and record the date and time of sample receipt. If the samples were delivered after hours the ASBSCC/designee, upon official receipt of the samples, will record the facts of delivery to include notations that the samples were placed securely within the custody room or other necessary description of sample disposition . If the samples are for a quick turn-around project the ASBSCC/designee will notify the appropriate manager and analyst immediately that the sample have been received.

3.4.1.2 Document whether the individual samples/sample transport containers (e.g., coolers) were sealed upon receipt; also document unusual conditions of any sample container in remarks section of the custody form. Insure that anomalies of the sample receipt are communicated to the appropriate manager and/or analyst.

3.4.1.3 Shipping Container Temperature Blanks. Each shipping container (ice chest) should contain a temperature blank. Document the container temperature as received using the following procedure. [Special Note: ASB will make no analytical judgements on the samples based on receipt temperature alone. The information will be used by the project leaders to determine if the data quality objectives of the project may be compromised.]

3.4.1.3.1 Each ice chest should contain a temperature blank that consists of a container of water placed along with the samples and should be properly labeled and identified on the chain of custody. Inclusion of a temperature blank in each ice chest is the responsibility of the sampling organization. Immediately upon sample receipt, the ASBSCC or designee will measure the temperature of all sample ice chest blanks by placing the probe of a NIST traceable temperature measuring device into the water of the temperature blank. If no temperature blank is included or is not properly tagged a note to this fact should be included on the chain of custody form and this fact communicated to the Project Manager in writing (email is acceptable). A hard copy of the email shall be placed in the ASB project file. No temperature measurement is necessary for samples designated as "waste". [Special Note: For air samples there will be a max/min thermometer placed into the ice chest by field sampling personnel following standard operating procedures for field operations. The ASBSCC/designee should then record the max./min temperature in the temperature log and on the chain of custody form. The information is transmitted to the project leaders via the chain of custody form by the ASBSCC/designee.]

3.4.1.3.2 Immediately upon opening the ice chest read and record the temperature in the temperature log book (to be maintained by the ASBSCC/designee) and on the chain of custody form. The ASBSCC/designee will record in the temperature log book the project number and the temperature of each ice chest temperature blank. The temperature will be recorded in the order of which they were opened and designated likewise. (e.g., if there are 5 ice chests the ASBSCC/designee will record 5 temperatures labeled as temp. 1, temp. 2, temp. 3, etc....)

3.4.1.3.3 If all temperatures are less than or equal to 6 degrees C, record in the temperature log book (tracked by project number) and no further action is necessary.

3.4.1.3.4 If the temperature of any ice chest is above 6 degrees C the ASBSCC/designee will record the temperature excursions on the temperature

log book and the chain of custody and inventory all affected samples. The affected samples will be documented in writing with the original (in hard copy format) placed into the ASB project files and a copy (e-mail OK) sent to the project leader.

3.4.1.3.5 It is generally recognized that on occasion samples may be collected locally and will be transported and received during normal business hours. For samples which are received within a short time of sampling, measuring the temperature of a temperature blank may not be practical since the samples will not have reached temperature equilibrium with the ice. However, the sample ASBSCC/designee will note whether the ice chest contains ice and will record this fact on the chain of custody form.

3.4.2 Acceptance of Samples Suspected to Contain Dioxin

Samples known to contain Dioxin will not be accepted into the Analytical Support Branch for analysis. Samples not accepted by ASB because of the known or suspected presence of dioxin may sometimes be scheduled for analysis with contract labs. In these instances the ASBSCC (or designee) must take appropriate steps within the contractual process to notify the laboratory of the presence or potential presence of dioxin in the samples.

3.4.2.1 There may be times for which there is no specific indication of the presence or absence of dioxin at a site or facility being scheduled for analyses. The following is offered as guidance in making the acceptance decision for such instances:

3.4.2.2 Routine environmental samples with no known source of dioxin contamination may be accepted.

3.4.2.3 No <u>waste</u> samples known or suspected to contain dioxin will be accepted by ASB.

3.4.2.4 If the project in question also has a request for dioxin analysis this suggests that project leaders suspect the possibility of dioxin at the site. However, samples from the same project may be local environmental samples which are not in proximity to the actual problem area. When project leaders schedule samples into the R4LIMS for routine analyses and for dioxin at the same site, he/she should note in the comments section of the project log their knowledge of the suspected presence or absence of dioxin in the routine samples. Often additional consultation by the ASBSCC/designee and/or Section Chiefs with the project leader and/or other sampling personnel is required to determine

the nature of the samples being scheduled. If the samples are taken at same location for which dioxin is "suspect" then they should not be accepted until such time as data is generated showing negative results. If the samples are near a dioxin site, and in the experience and knowledge of the project manager/sampling personnel not suspected to contain dioxin, then the samples may be accepted.

3.4.2.5 Whenever there is any question about dioxin as an issue for a site/facility, the ASBSCC/designee should check with sampling personnel, project managers, or other sources that might have knowledge of the site or facility. Historical data, if it exists, would be another source of information.. If there is any knowledge or data indicating that the site contains dioxin then the samples should not be accepted. If, however, data indicates no positive hits and the samples for the current project are to be from the same area, then they would be considered acceptable.

3.5 Sample Logging and Storage

3.5.1 Assignment of Numbers

Each time a group of samples is scheduled through ASB for analyses, it is assigned a unique project number, regardless of the source of the samples. All samples within each project are then assigned unique numbers when logged into the Laboratory Information Management System (LIMS). Sample numbers are cycled on an annual basis (fiscal year) and the LIMS automatically tracks the last used number. Each sample is assigned a unique number and the assigned number is transferred to the Custody Sheet by the ASBSCC/Designee. The sample numbers are placed on the sample tags and/or containers using labels prepared by the ASBSCC/Designee. The number label includes the fiscal year and LIMS assigned number (e.g., 00/8651).

3.5.2 Storage of Samples

When all numbers are assigned, samples are secured within the custody room walk in coolers designated for new samples as specified below:

3.5.2.1 Cooler #1 - Metals/Organics: Storage for metals samples, extractable organics and pesticide samples. [See below for special handling of samples for volatile organics analysis.]

3.5.2.2 Cooler #2 - Samples Waiting Disposal: Samples from completed projects that are on hold for the disposal cycle.

3.5.2.3 Cooler #3 - Classical/Nutrients/EAB: Storage of samples for classical and nutrient analyses. This cooler is also shared with the EAB for storage of their samples.

3.5.2.4 Walk in Freezer: The freezer will be divided equally between the ASB and EAB for samples required to be maintained in a frozen condition.

3.5.2.5 After samples are placed in the area designated for new samples, analyst(s) will, as soon as practical, place them in a manner that is functional for their operational team. Each Section is responsible for keeping their area of the custody room secure, orderly, neat and maintaining space for incoming sample placement.

3.5.2.6 The temperature of the custody room coolers and freezer is measured by a certified thermometer kept in a bottle of 25% ethylene glycol solution (50% for the freezer). The temperatures are recorded in the Custody Cooler/Freezer temperature log book each working day. The Cooler/Freezer temperature log book form is located on Region 4 SESD's local network drive (K: drive) at K:\asb\forms\custody. An electronic temperature recording device (Hanna Instruments thermologger) is located inside each cooler/freezer for long term monitoring. The thermologger is set to record temperatures every half-hour for 24 hours/day. Weekly, the ASBSCC/designee will download the data collected from each thermologger. Hardcopy graphs of the data will be kept on file. If a graph shows excursions above or below the acceptable temperature limits, the entire data set showing individual data points must be printed in addition to the graph. The acceptable temperature range for the coolers is from above the freezing point of water to 6˚C. The freezer should maintain a temperature cooler than -10˚C. The coolers and freezer are monitored periodically at night by security personnel.

3.5.3 Samples for Volatile Organics Analysis

Samples for volatile organics analysis (VOA) are maintained in satellite storage areas within the VOA GC/MS laboratories. **[Waste samples for volatile analysis will be maintained as designated in paragraph 3.5.5 below]** Soil/Sediment and water samples are placed in a refrigerator as outlined below and log books for each storage area (refrigerator or freezer) will be maintained. Analysts must log samples in and out by signature. The following are the receipt and storage procedures for Volatile samples:

3.5.3.1 VOA samples are normally received during normal business hours by the ASBSCC/designee, are logged and numbered as other samples, and then stored within refrigerator located in the GC/MS volatile analysis laboratories.

3.5.3.2 VOA samples delivered after normal business hours shall be stored within their shipping containers in the Custody Room coolers and will be received by the ASBSCC/designee the next business day. Samples will then be logged and numbered and subsequently stored in the appropriate satellite storage refrigerator. When the samples are removed from the refrigerator for analysis they are signed out (and signed back in if appropriate) by using a log book maintained at the appropriate refrigerator.

3.5.3.3 Air samples for volatile organics analysis are collected in stainless steel summa polished canisters. These will be received and logged as other samples, but will be stored within the VOA air analysis laboratory. The samples are considered in custody as maintained by analysts in the laboratory.

3.5.4 Ultra-Trace Level (UTL) Mercury

Samples to be analyzed for ultra-low trace level mercury shall be stored within the UTL mercury laboratory.

3.5.5 Waste Samples

Due to their potential hazardous nature, waste samples (for ALL ANALYSES) should be contained in special sealed buckets and stored on designated shelving located within the custody room outside the coolers. (Refrigeration is not required for waste samples). Waste samples received in the sealed buckets are not opened in the custody room by the ASBSCC/designee. The sample ASBSCC/designee assigns and logs the samples into the LIMS system using the information on the chain of custody (COC). The assigned numbers are recorded on the COC by the ASBSCC/designee and should be placed on the individual sample containers by analysts at the time the sealed buckets are opened for analysis. Analysts should make a copy of the COC when they begin analysis and use it as a reference in placing the numbers on the individual sample containers. The COC information can also be obtained from the analysis backlog in the LIMS system. Analysts should review the sample numbers, station identifications, and the COC when the analysis process is begun to verify that there is no discrepancy in information. If any discrepancy is noted, immediately notify the ASBSCC . Extracts of volatile waste samples (methanol and TCLP) are stored in a refrigerator within the custody room.

3.6 <u>Custody</u>

The ASBSCC will maintain custodial records only for those samples that are received for analysis by the ASB. Custodial records for samples to be analyzed by other organizations within the SESD will be maintained by the appropriate organization for which the samples are intended. Most often this will be samples that are to be utilized by the EAB.

3.6.1 Custody Room Access

Access to the main custody room area is controlled by computer card entry. The entry is monitored by computer and each time the card is used the name of the individual assigned to the card, the date, and the time of the entry is stored electronically. Authorized entry is coordinated with the Facilities Manager by each Branch Chief and Office Director submitting a memo listing all staff authorized for entry. This list should be updated whenever there is a change of personnel. It is the responsibility of the Facilities Manager to insure that the authorized names are properly entered into the computer.

3.6.2 Documentation of Custody

Documentation of sample custody is accomplished by the use of chain of custody seals that are secured by field sampling personnel, a chain of custody form initiated at the time of sample collection, field log books, individual analysis logs, the laboratory information management system (LIMS), the ASB custody room sample logs, and sample disposal memos and records. The original field custody form, along with a computer printout of the requested analytical tests, will be maintained in the SESD Project files. A copy of the field custody form and a copy of the computer print out will be sent to the project leader responsible for sample collection. It is the responsibility of the project leader to check the computer print out against the custody record for accuracy as it relates to analyses requested for the project and the sampling station identification information.

3.6.3 Assuming Custody for Analysis (for samples other than volatiles)

For an analyst to receive samples for analysis, he/she must assume custody of the samples and the following actions are required: (for volatiles see 3.5.3)

3.6.3.1 The analyst must complete the appropriate Custody Room Sample Log to include their signature, a list of the sample numbers, and the date and time. Samples may be removed from the custody area only after performing the appropriate documentation transferring custody to the analyst. The samples should be signed back into the custody room upon return again with signature and date of return. There will be 4 separate log books for this process:

Custody Log #1 = metals
Custody Log #2 = extractable and pesticide
Custody Log #3 = volatile organics (located in volatile organic analysis laboratories)
Custody Log #4 = classical/nutrients/ other inorganics.

3.6.3.2 The analyst will return the samples to the custody room when he/she is finished with the analysis. **In no case will the original samples (less aliquot required for analysis) remain outside the custody room or designated satellite storage area during non-duty hours.** When the samples are returned, the analyst will note the date and time returned in the appropriate Custody Log. **The Custody Room Sample Logs will be maintained as a permanent file per document control procedures**.

3.6.4 Transfer of Custody from ASB

On occasion, after ASB has assumed custody of the samples, there may be requests for samples to be transferred to other individuals or organizations. **Samples shall only be removed from ASB custody by transferring official custody using appropriate chain of custody forms.** All custody transfers of this nature must be coordinated through the ASBSCC.

3.7 Audit of Custody Records

Audits of custody information will be performed by the Branch Management, Branch QA Officer or designee(s). At a minimum these audits will occur every three years and will include an examination of custody documentation of randomly selected samples for traceability, completeness, and accuracy.

3.8 Disposal of Laboratory Samples/Extracts

3.8.1 Regulation

Samples submitted to the laboratory for analysis are excluded from regulation as hazardous waste under 40 CFR 261.4(d) provided the samples are being transported to or from the laboratory, are being analyzed, are being held for analysis, or are being maintained in custody for legal reasons. However, once a decision is made to dispose of laboratory samples, the exclusion provisions of 40 CFR 261.4(d) no longer apply. Depending upon the characteristics and/or contents of such samples, they may be subject to regulation as a hazardous waste under RCRA or as a PCB-containing material under TSCA and must be handled accordingly.

3.8.2 Special Note

Empty sample containers (due to the sample being depleted during analysis or for any other reason) should always be returned to the custody room. Doing so facilitates the tracking of the entire project when the sample disposal process is initiated. These containers will be thrown away or recycled as appropriate during the sample disposal process.

3.8.3 Disposal Process Initiation

At the completion of each project, the ASBSCC generates a report from the LIMS which describes each analysis performed on the individual samples together with a parameter by parameter listing of positive results. The computer program has been designed to deliver a print-out defined as a "characterization report". Characterization reports are referred to the SESD Hazardous Waste Control Officer who makes the decision as to the proper disposition of the samples.

3.8.4 Criminal Samples

No criminal investigation samples, tags, labels or sample containers will be disposed until authorized by the appropriate officer of the court. Due to the timing on litigation, criminal samples usually require long term storage. Space limitations within the custody room make it necessary to store criminal samples within the HAZMAT facility using the following procedure: 1) At the completion of all required analyses the "characterization report" will be generated, denoting the sample as to its hazardous or non-hazardous status. 2) A copy of the characterization report and custody of the samples will be transferred to the SESD Hazardous Waste Control Officer. 3) The Hazardous Waste Control Officer will maintain custody of the criminal samples while in storage and will coordinate disposal with all appropriate parties. **Extracts** of the criminal samples may be disposed when the samples are transferred to the Hazardous Waste Control Officer for long term storage. The exception would be if a special request to hold the extracts is implemented.

3.8.5 Non-Criminal Samples

Samples and their extracts that are not part of a criminal investigation will normally be disposed within 90 days from the completion of the final laboratory data report. Each data report transmittal memo will have this fact so indicated on the memo and will include the fact that a hold beyond the 90 days may be initiated by simply sending an email to the ASBSCC requesting that the samples be held. .

3.8.5.1 The ASBSCC or designee will monitor samples requested for hold and the samples ready for disposal. Samples ready for disposal will be entered into the LIMS program which then generates a list of compounds found in each sample. This "compound list" is used to identify those samples that may be disposed as ordinary environmental samples and those that are defined as "hazardous" by regulation.

3.8.5.2 Samples characterized as **hazardous** are documented within the LIMS and a list is generated. Those samples characterized as hazardous will be coordinated with the Science and Ecosystem Support Division (SESD), Hazardous Waste Control Officer for disposal. Refer to Chapter 4 for more details on hazardous waste disposal.

3.8.5.3 Samples characterized as **non-hazardous** will have a disposal report generated by the ASBSCC and provided to designated staff as appropriate. Sample disposal of the non-hazardous samples should be completed by the appropriate designee within 4 weeks from disposal report distribution. Non-hazardous samples shall be disposed of as follows:

3.8.5.3.1 The tags are removed from the sample containers and are discarded.

3.8.5.3.2 Water samples determined to be non-hazardous are disposed by pouring the water down the sink drain and rinsing the containers out with tap water a minimum of three times. **<u>However, acid or base preserved samples must be neutralized.</u>** If the facility centralized neutralization system is under maintenance and/or not functional, the preserved waters must be neutralized before flushing down the sink. The operation and maintenance of the facility neutralization system is the responsibility of the facilities manager and the facilities manager must notify ASB management and staff of any problems. However, ASB staff share in the responsibility of being proactive in maintaining knowledge that the facility neutralization system is operating prior to disposal.

3.8.5.3.3 Non-hazardous soil/sediment samples are disposed in the dumpster.

3.9 <u>Special Sample Handling Instructions - Foreign Soils</u>

3.9.1 Soils from Foreign Countries

On occasion the ASB may receive requests for analyses of foreign soil samples. Such samples require special handling for labeling and disposal. The following procedure should be followed:

3.9.1.1 When scheduled into the Laboratory Information Management System (LIMS) there must be a special notice of the fact that the samples are of "FOREIGN SOIL".

3.9.1.2 When the samples are received at the laboratory the ASBSCC or designee is responsible for labeling the tags with the notation "FOREIGN SOIL". The tag must remain with the sample container until project completion and sample disposal.

3.9.1.3 After the samples are tagged and logged they should be stored in the custody area per standard procedures.

3.9.1.4 Unused original sample must be autoclaved prior to disposal for at least 30 minutes at 121 C^{o} and 15 psi.

3.9.1.5 After autoclaving the samples may be disposed using standard procedures for other environmental samples. **NOTE: ASB will not routinely accept foreign soil/sediment samples suspected to be hazardous as defined by statute. However, in the unlikely event that the test results indicate that they are "hazardous", disposal should be coordinated with the Hazardous Waste Control Officer. Refer also to Chapter 4 for additional details of disposal of samples characterized as "hazardous".**

3.10 Special Handling for Waste/Potentially Hazardous Samples

3.10.1 General

A small percentage of samples received by ASB may be characterized as waste that is either known to be "hazardous" or is "potentially hazardous". It is the responsibility of field sampling personnel to determine the potential hazard through field testing and/or through personal knowledge of the site under study. Samples that exhibit a strong chemical odor should be treated as potentially hazardous.

3.10.2 Special Containers and Notification

"Hazardous" or "potentially hazardous" samples should be in a primary container that has been cleaned by field personnel to insure no contamination to the exterior of the

container. The samples should then be tagged, sealed and placed within a sealed bag that is secured. They will then be placed within a transport bucket that has a secure seal screw top as described in the EIB Standard Operating Procedures. There should be documentation and/or labeling of the containers that describes the hazardous nature of the samples. It is the ASBSCC/designee's responsibility to insure that the hazardous nature of the samples is communicated to all ASB staff.

3.10.3 Storage

Waste samples require no preservation or refrigeration and may be stored within their properly sealed buckets on shelves located outside the coolers.

3.10.4 Handling Procedure for Analysis

When concentrated waste samples are received at the Laboratory the following procedure should be followed for the storage and handling:

3.10.4.1 Samples will be signed out of the designated storage area and chain of custody maintained as with routine environmental samples. (See 3.6.3)

3.10.4.2 The samples will be transported unopened and placed in the appropriate preparation area **within a fume hood.** Samples should never be transported to and from a fume hood unless they are sealed within the secondary containment vessel.

3.10.4.3 Once inside the hood, the secondary containment may be opened and the individual sample processing may begin. Care should be taken to keep the secondary containment vessel so that the original sample may be repacked after completion of the preparation for analysis. **All sample processing and manipulation should be accomplished within the hood. At no time should the raw sample be removed from the hood without being properly repacked within the primary and secondary containment vessels.**

3.10.4.4 At the completion of the sample processing the original samples shall be repacked into the primary and secondary containment with care taken to insure that there is no waste contamination on the exterior of the containment vessels. When properly repacked, the samples shall be returned to the designated storage area in the custody room and custody is returned by signing the appropriate logbook. **Refer to Chapter 4 for details of the disposal of hazardous waste samples.**

3.10.5 Personal Protective Equipment (PPE)

All initial preparation/aliquoting of the samples must be performed using the following personal protective equipment at a minimum: 1) Latex or other type of appropriate gloves; 2) Lab Coat; 3) Safety glasses or safety face shield. Higher levels of PPE may be required as determined by information received from field personnel, knowledge/experience of the analyst, or lab supervisor. These determinations will be made by results of field screening and any additional knowledge of the sample matrix. **It is the responsibility of each analyst to insure that appropriate methods and safe laboratory practices are followed at all times**. **If at any time an analyst has a concern about the preparation process, or if unsure about their ability to safely handle the samples, they should immediately contact their supervisor.**

3.10.6 Handling/Disposal of Items Used for Analysis

Any glassware or equipment such as spatulas, pipets, droppers, etc. used in contact with the concentrated waste must remain within the hood until properly cleaned or disposed in an appropriate manner. In general, disposable items may be placed in secondary containment (double bagged) and may be disposed of as ordinary waste in the dumpster. Any solvents or solutions used to clean waste from glassware or other equipment must be collected and treated the same as the waste material. Where practical and prudent for the analytical method, choose items that are disposable. **In all cases consult with the Divisional Hazardous Waste Control Officer before removing and discarding any of the contaminated materials.**

3.10.7 Samples Exhibiting Strong Chemical Odors

There may be instances when samples are received by ASB that are not sealed within the screw top buckets, but upon opening of the ice chest exhibit a strong chemical odor. For these samples take the following precautions:

3.10.7.1 Close the ice chest immediately.

3.10.7.2 Place samples in a hood or well ventilated area and contact project leaders to determine the origin/nature of the samples and the potential need for re-packing as waste samples. Using appropriate personal protective equipment, place the samples causing the odor in plastic bags, secure and place in screw top buckets. The ASBSCC or designee will maintain a small supply of the bags and buckets within the custody room for such purposes. Notify ASB management of the problem.

3.10.7.3 When the samples have been re-packaged treat as “potentially hazardous” for analytical activities.

3.10.7.4 Maintain the samples within properly sealed buckets and place in the appropriate cooler. Maintain the offending samples within their sealed buckets and only open within fume hoods.

Figure 3-1
RECOMMENDED PRESERVATION & HOLDING TIMES

ANALYTICAL GROUP	Soil/Sediment		Water[1]		Waste		Tissue	
	Pres	Hold	Pres	Hold	Pres	Hold	Pres	Hold
INORGANICS								
Acidity	NA	NA	4ºC	14 days	NA	NA	NA	NA
Alkalinity	NA	NA	4ºC	14 days	NA	NA	NA	NA
BOD5	NA	NA	4ºC	48 hrs	NA	NA	NA	NA
Chemical Oxygen Demand (COD) and Total Organic Carbon (TOC)	4ºC	Not specified	4ºC, H2SO4 to pH<2	28 days	NA	NA	NA	NA
Chloride	None	Not specified	None	28 days	NA	NA	NA	NA
Color	NA	NA	4ºC	48 hrs	NA	NA	NA	NA
Conductivity	NA	NA	4ºC	28 days	NA	NA	NA	NA
Chromium VI	4ºC	Extract - 1 mo Analy - 4 days[12]	4ºC	24 hrs	Not specified	Not specified	NA	NA
Cyanide	4ºC	Not specified	NaOH to pH>12, ascorbic acid, 4ºC	14 days	Not specified	Not specified	NA	NA
Dissolved P, total	NA	NA	Filter immed[2], 4ºC, H2SO4 to pH<2	28 days	NA	NA	NA	NA
Fluoride	None	Not specified	None	28 days	NA	NA	NA	NA
Hardness	NA	NA	HNO3 to pH<2	6 mos	NA	NA	NA	NA
Mercury	4ºC	28 days[7]	HNO3 to pH<2	28 days	Not specified	Not specified	Freeze	Not specified
Mercury - TCLP	Not specified	56 days[4]	None	56 days[4]	Not specified	56 days[4]	NA	NA
Metals, except mercury	4ºC	6 mos[7]	HNO3 to pH<2	6 mos	Not specified	Not specified	Freeze	Not specified

Figure 3-1
RECOMMENDED PRESERVATION & HOLDING TIMES

ANALYTICAL GROUP	Soil/Sediment		Water[1]		Waste		Tissue	
	Pres	**Hold**	**Pres**	**Hold**	**Pres**	**Hold**	**Pres**	**Hold**
Metals - TCLP	None	360 days[3]	None	360 days[3]	None	360 days[3]	NA	NA
Nitrate	4ºC	Not specified	4ºC	48 hrs	NA	NA	NA	NA
Nitrite	4ºC	Not specified	4ºC	48 hrs	NA	NA	NA	NA
Nutrients (Ammonia, TKN, NO_3+NO_2 -N, total phosphorus)	4ºC	Not specified	4ºC, H2SO4 to pH<2	28 days	NA	NA	NA	NA
Oil & Grease	NA	NA	4ºC, HCl or H2SO4 to pH<2	28 days	NA	NA	NA	NA
Ortho-P	NA	NA	Filter immed[2] , 4ºC	48 hrs	NA	NA	NA	NA
Phenols (4AAP Colorimetric)	NA	NA	4ºC, H2SO4 to pH<2	28 days	NA	NA	NA	NA
pH	Not specified	Not specified	None	Immed except 24 hrs for RCRA[13]	Not specified	Not specified	NA	NA
Settleable Solids	NA	NA	4ºC	48 hrs	NA	NA	NA	NA
Solids Series (TSS, TDS, TVSS)	NA	NA	4ºC	7 days	NA	NA	NA	NA
Sulfates	4ºC	Not specified	4ºC	28 days	NA	NA	NA	NA
Sulfides	4ºC	Not specified	Zn Acetate & NaOH to pH >9, 4ºC	7 days	Not specified	Not specified	NA	NA
Temperature	NA	NA	None	Immed	NA	NA	NA	NA
Turbidity	NA	NA	4ºC	48 hrs	NA	NA	NA	NA

Figure 3-1
RECOMMENDED PRESERVATION & HOLDING TIMES

ANALYTICAL GROUP	Soil/Sediment		Water[1]		Waste		Tissue	
	Pres	**Hold**	**Pres**	**Hold**	**Pres**	**Hold**	**Pres**	**Hold**
ORGANICS								
Extractables (Pesticides, Herbicides, Semivolatiles) - TCLP	4ºC	61 days[6]	4ºC	61 days[6]	None	61 days[6]	NA	NA
Extractables (Pesticides, Herbicides, Semivolatiles)	4ºC	54 days[10]	4ºC	47 days[9]	None	54 days[10]	Freeze	Not specified
Flashpoint	N A	NA	NA	NA	Not specified	Not specified	NA	NA
Org Halide (TOX)	NA	NA	4ºC, H2SO4 to pH<2	28 days	NA	NA	NA	NA
VOCs - Method 5035	4ºC	48 hours for En-Core™ sampler[11]	NA	NA	NA	NA	NA	NA
VOCs	4ºC, sodium bisulfate	14 days[11]	dechlor w/ ascorbic acid, add 0.2 mL 1+1 HCl, 4ºC	14/7[8]	None	14 days	NA	NA
VOCs - TCLP*	4ºC	28 days[5]	NA	NA	4ºC	28 days[5]	NA	NA

Figure 3-1
RECOMMENDED PRESERVATION & HOLDING TIMES

ANALYTICAL GROUP	Soil/Sediment		Water[1]		Waste		Tissue	
	Pres	Hold	Pres	Hold	Pres	Hold	Pres	Hold

General Footnotes:
NA - Not applicable
Pres - Preservation
Hold - Holding Time (days)

1 - Consult 40 CFR Part 136 Table II. - Required Containers, Preservation Techniques, and Holding Times for latest NPDES requirements.

Preservatives:

2 - Filter on-site

Holding Times:
Immed - Immediate (within 15 minutes: 40 CFR 136 Table II)
3 - TCLP Metals - 360 days: 180 days to TCLP extraction plus 180 days to analysis of extract (SW-846, Method 1311, Section 8.5)
4 - TCLP Mercury - 56 days: 28 days to TCLP extraction plus 28 days to analysis of extract (SW-846, Method 1311, Section 8.5)
5 - TCLP VOCs - 28 days: 14 days to TCLP extraction plus 14 days to analysis of extract, or 7 days to analysis of extract if not preserved following extraction)
6 - TCLP Extractables - 61 days: 14 days to TCLP extraction, 7 days to solvent extraction, 40 days to analysis of extract (SW-846, Method 1311, Section 8.5)
7 - Applies to samples for Resource Conservation Recovery Act (RCRA) only.
8 - VOCs - 14 days for acid preserved, 7 days if not preserved (40 CFR 136 Table II)
9 - Extractables - 47 days: 7 days to solvent extraction, 40 days to analysis of extract (40 CFR 136 Table II)
10 - Extractables - 54 days: 14 days to extraction, 40 days to analysis of extract (SW-846, Table 4-1)
11 - VOCs - for soil samples contents of EnCore® sampler must be analyzed within 48 hours or transferred to a VOA vial and preserved within 48 hours. After transfer from the EnCore® sampler, the sample must be analyzed within 14 days of collection date (SW-846, Table 4-1). Preservation is accomplished for non-calcareous soils by transferring from the EnCore® sampler to a VOA vial containing sodium bisulfate and sealing. For samples containing calcareous soils, contents of EnCore® sampler must be transferred to a VOA vial containing organic-free water, sealed, and frozen.
12 - Chromium VI (hexavalent) - 1 month until extraction, 4 days to analysis of extract (SW-846, Table 3-1)
13 - pH - for aqueous RCRA samples only, a 24 hour holding time is allowed (SW-846, Table 2-36)