

Standard Operating Procedure

Great Salt Lake Water Quality Studies

Sample Archiving

PREPARED FOR: State of Utah, Division of Water Quality

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This Standard Operating Procedure (SOP) applies only to whole-body, tissue (e.g., bird blood, livers, and eggs), aquatic biota, and sediment samples collected as part of the Department of Water Quality's (DWQ's) Great Salt Lake Water Quality Studies – Selenium Program. Water samples will generally not be archived and are not addressed by this SOP.

Background

Principal Investigators (PIs) were originally requested to collect extra samples and/or larger volumes/biomass per sample where it could be accomplished at a minimal cost/effort to the project and still meet the objectives of their project. Surplus samples were either shipped to the prescribed laboratory or stored locally at the PI's own facility. Laboratories have also identified sample material exceeding that required for analysis and are temporarily storing this excess material at the laboratory. **This SOP defines the process for archiving these surplus samples in one centralized facility.**

The objectives of storing and/or archiving surplus samples from the selenium program are as follows:

1. Provide storage of samples that could be useful in the event a new question or follow-up question is asked whose answer would provide additional value to the selenium program.
2. Provide storage of samples that may be used in addressing questions posed regarding the ecosystem of the Great Salt Lake not directly related to the selenium program (e.g., mercury).

Samples will be stored in a secure, centralized facility through 2007 and possibly 2008, depending on the availability of funding.

Sample Tracking

All samples collected by the PIs, including surplus samples, will be identified with a unique sample id and logged into the program sample database. This database will include metadata describing the source and disposition of each sample. Sample disposition will be listed as follows:

1. At laboratory for selenium analysis
2. In laboratory storage facility
3. In PI storage facility
4. In DWQ storage facility

5. Selenium analysis complete, sample disposed of
6. Sample disposed of without analysis (with reason for disposal specified)
7. Name of new owner (if sample custody has been transferred)

The individual who moves a sample to a new location is responsible for ensuring the sample disposition in the database is updated. Chain-of-custody (COC) documentation will be used to track the samples and copies will be provided to CH2M HILL. CH2M HILL will maintain this database during the length of its contract and turn maintenance of the database over to DWQ at the end of the contract term.

Sample Storage

DWQ will furnish a central storage facility to be located at Central Davis County Sewer District's (CDCSD) wastewater treatment plant (Plant). The Plant is located at:

Central Davis County Sewer District
2200 South Sunset Drive
Kaysville, Utah 84037
(801) 451-2190

Samples shall be stored using following procedures:

- Up to four chest freezers (~20 cubic foot capacity each) will be provided at this facility. Freezers will be clearly marked as owned by the Division of Water Quality. Freezers will be individually locked and kept in a room/building that will have limited access.
- Storage facilities will have an uninterruptible power supply to guard against power failure. Wiring for the freezers will be placed (and clearly labeled) in a manner that will minimize the risk of unintentional disconnection from the power supply.
- Freezers will include thermometers that have been calibrated against an NIST traceable thermometer. Each thermometer will be labeled with the correction factor determined during calibration. Each thermometer will be labeled with a unique identifier. Thermometer accuracy will be verified annually against the NIST thermometer and the correction factor updated as necessary.
- Freezers will be kept at a temperature of -10 degrees Celsius with an allowable temperature range of -20 to 0 degrees Celsius. Displaying thermometers will indicate the temperature of each freezer. Temperature alarms on the freezers will indicate if a threshold temperature of -5 degrees Celsius has been exceeded. Alarms should have adequate volume such that plant personnel will be able to detect the alarm during normal plant operations. CDCSD personnel will check each freezer daily and log the temperature on a log at the storage facility. If the check indicates that the threshold temperature has been exceeded, plant personnel will immediately investigate and correct the problem. If temperature adjustment is required, the temperature will be lowered or raised in small increments (5 degrees Celsius) to avoid large temperature swings. Temperatures will be checked often until successive measurements indicate the freezer has returned to the correct temperature.
- Each sample will be clearly marked with its unique sample id and wrapped per standard protocol identified in other program SOPs. Samples will be

packaged/boxed by group (PI/project and date or similar “batch”) within the freezers. A sample inventory and sign-out sheet will be included with each freezer.

- Storage facilities will be inspected by CDCSD on a daily basis to ensure equipment is functioning as intended.
- Freeze-dried samples will be stored in the chest freezers if space is available. If freezer space becomes inadequate, freeze-dried samples may preferentially be taken out and stored in plastic (not Styrofoam) coolers to protect from rodents. Freeze-dried samples should not be stored unprotected on shelving or the floor.

Packaging and Transport of Samples to Storage

Guidelines for COC, Packaging and Transport as specified in the Quality Assurance Project Plan will be followed for transport/shipment of surplus samples to the centralized storage facility at Central Davis Sewer District. The shipping address is listed above. William O. Moellmer/DWQ [(801) 538-6329] shall be notified prior to shipment so that he can coordinate the transfer into freezers.