STANDARD OPERATING PROCEDURE NO. 36

SAMPLE PRESERVATION, STORAGE, SHIPPING AND CUSTODY

REVISION LOG		
Revision Number	Description	Date
36.0	Original SOP	3/25/04
36v0	Finalized by LMK for posting to website and to send George Robinson for lab audit; LMK did not edit this SOP	3/30/07
36v1	Editorial by SKA	10/24/08

1.0 PURPOSE AND SCOPE

This Standard Operating Procedure (SOP) provides technical guidance and methods that will be used in sample preservation, storage, shipping and custody at the Molycorp Mine Site.

2.0 RESPONSIBILITIES AND QUALIFICATIONS

The Principal Investigator (PI) or Bureau Field Geologist have the overall responsibility for implementing this SOP. They will be responsible for assigning appropriate technical staff to implement this SOP and for ensuring that the procedures are followed by all personnel.

All personnel performing these procedures are required to have the appropriate health and safety training. In addition, all personnel are required to have a complete understanding of the procedures described within this SOP and receive specific training regarding these procedures, if necessary.

All project staff are responsible for reporting deviations from this SOP to the PI or Bureau Field Geologist.

3.0 DATA QUALITY OBJECTIVES

The characterization portion of this research project has identified nine DQOs, described in the QAPP that must be addressed in order to solve this problem.

4.0 RELATED STANDARD OPERATING PROCEDURES

The procedure for chip tray preparation set forth in this SOP is intended for use with the following SOPs:

- SOP 2 Sample Management
- SOP 3 Surveying (GPS)
- SOP 4 Taking Photographs
- SOP 5 Sampling Outcrops, Rock Piles, and Drill Core
- SOP 6 Drilling, Logging, and Sampling of Subsurface Materials
- SOP 7 Decontamination of Sampling Equipment

4.0 EQUIPMENT LIST

The following materials and equipment listed will be needed for chip tray preparation:

- Molycorp Access Data Base Forms (Appendix 1)
- Waterproof pens
- Hand lens (10X magnification or stronger)
- Spoon or scoop
- Decontamination equipment and supplies (see SOP No. 7.0 Decontamination of Sampling Equipment)
- Chip trays

5.0 PROCEDURES

Preservation and Storage
Most solid samples will not require any special preservation or handling procedures. Any exceptions will be noted in the appropriate SOPs.

Table 1 summarizes the parameters, preservation methods, and holding times acceptable for water samples. Sample filtration, if required, is explained in SOP 15 and 16.

Table 1. Sample preservation and holding times for water samples.

Parameter	Field Analysis	Glass sample container	Polyethylene sample container	Preservation	Maximum storage/holding time
pH	X			unpreserved	6 hours
Electrical conductance	X			unpreserved	24 hours
Temperature	X				
Dissolved oxygen	X				
TOC					
redox					
TDS		X	X	unpreserved	7 days
Acidity		X	X	unpreserved	24 hours

Alkalinity	X	X	unpreserved	24 hours
Calcium (Ca)		X	HNO3	6 months
Magnesium (Mg)		X	HNO3	6 months
Sodium (Na)		X	HNO3	6 months
Potassium (K)		X	HNO3	6 months
Chloride (Cl)	X	X	unpreserved	7 days
Sulphate(SO4)	X	X	unpreserved	7 days
Nitrate (NO3)	X	X	unpreserved	24 hours
Total iron (Fe)		X	HNO3	6 months
Ferrous Iron		X	HNO3	24 hours
Aluminium (Al)		X	HNO3	6 months
Arsenic (As)		X	HNO3	6 months
Cadmium (Cd)		X	HNO3	6 months
Copper (Cu)		X	HNO3	6 months
Lead (Pb)		X	HNO3	6 months
Nickel (Ni)		X	HNO3	6 months
Zinc (Zn)		X	HNO3	6 months
Mercury (Hg)	X		H2SO4+K2 Cr2O	1 month

Shipping

Samples collected during this investigation will be either shipped to the laboratory via a carrier or will be hand delivered to Socorro for preparation and analysis. If the samples are sent by common carrier, an air bill will be used. Receipts of air bills will be retained as part of the permanent documentation. Commercial carriers are not required to sign off on the chain-of-custody forms as long as the chain-of-custody forms are sealed inside the sample cooler and the custody seals remain intact.

If, at any time after samples have been secured, custody seals on the container are identified as having been tampered with, the following procedures will be conducted:

- Check with personnel having access to sample coolers to evaluate whether inadvertent tampering can be documented.
- Document findings of the incident in a logbook.

If it cannot be documented that inadvertent breaking of the custody seal that did not affect the integrity of samples has occurred, the samples will be re-collected and the Project Manager and QA Officer will be notified.

Sample Archival and Disposal

As described in the QAPP and SOPs, all solid samples will be collected and archived at NMBGMR or the mine for potential future evaluation. Groundwater, surface water, and microbe sample aliquots will not be archived as a part of the study for future analysis or consideration. Any water sample volume not consumed during sample analysis will be disposed of by the laboratories as described in the laboratory QAM, and in accordance with all applicable rules and regulations.

6.0 DOCUMENTATION

The chip tray provides a portable sample of drill cuttings for given intervals for additional reference and examination. Documentation of observations and data acquired in the field will provide information on the activities concluded and also provide a permanent record of field activities. The observations and data will be transferred from the hardcopy database forms to electronic format daily. The chain of custody form for chip trays is part of the database form (Appendix 1).

7.0 REFERENCES