Appendix 5: Care and Maintenance Plan

Lupin Mines Incorporated

A wholly owned indirect subsidary of Elgin Mining Inc.

Lupin Mine Site

Nunavut, Canada

Care and Maintenance Plan

(Care and Maintenance)

March 2013

Lupin Mines Incorporated
Elgin Mining Inc.
#201 - 750 West Pender Street
Vancouver, BC V6C 2T7

Document Control

Revision No	Date	Details	Author	Approver
1.0	20/03/12	Reformatted to Lupin Mines standard. Revised and updated to reflect new ownership and contact information. Updated discussion of site occupation to reflect current site activities. Updated discussion of solid waste management to reflect current practices. Added reference to *Wildlife Management Plan*. Added reference to *Stormwater Management Plan* and updated plan to include liquid waste and water management. Added section and reference to *Fuel Containment Management Strategy.* Address comments from EC (2009) and AANDC (2010).	S. Hamm	P. Downey
2.0	30/03/13	Updated contact information. Updated environmental policy. Included information on site access. Updated to reflect current site activities and procedures. Proposed management of exposed tailings revised.	D. Vokey	W. Osborne

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1 Introduction

Lupin Mines Incorporated (LMI), a wholly owned indirect subsidiary of Elgin Mining Inc. (Elgin), has prepared this Care and Maintenance Plan (the Plan).

An annual review of the Plan takes place and revisions are submitted as necessary with the annual report. The current Type A Water Licence 2AM-LUP0914 (Water Licence) for the Lupin Gold Mine (Lupin or the Lupin Mine or the Site) is valid until March 31, 2014 and has been kept in good standing.

1.1 Project and Company Information

Elgin is a Canadian based company focused on the production at the Björkdal Gold Mine located in Sweden, and the exploration and development of the Lupin Gold Mine and Ulu Gold Project, both located in Nunavut, Canada.

Elgin purchased LMI, which owns the Lupin Mine, from MMG Resources Ltd. in July 2011. Lupin was in operation from 1982 to 2005 with temporary suspensions of activities between January 1998 and April 2000, and again between August 2003 and March 2004. The mine resumed production in March 2004 until February 2005. Since 2005, the Site has remained in Care and Maintenance.

General site maintenance and facilities upgrades are underway at the Lupin Mine in preparation for an underground exploration program. The activities underway were screened by the Nunavut Impact Review Board under file 99WR053 and approved by the Nunavut Water Board under Water Licence 2AM-LUP0914. Surface exploration is conducted under Water Licence 2BE-LEP1217. All camp infrastructure required for the surface exploration program currently exists at the Lupin Mine.

Company:	LMI
Project:	Lupin Mine, Nunavut
Company Address:	201 – 750 W Pender St, Vancouver, BC, V6C 2T7
Telephone:	604-682-3366
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Effective date:	30 March 2013
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Jim Currie	Chief Operating Officer
Peter Tam	Chief Financial Officer
Michele Jones	Manager, Corporate Affairs
Wayne Osborne	Project Manager
David Vokey	Sr. Environmental Coordinator
Karyn Lewis	General Administration

Additional copies of this Plan are available from General Administration. The Plans are available at the LMI Environment Department office and a notice is posted in key locations at the site indicating where they can be found. All employees and contractors will be made aware of its contents.

1.2 Site Location

The Lupin Mine is located in Kitikmeot Region, Nunavut, 400 km north of Yellowknife, Northwest Territories and 285 km southeast of Kugluktuk. The airport serving this Site is at 65° 46'00" N and 111° 14'41" W. The Site is on the western shore of Contwoyto Lake, approximately 60 km south of the Arctic Circle (Figure 1).

1.3 Environmental and Sustainable Development Policy

Elgin Mining Inc. and its subsidiaries (collectively, "Elgin Mining") are committed to maintaining a safe, clean, compliant and respectful work environment. Elgin Mining looks to our employees, contractors and managers to adopt and grow a culture of social responsibility and environmental excellence. Together we achieve this by:

- Promoting environmental stewardship in all tasks. Nothing is too important that it cannot be done in a clean and responsible manner. We strive towards maintaining a zero-incident work place.
- Recognizing that we have a shared responsibility as stewards of the environment in which we operate. We will not walk away from a non-compliant act.
- Identifying, managing and mitigating environmental, business and social risks in an open, honest and transparent manner.
- Planning our work so it is done in the cleanest possible manner and executing work according to plan.
- Continually improving environmental and operational performance by setting and reviewing achievable targets.
- Providing appropriate and necessary resources in the form of training, personnel and capital, including that required for closure planning and reclamation.
- Managing our materials and waste streams, maintaining a high degree of emergency response preparedness and minimizing our operational footprint to maintain environmental protection at all stages of project development.
- Procuring goods and services locally, where available, and favouring suppliers with environmentally and socially responsible business practices.
- Seeking to understand, learn from and mitigate the root causes of environmental incidents and near misses when they do occur.

- Employing systems and technology to achieve compliance, increase efficiency and promote industry best practices in development, operations and environmental stewardship.
- Working with stakeholders to identify and pursue opportunities for sustainable social and economic development and capacity building.
- Conducting early and ongoing stakeholder engagement relevant to the stage of project and mine development and operation.
- Recognizing diversity in the workplace and building meaningful relationships with all stakeholders in a timely, collaborative and transparent manner.

Through implementation of this policy, Elgin Mining seeks to earn the public's trust and be recognized as a respectful and conscientious employer, neighbor and environmental steward.

Approved by the Board of Directors on August 10th, 2012

1.4 Purpose and Scope

This Plan is designed to outline management and monitoring measures on site while the Lupin Mine is under care and maintenance with respect to the requirements within Water License Number 2AM-LUP0914, Part I (2).

The objectives of the Plan are to:

- Outline waste management measures,
- Outline fuel storage and management,
- Outline water management measures, and
- Provide details on tailings management and monitoring.

2 Occupation of the Site

The site is currently occupied in support of general site maintenance and exploration activities. Activities on site are expected to increase in the summer months to support facility upgrades in preparation for an underground exploration program.

People will be accommodated on site in the guesthouse, the 1300 wing of the accommodation complex, and additional wing(s) of the accommodation complex, depending on the number of personnel on site. The domestic water supply is Contwoyto Lake. Sewage and grey water are conveyed to the Sewage Lakes system (Figure 2).

2.1 Site Access

The Lupin Mine property is accessible by fixed wing or rotary aircraft from Yellowknife. A 1,950 m long gravel airstrip suitable for Boeing 727 and Hercules sized aircraft is located on the property. A facility to handle float-equipped aircraft is located on the shore of Contwoyto Lake. The property can be serviced by a winter road from Yellowknife, which currently operates between February and April to service the diamond mines south of Lupin. The Lupin spur has been inactive for several years, but can be reactivated to allow for the delivery of bulk items.

2.2 General Responsibilities

Responsibilities of site personnel include:

- Controlling fugitive dust,
- Managing snow and storm water in accordance with best management practices (BMPs),
- Maintaining secondary containment dry in petroleum storage areas,
- Preventing the release of petroleum products,
- Implementing the *Spill Contingency Plan*, as needed,
- Managing all wastes according to *Waste Management Plan (Solid and Hazardous)* and *Liquid Waste Management Plan,*
- Inspecting water and domestic sewage pipelines,
- Operating, maintaining and monitoring tailings and sewage facilities in accordance with this Plan,
- Maintaining environmental licenses, permits and authorizations,
- Conducting monitoring programs, and
- Regularly reviewing and updating contingency, mitigation and management plans.

3 Solid Waste Management

While under care and maintenance, LMI shall conduct appropriate solid waste identification, segregation, and disposal as outlined in the *Waste Management Plan (Solid and Hazardous)* (Appendix 3). All wastes generated by its activities will be managed by appropriately trained personnel. LMI has obtained a waste generator number (NUG 100047) and waste shipment off site will be manifested as required. Appropriate and approved waste receivers will be utilized.

4 Tailings Containment Area

4.1 Dam Integrity

A visual inspection of the dams' physical conditions and seepage will be carried out during snow-free periods when the TCA is accessible, and when safely accessible during winter months. A request has been submitted to NWB regarding inspection schedules. Inspection records will be maintained on site, for review upon the request of an inspector. During geotechnical inspections, thermistor readings will be taken for the assessment of dam performance. The dams will be inspected by an independent geotechnical consultant on an annual basis.

4.2 Water Management

Water within the TCA is contained in Cell 4, Cell 5, Pond 1 and Pond 2. All of this water will be periodically transferred downstream to maintain a 1 m freeboard at all times. The water in Cell 4 is transferred to Pond 1 via a gated valve; from here the water is transferred from Pond 1 to Pond 2. Cell 5 is directly upstream of Pond 1 and water is transferred directly from Pond 1 to Pond 2 via siphon. Pond 2 is the largest pond and the water is treated with lime to meet pH standards prior to being discharged to the environment.

At the start of the season a water level survey of all ponds and cells will be conducted. A base point elevation will be marked on all ponds and cells containing water to allow onsite staff to maintain the appropriate freeboard within the TCA. Water levels will be monitored as part of the dam inspections.

4.2.1 Discharge from Pond 2

Review of historical documentation associated with the site has shown that the accumulation of runoff and seepage in the ponds of the TCA builds up over a period of two to three years to the point where a discharge to the external environment is required to lower the pond levels. LMI plans to have a release every three years, or as current conditions on site require. Between July and September 2012, the pH of the water was adjusted by disbursing a lime solution throughout the water column until a pH of ~ 6.5 was maintained. The regulatory agencies were notified of the intent to discharge. The dewatering commenced on September 08, 2012 and the water elevation was lowered to an acceptable level by September 29, 2012 and the dewatering was halted. Water quality monitoring was conducted throughout this period and appropriate samples were collected and submitted to an accredited laboratory.

The *Liquid Waste Management Plan* and its appendix the *Water Quality Monitoring Plan and Quality Assurance/Quality Control Plan* are appended (Appendix 2).

4.3 Exposed Dry Tailings

After a thorough review of historical documents received from the previous owner of the site it has been determined that there is approximately 241,000 m^2 of tailings within the TCA that have yet to be

covered. It is understood that there is approximately 155,000 m^2 of Cell 5 and 86,000 m^2 of Cell 3 remaining to be covered. The tailings contained in Cell 5 are currently covered with water therefore eliminating any potential for dust contamination.

To contain the tailings solids that are not covered with water year-round during care and maintenance, it is proposed that a soil binding agent such as Soil-Sement or EK35 be applied when water levels recede during the summer in Cells 3 and 5.This will control wind-borne transport of the tailings solids to the adjacent areas outside of the TCA until final closure and reclamation of the TCA.

Windblown tails have been identified adjacent to Dam 6 of the TCA. LMI proposes to excavate this material and deposit it in an area of exposed tails in the TCA, prior to the application of the dust control agent. The excavation work will need to be conducted during periods when the soil is sufficiently firm to support mobile equipment. Soil samples will be collected from the base of the excavation on a 25 m grid pattern to confirm remediation.

5 Wildlife Management

A *Lupin Mine Wildlife Management Plan* has been developed, outlining measures designed to mitigate impacts to wildlife which may arise from air traffic, waste management and ongoing site activities (Appendix 3).

6 Liquid Waste and Water Management

The *Liquid Waste Management Plan* has been developed to outline water and liquid waste management practices currently in place at Lupin (Appendix 2). The *Water Quality Monitoring Plan and Quality Assurance/Quality Control Plan* is an appendix of the *Liquid Waste Management Plan*. It provides a set of standardized procedures for sampling, analysis and reporting for the water quality monitoring program.

Drinking water is obtained from Contwoyto Lake at LUP-01. It is transported by truck and stored in a storage tank adjacent to the 1300 wing. Investigations into re-opening the water line are expected in 2013 and the line may be re-opened.

Liquid waste resulting from camp accommodations and kitchen facilities (dishwater and sanitary waste) is stored in a sewage tanks and then hauled to the Upper Sewage Lake for disposal as needed. Water accumulating in sewage lakes is tested prior to discharge to the environment to ensure it is in compliance with part E (8) of the Water Licence. If compliant, water is discharged from LUP-14 to the environment.

Stormwater results from precipitation events on the ground surface and building roofs on site. Overland flow quality and quantity are managed through implementation of a series of BMPs to minimize effects to the environment that may result from stormwater run-off. Safe material handling and storage procedures minimize introduction of potential contaminants to the site environment, which may in turn,

be mobilized by stormwater. BMPs including erosion control measures, snow removal, site grading and ditching are in place to minimize impacts from the movement of surface water over surficial materials.

Water accumulating in secondary containment of fuel storage facilities is tested prior to discharge to the environment to ensure it is in compliance with part E (9) of the Water Licence. Water that is not in compliance is pumped to storage containers where it is held until it can be treated and subsequently released to the environment at LUP-27. Snow that is contaminated with hydrocarbons is collected and melted. The hydrocarbon portion is skimmed of the water using sorbent towels. The water is then tested and either discharged or stored prior to treatment and release to the environment.

7 Fuel Management

A *Fuel Containment Management Strategy* was developed early in 2012, following a site inventory of the current fuel containment system at Lupin. It has been revised to reflect work completed in 2012; and recommendations received from Roosdahl Engineering Enterprises on maintenance and upgrades to the fuel containment facilities. Work on the Main Tank Farm is planned for 2013-2015 when the weather warms up.

This strategy can be found in Appendix 4. This document lists current systems, their status, and outlines a plan to bring systems into compliance.

Legend

Project Location

Coordinate System: NAD_1983_UTM_Zone_12N

Map Sources/Notes:
Various Canadian Government Websites - Feb 2012

0 60 120 240 360 480 600 Km

1:15,000,000

Approved By: AL
Project No.: LUP
File Name: Lup-13-08-01-LocationMap-A.mxd

Prepared By: PW
Date Revised: 15 Apr 2013

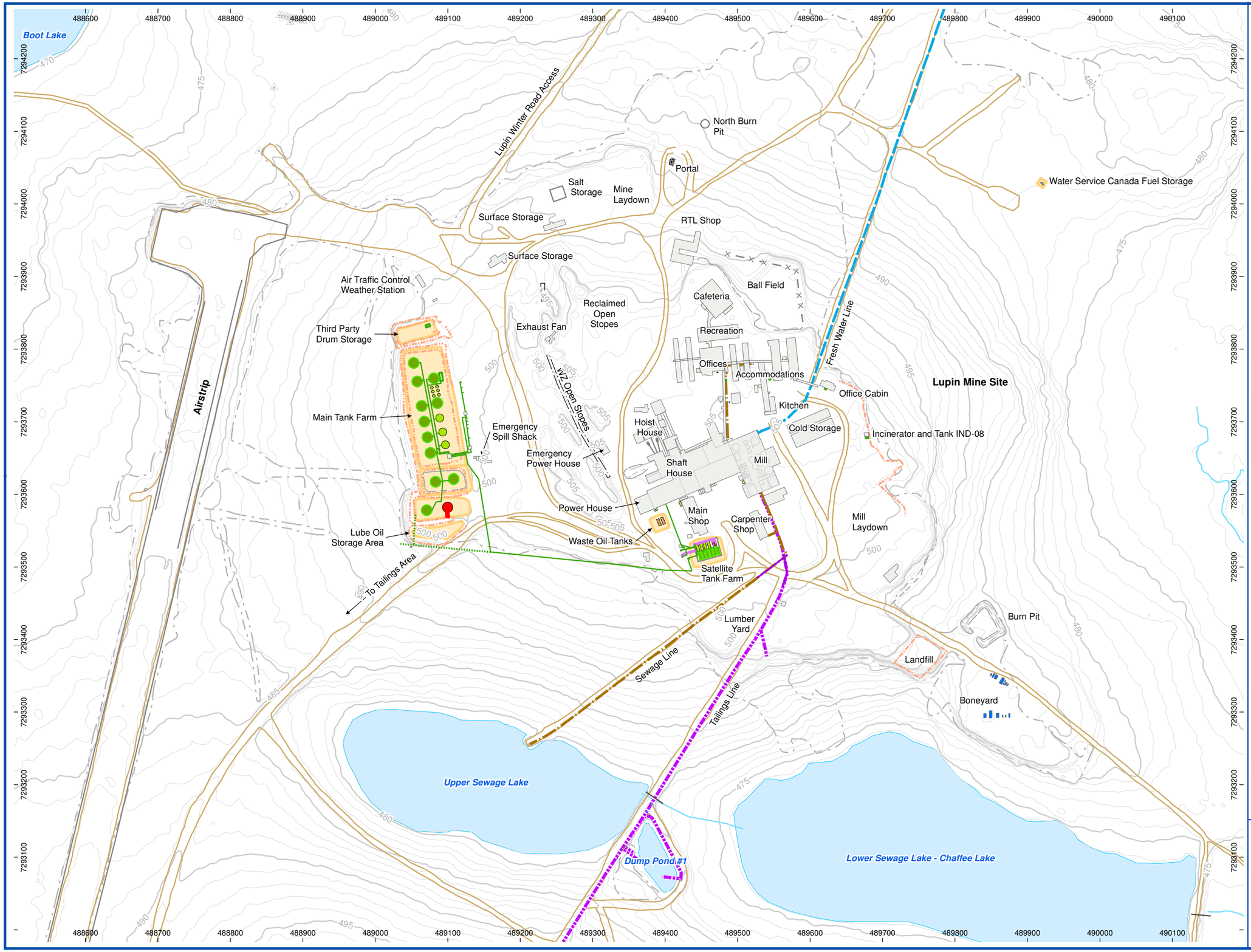
Project: **Lupin Project**
Location: Kitikmeot Region, Nunavut, Canada

Location Map

Lupin Mines Incorporated

ELGIN MINING INC.

Figure: 1
Rev: 130415



Legend

- Building
- Tank Farm Berm Outline
- Lake
- Edge of Disturbed Area
- Stream
- Road
- Topographic Contour (5m)
- Topographic Contour (1m)
- Sewage Pipeline (6 in Diam)
- Tailings Line Route
- Water Pipeline (8 in Diam)

Pipe - Fuel Type, Status

- Diesel, Active
- Diesel, Abandoned
- Diesel, Uncertain
- Gasoline, Active
- Jet A, Active

Location of Tank - FuelType

- Diesel P-40
- Diesel P-50
- Diesel
- Water
- Jet-A
- Gas
- Glycol
- Waste Oil
- Empty
- Unknown

N W E S

Map Sources/Notes:
Topographic features and site layout from Satellite image dated Aug 21, 2012
Fuel tank and Fuel Containment layouts adapted from drawings by Emerson Engineering dated Oct 17, 2011 and from data updated to March 01 2013

Coordinate System: NAD_1983_UTM_Zone_12N

Meters
0 50 100 200

1:5,000

Approved By: AL
Prepared By: PW
Project No.: LUP
Date Revised: 15 Apr 2013
File Name: Lup-13-08-03-MinesiteArea-B.mxd

Project: **Lupin Gold Mine**
Location: Kitikmeot Region, Nunavut, Canada

Minesite Area

Lupin Mines Incorporated

ELGIN MINING INC.

Figure: 3
Rev: 130415

Appendices

Appendix 1: Lupin Mine Waste Management Plan (Solid and Hazardous)

Lupin Mines Incorporated

A wholly owned indirect subsidary of Elgin Mining Inc.

Lupin Mine Site

Nunavut, Canada

Waste Management Plan (Solid and Hazardous)

(Care and Maintenance)

March 2013

Lupin Mines Incorporated
Elgin Mining Inc.
#201 - 750 West Pender Street
Vancouver, BC, V6C 2T7

Document Control

Revision No	Date	Details	Author	Approver
1.0	20/03/12	Reformatted to Lupin Mines standard. Revised and updated to reflect new ownership and contact information. Updated discussion of onsite waste management facilities to reflect current facility usage, and include burn pit, waste oil storage. Removed reference to land farm. Added Figures, illustrating waste management facilities. Removed discussion on hazardous material purchase; not relevant to current activities. Updated discussion on aerosol can disposal. Added comment on recycling. Removed reference to drum storage building. Added reference to waste generator number. Updated section on records to reflect current status. Addressed comments from AANDC (2010).	S. Hamm	P. Downey
2.0	24/02/13	Updated contact and general information. Updated environmental policy. Updated to reflect current site activities and procedures. New incinerator operating installed in 2012 and operating procedures attached. Proposed use of waste oil furnaces described.	D. Vokey	W. Osborne

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Figures

Appendices

1 Introduction

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Company:	LMI
Project:	Lupin Mine, Nunavut
Company Address:	201 – 750 W Pender St, Vancouver, BC, V6C 2T7
Telephone:	604-682-3366
Email:	wosborne@elginmining.com
Attention:	Wayne Osborne, Project Manager
Effective date:	30 March 2013

Distribution List:

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Jim Currie	Chief Operations Officer
Peter Tam	Chief Financial Officer
Wayne Osborne	Project Manager
Michele Jones	Manager, Corporate Affairs
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Karyn Lewis	General Administration

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Through implementation of this policy, Elgin Mining seeks to earn the public's trust and be recognized as a respectful and conscientious employer, neighbor and environmental steward.

Approved by the Board of Directors on August 10th, 2012

1.3 Purpose and Scope

This Plan is an appendix to the Care and Maintenance Plan. This Plan is designed to address waste management criteria established in Water Licence 2AM-LUP0914 and INAC Surface Leases 76E/14-1-9(2) (mine site) and 76E/14-2-10 (airport). Waste management criteria established in surface exploration Water Licence 2BE-LEP1217 and associated Land Use Permit N2011C0026 relies on use of the Lupin Mine facilities and this Plan. The Plan provides information for identification, segregation, handling and disposal of solid and hazardous waste at Lupin during Care and Maintenance.

The objectives of the Plan are to:

- Provide guidance for solid and hazardous waste management at Lupin; and
- Describe the responsibility and tasks involved with Waste Management.

2 Waste Identification

Typical waste generated on site during Care and Maintenance includes domestic and hazardous waste, and, in the event of a spill, contaminated soils. In order to determine if a solid waste is a hazardous waste, LMI shall:

- Refer to the MSDS for the material in question,
- Maintain an inventory of materials on site and their classification, and
- Review the materials inventory on an annual basis.

All wastes generated by LMI's activities are classified by appropriately trained personnel. Common knowledge can be used to determine that materials such as paper, untreated wood, concrete and food scraps are not hazardous waste. LMI conducts site inspections and observe waste periodically. All Site

workers are instructed to call the on-site Environmental Coordinator or their on-site designate if uncertain about waste products and their storage and disposal methods.

3 Waste Segregation

After the waste is identified, it is segregated at the source. The following waste streams are currently being segregated: domestic waste; domestic recycling; scrap metal; oily waste; aerosols; combustibles; batteries; spent canisters (propane, acetylene). Each waste stream, with the exception of domestic waste, is stored on site for future removal or recycling.

4 Waste Diversion

Where possible, waste diversion, including material re-use and recycling, will occur; for example domestic drink containers. Where diversion is not an option, waste will be disposed of at onsite facilities or shipped offsite to a third party waste receiver.

5 Solid Waste Disposal Facilities

Waste management facilities at Lupin include an incinerator, a "boneyard" (for decommissioned tanks, buildings, and equipment), a landfill (not currently permitted for use), two burn pits (not currently permitted for use) and waste oil storage (Figure 2). In the event that a waste management facility on site is not useable, waste is appropriately segregated, stored such that it is inaccessible to wildlife and shipped to a third party waste receiver in Yellowknife, NT.

5.1 Incinerator

An incinerator has been used to incinerate combustible, inert solids throughout the life of the Lupin Mine. A new incinerator was installed in 2012. The incinerator is a cinder block building that is secure from wildlife. The following types of material will be incinerated:

- Organic waste (such as kitchen waste),
- Wood,
- Paper,
- Cardboard,
- Air filters,
- Domestic waste,
- Light plastics (bags, thin plastics),
- Cooking waste oil (small amounts, used as incinerator fuel) and
- Poor grade diesel fuel (small amounts, used as incinerator fuel).

The Inciner8 Model A600X incinerator is a dual stage forced air commercial incinerator that will operate on diesel fuel or kerosene. The Operations and Maintenance Procedure for the incinerator is included as Appendix 1. The document was developed in accordance with *Technical Document for Batch Waste Incineration* (Environment Canada, 2010).

5.2 Landfill

Non-combustible, non-hazardous materials were historically placed within the landfill area and constantly kept covered. In the past, it is understood that the following items were designated as landfill waste and buried within the surface waste rock piles:

- Wood,
- Iron products,
- Plumbing piping (copper, steel, etc.),
- Electrical wiring,
- Compressed gas containers,
- Rubber products,
- Tires,
- Heavy plastics (pails, etc.),
- Plexiglass,
- Glass,
- Vehicle lights,
- Fibreglass,
- Styrofoam boards,
- Insulation,
- Plaster and plaster boards,
- Hydraulic rubber hoses,
- Rock resin, and
- Ash produced from incinerator.

LMI would like to continue to utilize the landfill and plans to apply for the use of this land fill area based on current regulations and guidelines governing landfill operations.

5.3 Burn Pit

One burn pit is located on site adjacent to the landfill, and a second one is at the north end of the site (Figure 2). Historically, combustible non-hazardous, non-domestic waste was open-burned here. LMI would like to continue to utilize the burn pit accordingly. LMI plans to apply for a permit to open burn.

5.4 Waste Oil Storage

A waste oil tank farm, (two above ground storage tanks located in secondary containment), and a lube oil and grease storage area exist on site. The waste oil tank farm contains oil, but no oil is being transferred in or out of the tanks until the tanks and pipeline system is upgraded to meet the current Environment Canada Regulations. Used oil is currently placed in sealed containers and stored in a bermed area adjacent to the main tank farm. Waste oil furnaces are on site and will begin using this used oil upon Nunavut Water Board approval of the Plan.

6 Solid (Non Hazardous) Waste Management

Routinely generated non-hazardous solid waste are collected and segregated, along with bulk liquids, or bulk petroleum products (waste solvents, used oil, oil filters, aerosol cans, batteries, mercury vapour lamps, mercury switches, used greases). Such wastes include:

- Kitchen wastes, paper, scrap metal (including non-returnable drums that have been crushed),
- Demolition debris (e.g.; scrap wood, scrap metal, concrete), and
- Maintenance shop wastes (e.g. drained and crushed oil filters, punctured and drained aerosol cans, floor clean-up, used spill absorbent pads and materials).

Demolition waste and maintenance shop waste is currently being stored and backhauled, as opportunities arise to Yellowknife for disposal at a third party facility. Once the burn pit and landfill facilities are approved for use, they will be used per the previous discussion of them.

The new incinerator is operational and is used to burn the domestic and kitchen waste.

Used shop grease which has been determined to be non-hazardous waste shall be collected in drums for disposal offsite at a third party facility.

Heavy equipment tires and light vehicle tires that cannot be returned to the vendor are currently stored on site pending approval to be disposed of in the Lupin landfill or mine workings.

Recyclable containers, primarily food and beverage, are segregated and shipped off site for management by a third party waste receiver.

7 Contaminated Soil Management

7.1 Materials Contaminated with Petroleum Products

Soils contaminated from spills of petroleum products (including diesel, gasoline, oils, used oil, and grease) will be remediated to the *CCME Canada Wide Standards for Petroleum Hydrocarbons in Soil*, which have been adopted by the Government of Nunavut in the Environmental Guideline for Contaminated Site Remediation (2009).

7.2 Materials Contaminated with Metals

Materials contaminated with metals require excavation only if the material would be considered a remnant of hazardous materials. These materials should be managed according to the procedures for hazardous materials. Metal-contaminated material that is not remnant of hazardous materials may be left in place or placed in the Tailings Containment Area.

7.3 Materials Contaminated with Solvents

Materials contaminated with solvents containing greater than 10% chlorinated and/or fluorinated hydrocarbons shall be excavated until there is no visible sign of contamination, containerized and disposed off-site as a hazardous material.

Material contaminated with solvents other than those containing greater than 10% chlorinated and/or fluorinated hydrocarbons shall be excavated until there is no visible sign of contamination, and managed as petroleum-contaminated soil.

8 Hazardous Waste Management

Hazardous waste is managed in accordance with the Government of Nunavut *Environmental Guideline for the General Management of Hazardous Waste* (2010), the Transport Canada's *Transportation of Dangerous Goods Regulations* and the Canadian Environmental Protection Act's *Inter-provincial Movement of Hazardous Waste Regulations*.

8.1 Batteries

All used batteries, including general purpose batteries (flashlight, lantern batteries); lithium, nickel cadmium, and lead acid batteries shall be collected and stored in order to prevent the release of any hazardous constituents to the environment. The batteries are to be transported off-site for disposal at an approved facility during periods when the winter road is operational.

8.2 Empty Drums and Scrap Metal

Metal drums are in high demand at Site, as clean-up continuously progresses. Waste oil and/or suspect fuel is kept in barrels for future use as fuel for the waste oil furnaces. The tops are removed from drums being used to store waste materials pending future disposal in accordance with this Plan. Only badly damaged drums are crushed. To the maximum extent practical (e.g., when the winter road is open), scrap metal generated at Lupin is removed from site and sold for metal recycling. Scrap metal that cannot be recycled is either removed from site or stored pending approval for disposal within the landfill or mine workings.

8.3 Emptying of Containers that Contain Hazardous Waste

The following sections apply to all non- latex paints, solvents and aerosol cans at Lupin with the exception of non-solvent cleaners such as glass cleaner, and other non-hazardous materials.

8.3.1 Non- Aerosol Cans (except acute hazardous waste)

During use, containers will be emptied of all material by normal means (e.g. pouring, pumping); until 1% of the container's original capacity remains. If more than this amount of materials remains in the container, it must be used or emptied into a satellite accumulation drum prior to disposal. Inner liners, if

present, are removed. Once emptied by this procedure, the container can be disposed of as solid, non-hazardous waste.

8.3.2 Aerosol Cans (except acute hazardous waste)

Aerosol cans emptied of all products are currently being segregated from the waste stream, stored in a lined Mega-bag, and shipped off site for disposal by a third party waste receiver. The Site has an aerosol can puncture unit to drain the cans for easier and safer disposal.

8.4 Hazardous Wastes that are Compressed Gases

Gas cylinders for acetylene and propane and oxygen are returned and refilled as required. Cylinders are considered empty when the tank pressure approaches atmospheric pressure.

9 Transportation and Documentation

Transportation of dangerous goods within the Site and shipping to and from Lupin requires conformance with transportation regulatory requirements, including Dangerous Goods Regulations and International Air Transport Association.

Emergency Response Information for hazardous materials, shipped from Site, shall be maintained on site. Workers involved in transportation of hazardous materials shall receive proper training.

9.1 Labeling

Appropriate labeling of all hazardous waste shall be conducted as the waste is generated. Drums must be labeled as 'Hazardous Waste' and the label must include the date of the start of the accumulation and the contents of the drum. A log tracking the amount, accumulation date and nature of all hazardous wastes placed in the storage area, including any used solvent or antifreeze generated at Lupin which is determined to be hazardous.

9.2 Storage and Packing of Hazardous Waste Prior to Shipment

LMI shall ensure that the total amount of hazardous waste temporarily stored in any one location or building does not exceed more than one drum. In the event that a total of more than 45 gallons of hazardous waste are accumulated in any one satellite accumulation area, the drums must be moved to the storage area immediately.

Within 24 hours of reaching the 45 gallon total, LMI shall ensure this waste is entered into the Hazardous Waste Log, regardless of whether the waste has been transferred to the storage area or not. Appropriate placards, as required under the transport of hazardous materials, must be supplied by the transporter. Only licensed waste handlers shall be used. A copy of the license shall be kept in the files.

9.3 Manifests

LMI has a Waste Generator Number, and proper manifesting will accompany all waste shipments. The manifest form must be signed by one of the following:

- Site Manager,
- Environmental Coordinator, or
- Their designate.

The transporter must sign and date the manifest upon accepting the waste for shipment. A copy of the signed manifest shall be retained for at least three years. The returned copy of the manifest with the handwritten signature of the owner or operator of the recycling or disposal facility shall be retained on site for at least three years.

9.4 Record Keeping and Reporting

Copies of each manifest form shall be retained on site for at least three years.

LMI shall retain all records of any test results, waste analysis or other determinations made in evaluating whether wastes generated at the Lupin site are hazardous wastes for at least three years after the waste(s) were last sent off-site for treatment or disposal.

Records containing data used to determine treatment requirements for land disposal shall be retained for at least five years after the waste(s) were last sent off-site for treatment or disposal.

The Site shall retain records of any arrangements made with local police, fire, hospitals or emergency response teams, emergency response contractors, and with the local health department, as appropriate, for the types of hazardous wastes handled at Lupin and the potential need for the services of these agencies.

Legend

Project Location

Coordinate System: NAD_1983_UTM_Zone_12N

Map Sources/Notes:
Various Canadian Government Websites - Feb 2012

0 60 120 240 360 480 600 Km

1:15,000,000

Approved By: SH
Prepared By: PW
Project No.: LUP
Date Revised: 21 Mar 2012
File Name: Lup-12-10-01-LocationMap-A.mxd

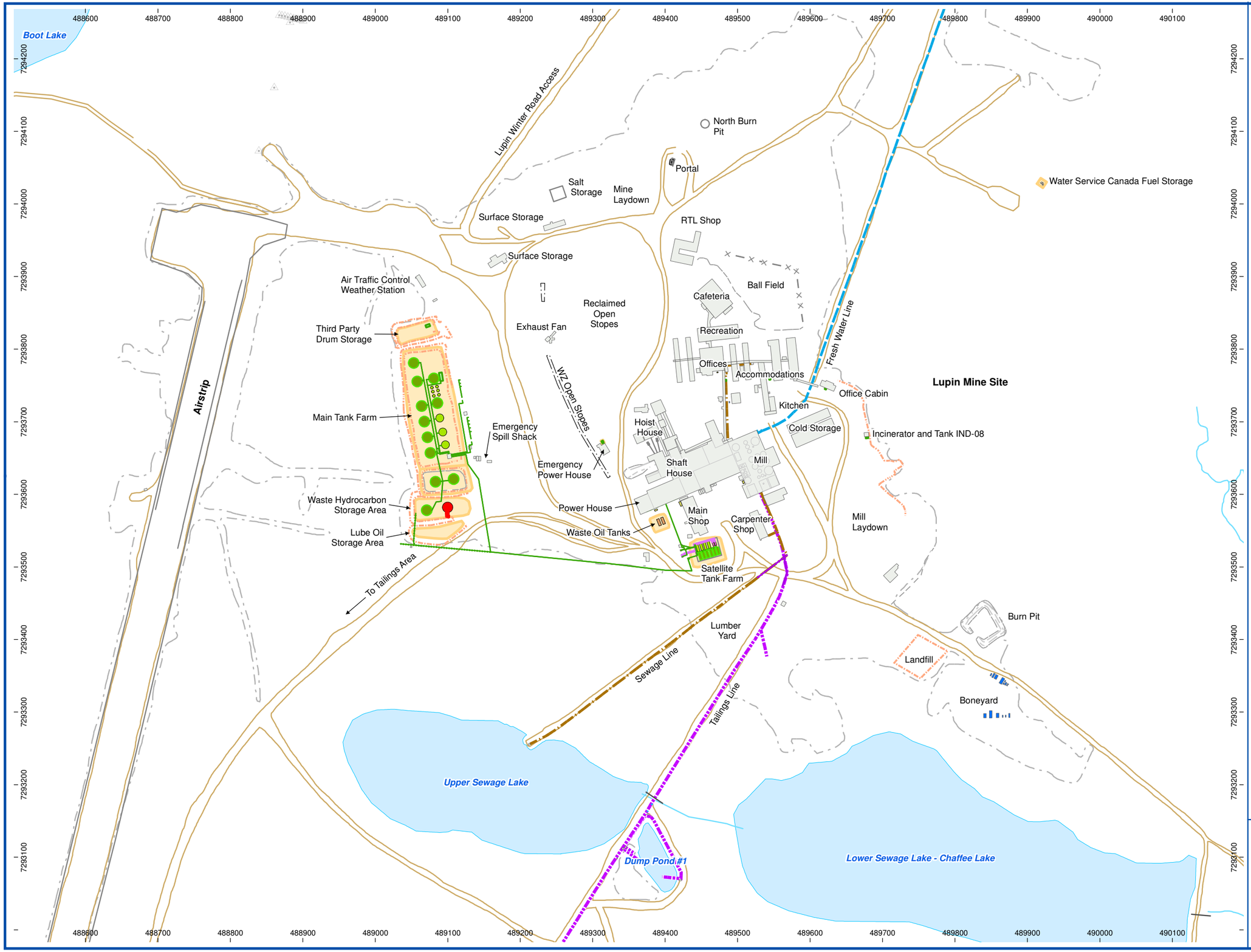
Project: **Lupin Project**
Location: Kitikmeot Region, Nunavut, Canada
Lupin Mine Annual Report - Water Licence 2AM-LUP0914

Location Map - Lupin Mine

Lupin Mines Incorporated

ELGIN MINING INC.

Figure: **1**
Rev: 120321



Legend

- Building
- Tank Farm Berm Outline
- Lake
- Edge of Disturbed Area
- Stream
- Road
- Sewage Pipeline (6 in Diam)
- Tailings Line Route
- Water Pipeline (8 in Diam)

Pipe - Fuel Type, Status

- Diesel, Active
- Diesel, Abandoned
- Diesel, Uncertain
- Gasoline, Active
- Jet A, Active

Location of Tank - FuelType

- Diesel P-40
- Diesel P-50
- Diesel
- Water
- Jet-A
- Gas
- Glycol
- Waste Oil
- Empty
- UnknownC

N W E S

Map Sources/Notes:
Topographic features and site layout from Satellite image dated Aug 21, 2012
Fuel tank and Fuel Containment layouts adapted from drawings by Emerson Engineering dated Oct 17, 2011 and from data updated to March 01 2013

Coordinate System: NAD_1983_UTM_Zone_12N

0 25 50 100 150 200 Meters

1:5,000

Approved By: JCB
Prepared By: PW
Project No.: LUP
Date Revised: 01 Apr 2013
File Name: Lup-13-04-01-SiteFacilities-B.mxd

Project: **Lupin Gold Mine**
Location: Kitikmeot Region, Nunavut, Canada

Care and Maintenance Plan

General Site Map - Lupin Mine

Lupin Mines Incorporated

ELGIN MINING INC.

Figure: 2
Rev: 130401

Appendices

Appendix 1 Incinerator Operation and Maintenance Procedure

INCINER8 Model A600X Operation and Maintenance Procedure

WASTE MANAGEMENT

A properly documented and effective waste management program is a requirement of LMI's permits, licences and authorizations. Proper incineration is an effective and environmentally sound method to deal with most domestic waste generated at the Site. Organic waste is collected and incinerated daily to avoid interactions with wildlife.

The INCINERA8 Model A600X waste incinerator installed at Lupin in 2012 to replace the outdated Site incinerator. The system operates on diesel or kerosene. The charge rate is up to 270 kg per charge of typical waste (BTU/lb rating of 1000). Batch loaded allowing complete burn-out in approximately 6 to 8 hours, cool down and ash removal before reloading. The burn rate is approximately 45 kg/hr.

The incinerator was installed in the existing Site incinerator building by the vendor, Discovery Mining Services on May 11, 2012. Discovery Mining Service operates and performs maintenance on the incinerator.

INCINERATOR OPERATION

ACCEPTABLE FOR INCINERATION

- Organic waste (such as kitchen waste),
- Wood,
- Paper,
- Cardboard,
- Air filters,
- Domestic waste,
- Light plastics (bags, thin plastics),
- Cooking waste oil (small amounts, used as incinerator fuel), and
- Poor grade diesel fuel (small amounts, used as incinerator fuel).

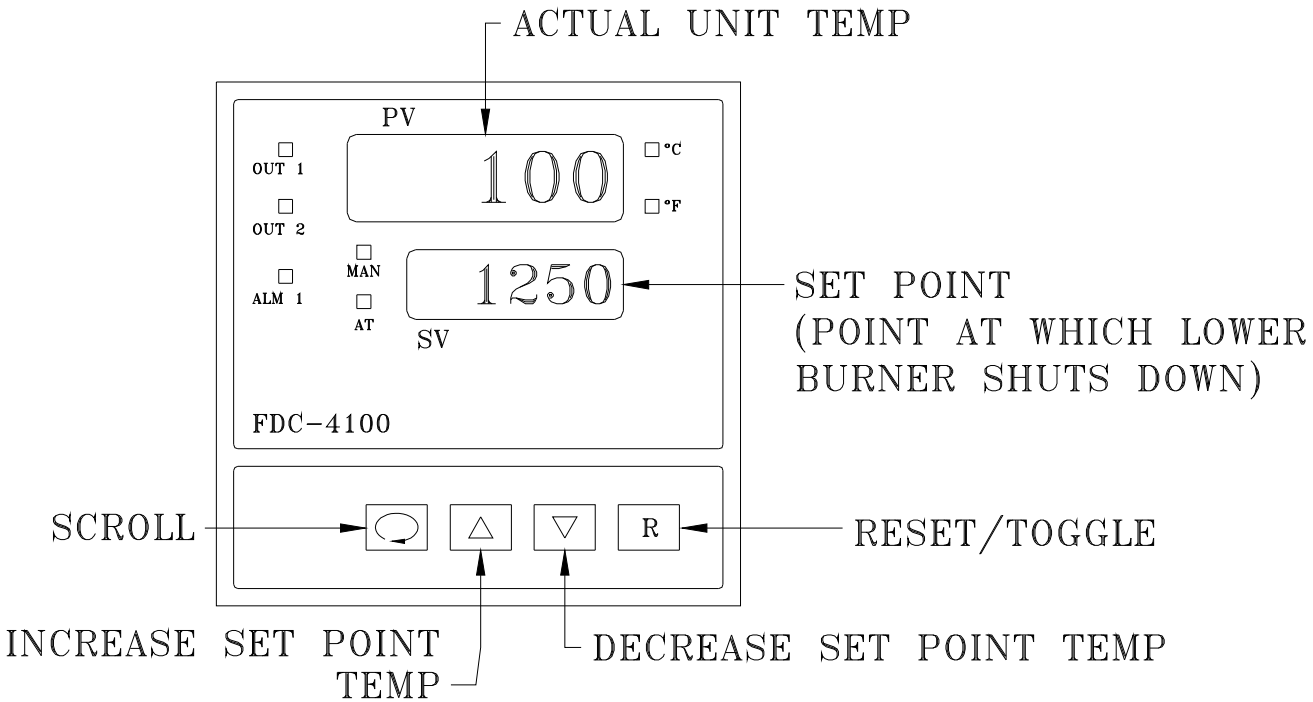
PROHIBITED FROM INCINERATION

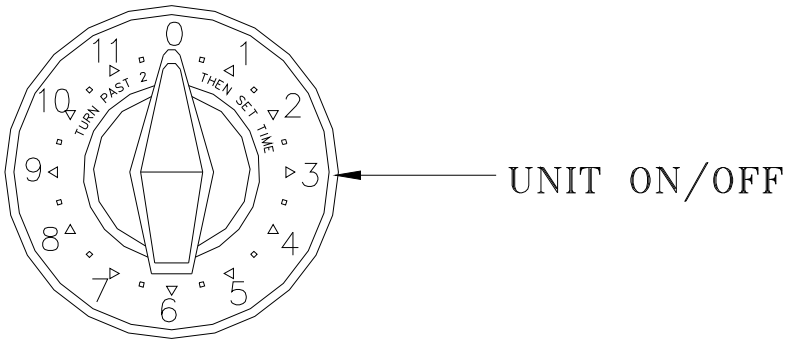
The following items are **not** to be disposed of by incineration:

- Used oil or fuel filters,
- Absorbent materials used to clean up spoiled petroleum products
- Waste grease of any kind (empty pails or cartridges, greasy rags, etc.),
- Batteries of any kind,
- Aerosol cans, compressed air cans, propane cylinders,
- Plastic containers, packaging, other than described as acceptable above, and
- Flammable accelerants.

Operating Instructions

1. Remove ashes before loading the incinerator.
2. Load incinerator. **Keep the waste 6"-8" away from the burner port.**
3. Start burner by setting the timer for the desired burn time. A full load will normally burn out in 6-8 hours.
4. The incinerator will automatically shut off when the burn is completed.
5. For best results, burn to a white ash.





Ash Removal and Loading Instructions

1. Clean out the ash from the previous day. Any unburned material found in the ash should be recharged to the primary chamber. Put ash in a container suitable for shipment to an approved landfill.
2. Load with waste. Cardboard boxes should be broken down or ripped into manageable pieces. Do not over fill with cardboard because it blocks the burner inlet. Small volumes of wet waste (e.g. organic waste) are to be mixed with more combustible paper and cardboard materials to ensure total elimination during incineration.

Do's and Don'ts

1. Remember -----the unit is producing **HIGH HEAT**. **USE CAUTION!**
2. **NEVER** introduce any type of petroleum products directly into the fire box.
3. **ALWAYS** wear protective gear while operating the incinerator (fire retardant coveralls or apron, gloves and face shield).
4. **NEVER** open the loading door after loading the fire-box and igniting the load (there is always a danger that someone has carelessly thrown an aerosol can or battery into the garbage).
5. **NEVER** hit on or scrape the interior of the fire-box (this finish is refractory cement and it will crack). The door guard must always be in place when the load door is open.
6. **NEVER** make any adjustments to the unit without the consent or presence of the Site Manager.
7. **NEVER** overload the fire-box------If material is pushed too far into the burn chamber it restricts the operation of the burner and slows down the burn time.
8. **NEVER** have clutter in the building / area (you should always have access and a clear path on all 4 sides of the unit).
9. **NEVER—NEVER** use unfiltered fuel (always make sure that the fuel being fed to the burners passes through a fuel oil filter).
10. The only tools that should be required are...a square mouth shovel...a round mouth shovel.....and a scrap drum for ash AND A FIRE EXTINGUISHER.
11. **NEVER OPERATE THE INCINERATOR WITHOUT THE FIRE ROPE SEAL IN PLACE IN THE DOOR!! Doing so will cause permanent damage to the refractory cement.**

Used filters must be retained in appropriate containers and shipped off-site for disposal at an approved handling facility. Used oil is stored appropriately for use in the waste oil furnace.

Ash from the incinerator can contain materials that are deleterious to human health and the environment. The ash must be disposed on in an approved disposal site. Ash residue is currently backhauled to Yellowknife for disposal. Approval from the Nunavut Water Board is required before it can be landfilled at Site.

PERSONAL PROTECTIVE EQUIPMENT

Proper PPE is to be worn at all times while operating the incinerator. This includes, but is not limited to, fire retardant coverall or apron heat resistant gloves, and full face shield for face.

RECORD KEEPING

An Operating Log is to be maintained on a daily basis while the incinerator is in operation. Date and operators name are to be recorded. All waste to be incinerated is to be recorded by general type and weight (i.e. 50 pound bag camp kitchen waste. 20 pound bag office waste, etc). The weight of ash produced is also to be recorded. Electronic records of operation are required.

TROUBLE SHOOTING

No spark at electrodes

1. Be sure there is no obstruction in the end of the burner tube and there is no soot build-up on the retention head, electrodes or nozzle.
2. Check all electrical connections.
3. Transformer may be burned out. Listen or look to see if there is an arc across the electrodes. Replace transformer if no spark is present.
4. Check for damage to electrodes.
5. Improper firing head adjustment. See Beckett burner installation manual.

No oil spray through nozzle

1. Defective motor. Check to see if blower wheel is turning. If not, check electrical connections and voltage to motor.
2. Air in fuel line. Check all fittings between burners and at fuel tank for tightness. Air may be bled from the fuel line at the fuel pump.
3. Dirt or water in oil tank.
4. Check the plastic coupling between motor and pump for tight fit.
5. Check for clogged filter at tank or on nozzle.
6. Be sure there are no kinks in the oil line.
7. Check the tubing between the pump and nozzle for blockage.
8. Defective pump.

If incinerator does not burn properly

1. Have the ashes been removed at the beginning of the day?
2. Be sure there is no obstruction blocking the burner tube.
3. Are the air bands adjusted correctly?
4. Is No. 1 Fuel Oil (Kerosene) or No. 2 Fuel Oil (Diesel) being used as fuel?

INCINERATOR MAINTENANCE

DAILY CHECKS BEFORE INCINERATION BEGINS WILL HELP PROLONG THE LIFE THE INCINERATOR.

ADVICE In order to have your unit in good working condition, check daily for:

- Damage to the fire rope under the lid. Replace if necessary,
- Abnormal damage to the refractory lining,
- Scorch damage to the external steelwork,
- Check all fuel and power connections, and
- Visible damage to the chimney.

Monthly maintenance procedures

In order to have your unit in good working condition, every month it has to be checked for:

- Damage to the fire rope under the lid,
- Visible damage to the chimney,
- Visible damages to the outside body of the incinerator (corrosion of metal parts, discolorations, leaks),
- Condition of temperature probe , and
- Condition of fuel and electrical installation.

The operator must keep logs about all maintenance procedures, with his comments. Electronic records of maintenance are to be maintained by LMI.

Yearly service procedures

In order to have unit in good working condition it has to be serviced once per year (or every 1000 hours, whatever comes first):

- Replace fire rope under the lid,
- Adjust counterbalance so lid is balanced and sealed,
- Do parallel measurement of temperature probe (if regulated by law),
- The burner should be serviced by an approved professional, and
- Check sealing between each individual part of chimney (including secondary chamber).

The operator must keep logs about all service procedures, with his comments. Electronic records of maintenance are to be maintained by LMI.

A sample log is as follows:

Maintenance Log

Action	**Date**	**Comments**	Operator
Installation			
Monthly Check			
Monthly Check			
Monthly Check			
Monthly Check			
Monthly Check			
Monthly Check			
Monthly Check			
Monthly Check			
Monthly Check			
Monthly Check			
Monthly Check			
Monthly Check			
Service			
Service			
Service			

Appendix 2: Lupin Mine Liquid Waste Management Plan

Lupin Mines Incorporated

A wholly owned indirect subsidary of Elgin Mining Inc.

Lupin Mine Site

Nunavut, Canada

Liquid Waste Management Plan

(Care and Maintenance)

March 2013

Lupin Mines Incorporated
Elgin Mining Inc.
#201 - 750 West Pender Street
Vancouver, BC, V6C 2T7

Document Control

Revision No.	Date	Details	Author	Approver
1.0	20/03/12	Reformatted to Lupin Mines standard. Revised and updated to reflect new ownership and contact information. Updated figures to reflect current site conditions. Document re-write, primarily for clarity and organization. Addressed comments from AANDC (2010), EC (2009) Revised to include liquid waste management	S Hamm	P Downey
2.0	30/03/13	Combined *Discharge Procedure: Tailings Containment Area and Sewage Lakes Disposal Facility* with the *Liquid Waste and Stormwater Management Plan* to create the *Liquid Waste Management Plan.* Updated contact and general information. Additional details on preparation for discharge from the TCA added.	D Vokey	W. Osborne

Table of Contents

Tables

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Appendices

1 Introduction

Lupin Mines Incorporated (LMI), a wholly owned indirect subsidiary of Elgin Mining Inc. (Elgin), has prepared this Liquid Waste Management Plan (the Plan).

An annual review of the Plan will take place and revisions will be submitted as necessary with the annual report. The current Type A Water Licence 2AM-LUP0914 (Water Licence) for the Lupin Gold Mine (Lupin or the Lupin Mine or the Site) is valid until March 31, 2014 and has been kept in good standing.

1.1 Project and Company Information

Elgin is a Canadian based company focused on the production at the Björkdal Gold Mine located in Sweden, and the exploration and development of the Lupin Gold Mine and Ulu Gold Project, both located in Nunavut, Canada.

Elgin purchased LMI, which owns the Lupin Mine, from MMG Resources Ltd. in July 2011. Lupin was in operation from 1982 to 2005 with temporary suspensions of activities between January 1998 and April 2000, and again between August 2003 and March 2004. The mine resumed production in March 2004 until February 2005. Since 2005, the Site has remained in Care and Maintenance.

General site maintenance and facilities upgrades are underway at the Lupin Mine in preparation for an underground exploration program. The activities underway were screened by the Nunavut Impact Review Board under file 99WR053 and approved by the Nunavut Water Board under Water Licence 2AM-LUP0914. Surface exploration is conducted under Water Licence 2BE-LEP1217. All camp infrastructure required for the surface exploration program currently exists at the Lupin Mine.

Company:	LMI
Project:	Lupin Mine, Nunavut
Company Address:	201 – 750 W Pender St, Vancouver, BC, V6C 2T7
Telephone:	604-682-3366
Email:	wosborne@elginmining.com
Attention:	Wayne Osborne, Project Manager
Effective date:	30 March 2013
Distribution List:	
Patrick Downey	Chief Executive Officer
Jim Currie	Chief Operating Officer
Peter Tam	Chief Financial Officer
Michele Jones	Manager, Corporate Affairs
Wayne Osborne	Project Manager
David Vokey	Sr. Environmental Coordinator
Karyn Lewis	General Administration

Additional copies of this Plan are available from General Administration. The Plan is available at the LMI Environmental Department office and a notice is posted in key locations at the site indicating where they can be found. All employees and contractors will be made aware of its contents.

1.2 Site Location

The Lupin Mine is located in Kitikmeot Region, Nunavut, 400 km north of Yellowknife, Northwest Territories and 285 km southeast of Kugluktuk. The airport serving this Site is at 65° 46'00" N and 111° 14'41" W. The Site is on the western shore of Contwoyto Lake, approximately 60 km south of the Arctic Circle (Figure 1).

1.3 *Environmental and Sustainable Development Policy*

Elgin Mining Inc. and its subsidiaries (collectively, "Elgin Mining") are committed to maintaining a safe, clean, compliant and respectful work environment. Elgin Mining looks to our employees, contractors and managers to adopt and grow a culture of social responsibility and environmental excellence. Together we achieve this by:

- Promoting environmental stewardship in all tasks. Nothing is too important that it cannot be done in a clean and responsible manner. We strive towards maintaining a zero-incident work place.
- Recognizing that we have a shared responsibility as stewards of the environment in which we operate. We will not walk away from a non-compliant act.
- Identifying, managing and mitigating environmental, business and social risks in an open, honest and transparent manner.
- Planning our work so it is done in the cleanest possible manner and executing work according to plan.
- Continually improving environmental and operational performance by setting and reviewing achievable targets.
- Providing appropriate and necessary resources in the form of training, personnel and capital, including that required for closure planning and reclamation.
- Managing our materials and waste streams, maintaining a high degree of emergency response preparedness and minimizing our operational footprint to maintain environmental protection at all stages of project development.
- Procuring goods and services locally, where available, and favouring suppliers with environmentally and socially responsible business practices.
- Seeking to understand, learn from and mitigate the root causes of environmental incidents and near misses when they do occur.

- Employing systems and technology to achieve compliance, increase efficiency and promote industry best practices in development, operations and environmental stewardship.
- Working with stakeholders to identify and pursue opportunities for sustainable social and economic development and capacity building.
- Conducting early and ongoing stakeholder engagement relevant to the stage of project and mine development and operation.
- Recognizing diversity in the workplace and building meaningful relationships with all stakeholders in a timely, collaborative and transparent manner.

Through implementation of this policy, Elgin Mining seeks to earn the public's trust and be recognized as a respectful and conscientious employer, neighbor and environmental steward.

Approved by the Board of Directors on August 10th, 2012

1.4 Purpose and Scope

This Plan is an appendix to the Care and Maintenance Plan. The purpose of this Plan is to provide the necessary information pertaining to liquid waste management during routine care and maintenance at the Lupin Mine. Liquid waste management planning is necessary to ensure waste water is appropriately stored, treated and discharged to the environment in compliance with the Water Licence and the *Metal Mining and Effluent Regulation* (MMER).

The objectives of the Plan are to:

- Describe source and fate waste water on the Lupin site, and
- Outline measures in place to mitigate impacts to the environment resulting from waste water discharge.

2 Sources of Liquid Waste

2.1 Stormwater

Water accumulates in secondary containment of fuel storage facilities due to precipitation. In order to maintain secondary containment dry, accumulated water needs to removed and managed.

Precipitation and the overland flow of surface water can encounter surficial materials such as disturbed native soils and the fine-grained fraction of waste rock materials, and can mobilize fine particulates, chemicals and contaminants contained therein. The majority of sediment contained in runoff at the Site is waste rock fines found stockpiles, roads, and miscellaneous "administrative" areas such as parking lots and storage yards (laydowns).

2.2 Sewage

Sewage and grey water are conveyed to the Sewage Lakes system. Liquid waste results from camp accommodations and kitchen facilities (dishwater and sanitary waste).

2.3 Tailings

There is a substantial amount of water present within the tailings containment area (TCA) (Figure 2). The containment is divided into three main components: solids retention cells (Cells 1, 2, 3, and 5), polishing ponds (Cell 4, Pond 1 and Pond 2) and the End Lake area (not used). All of this water is periodically transferred downstream to maintain a 1 m freeboard at all times at the perimeter dams. The water in Cell 4 is transferred to Pond 1 via gated valve, from here the water is transferred from Pond 1 to Pond 2 by way of siphon. Cell 5 is directly upstream of Pond 1 and water is transferred directly to Pond 2 via siphon. Pond 2 is the largest pond; here, water is treated with lime and eventually discharged to the environment by way of siphon.

3 Stormwater Management

The Lupin Mine is constructed on a topographic dome (Figure 3). Drainage to the northwest is towards the main tank farm, which is isolated by a containment berm system. Drainage to southwest and south reports to the Sewage Lakes Disposal Facility, which is contained by dykes. The north and east perimeter of the site is composed of laydown pads, graded to direct over land flow to either the airstrip access road, the surface crusher access road or the burn pit access road.

Site facilities at Lupin relevant to stormwater management planning include roads, the mine site infrastructure and the air strip.

3.1 Facilities

Mine Site Area

The mine site area referred to in this Plan includes: mine and mill buildings; shops; accommodations; laydown areas; storage facilities; weather station; and bulk fuel storage facilities. Surface runoff from these areas flows either towards the main tank farm area, the sewage pond system or access roads to the airstrip, burn pit or crusher as described above.

Roads

Runoff accumulating on roads is collected in a series of ditches and culverts. Road bases were constructed with non-acid forming materials.

Airstrip

The gradient of the airstrip results in run-off flow from south to north. Spring freshet and stormwater flow parallel to the strip, controlled through a combination of natural gradient, culverts, and ditches. The water flows naturally to Boot Lake, to the northwest, and typically carries negligible sediment.

3.2 Best Management Practices

LMI utilizes a number of best management practices (BMPs) to control the discharge of stormwater runoff to points outside the mine's footprint, as discussed in the following sections.

Good Housekeeping

Lupin management promotes good housekeeping to minimize exposure of materials to the environment and potential accumulation in stormwater. Materials and equipment are stored throughout the site such that leaks and leaching are minimized and contained.

Visual Inspections

Visual inspections of cold storage buildings, laydown areas, fuel containment, and tailings containment are conducted. These visual inspections are increased during spring freshet and after significant rain events.

Preventative Maintenance

Regularly scheduled maintenance for mobile equipment occurs to make sure fluids in process do not escape.

Material Handling Practices

The following material handling practices are used by Lupin personnel to minimize exposure of pollutants to stormwater:

- Containers are stored appropriately in designated storage locations at all times other than when in immediate use;
- Lids, covers, and caps are in place at all times other than when in immediate use; and
- Operators use caution when refueling equipment on site or transferring materials.

Spill Prevention and Emergency Response

Lupin has in effect a *Spill Contingency Plan*, designed to deal with proper procedures for oil and chemical spill prevention and response. Employees are trained in procedures to minimize the environmental and health risks associated with these events.

Sediment and Erosion Control

Ephemeral and intermittent drainages exist throughout the Lupin Mine site, many of which flow only because of significant rains events or during spring freshet. Ephemeral or intermittent drainages may require measures to control sedimentation and surface erosion; such as cross ditching, or silt fencing.

3.3 Bulk Fuel Storage Facility Discharge Procedures

LMI has in effect a *Fuel Containment Management Strategy*, designed to deal with proper procedures for the fuel and fuel handling facilities on site. Employees are trained in the procedures to maintain and operate the facilities.

Water accumulating in secondary containment of fuel storage facilities is tested prior to discharge to the environment to ensure it is in compliance with part E(9) of the Water Licence as listed below in Table 1. Samples for testing are collected in accordance with the *Water Quality Monitoring Plan and Quality Assurance/ Quality Control Plan* (the Monitoring Plan) found in Appendix A. Water that is not in compliance is pumped to a storage tank where it is held until it can be treated and subsequently released to the environment at LUP-27 (Figure 4, UTM coordinates: 7293609N 489072E). Snow that is contaminated with hydrocarbons is collected and melted. The hydrocarbon portion is removed and the water is then tested and either discharged or stored for further treatment. The hydrocarbon portion and water that cannot be treated on site is shipment off site for treatment and disposal.

Provide notice to the Aboriginal Affairs and Northern Development Canada (AANDC) Inspector at least ten (10) days prior to initiating discharge from the Bulk Fuel Storage Facilities including an estimated volume proposed for discharge and the receiving location.

Table 1: Monitoring station LUP-27 effluent quality criteria.

Parameter	Maximum Average Concentration (mg/L)	Maximum Concentration of any Grab sample (mg/L)
Total Ammonia	2.0	4.0
Total Lead	0.01	0.02
Benzene	0.37	
Toulene	0.002	
Ethylbenzene	0.090	
Total Suspended Solids	15	30
Oil and Grease	5.0 and no visual sheen	10
pH	6.0 to 9.0	

4 Sewage Waste Management

4.1 Sewage Lakes Disposal Facility

The sewage facilities consist of several lift stations within the camp and an 800 m long 6“ diameter insulated steel pipeline to the first of two sewage lakes. Alternatively, when camp capacity requirements during care and maintenance do not warrants its use; sewage and grey water are collected in a sewage tank at the 1300 and 800 wing of the accommodation buildings. The tank is then hauled to the Upper

Sewage Lake wherein waste is deposited. A sewage line to convey camp sewage directly to the Uppers Sewage Lake may be utilized. Grey water originating from office cabin use is deposited in a leaching pit adjacent to the guesthouse.

A 'permeable' type dam with an emergency overflow and an installed siphon exists between the upper and lower sewage lakes. Under Part E(7) of the Water Licence, all sewage is to be discharged to the Sewage Lakes Disposal Facilities. Discharge from the Lower Sewage Lake is controlled by the use of a siphon. Water accumulating in the Lower Sewage Lake is tested prior to discharge to the environment to ensure it is in compliance with Part E(8) of the Water Licence as provided in Table 2 below. If compliant, water is discharged from LUP-14 (Figure 4, UTM coordinates: 7293013N 490187E) to the environment. Samples for testing are collected in accordance with the *Water Quality Monitoring Plan and Quality Assurance/ Quality Control Plan*.

4.2 Sewage Lakes Disposal Facility Discharge Procedures

4.2.1 Pre-Discharge

The following procedures must be followed in preparation for discharge of sewage effluent from the Sewage Lakes Disposal Facility during open water conditions from the siphons.

3 weeks prior to Discharge

1. Collected samples from the Lower Sewage Lake near the siphon intake and test for pH, TSS, Total Metals, BOD_5, and Faecal Coliforms to confirm compliance with the effluent quality limits outlined in Table 2 following the procedures outlined in the Monitoring Plan (Appendix A).
2. The samples must be collected the morning of the plane day to account for sample holding times.
3. Inform the lab when the samples are shipped.

10 days prior to Discharge

1. Notify the AANDC Inspector at least ten (10) days prior to initiating discharge from the sewage pond. Including in the notification the laboratory sample results, an estimated volume proposed for discharge and the receiving location.
2. Monitoring Station LUP-14 sample analysis results must not exceed the criteria outlined in Table 2 prior to commencing discharge.

5 days prior to discharge

1. Take pH measurements daily for 5 days before anticipated discharge with the portable pH meter in the Lower Sewage Lake, near the siphon intake.
2. pH must be in the range of 6.0 to 9.5 or discharge cannot commence.

4.2.2 Discharge

The following procedures must be followed during discharge from the Sewage Lakes Disposal Facility:

1. Measure pH on the pond-side of the Lower Sewage Lake dam by the siphon intakes. If pH is between 6.0 and 9.5, and effluent quality at LUP-14 does not exceed the criteria provided in Table 2, start the siphons.
2. Record the following information for the Discharge Siphon Log:
    a. Date and time that the siphons were started
    b. pH reading from the portable meter
    c. Flow volume from each siphon
    d. General condition of the discharge point
3. Enter all information in the Discharge Siphon Log spreadsheet.
4. Collect monthly samples from LUP-14 including quality control samples (field duplicates, trip blanks) as outlined in the sampling event schedule (Table 2.2) of the *Water Quality Plan and Quality Assurance/ Quality Control Plan*. Follow the sampling procedures outline in that Monitoring Plan (Appendix A).
5. Prepare samples for shipment to the lab on weekly flight following the procedures outlined in the Monitoring Plan. Each shipment must include at least one duplicate sample and one trip blank.
6. If field pH measurement is <6.0 or >9.5, IMMEDIATELY shut down the siphons, employ the Spill Contingency Plan, and notify the following:
    a. AANDC inspector at 867-975-4548
    b. 24 Hour Spill Report Line at (867)920-8130
7. Upon receipt of analytical results for LUP-14 from the lab, compare analytical results to the effluent quality criteria outlined in the following Table 2. If results exceed the effluent quality limits IMMEDIATELY shut down the siphons, employ the Spill Contingency Plan, and notify the following:
    a. AANDC inspector at 867-975-4548
    b. 24 Hour Spill Report Line at (867)920-8130

Table 2: Monitoring station LUP-14 effluent quality criteria.

Parameter	Maximum Concentration of any Grab sample (mg/L)
Total Arsenic	0.05
Total Copper	0.20
Total Lead	0.05
Total Nickel	0.30
Total Zinc	0.50
Total Suspended Solids	35
Faecal Coliforms	30
BOD_5	1000 colony forming units/ 100mL
Oil and Grease	Visual Sheen
pH	6.0 to 9.5

5 Tailings Effluent Management

5.1 Tailings Containment Area

The Tailings Containment Area (TCA) is located approximately six (6) km south of the Lupin Mine, and covers an area of about 361 ha within the 750 ha land lease. Water in the TCA is treated and tested prior to discharge to the environment to ensure it is in compliance with Part E(5) of the Water Licence. If compliant, water is discharged at LUP-10 (Figure 4, UTM coordinates: 7289689N 485843E). In accordance with Part E(2) and Part E(3) of the Water Licence discharge can commence no sooner than July 15 of any calendar year and the volume discharged cannot exceed 70,000 m^3 per day.

The procedures for sampling discharge from the TCA in accordance with the Monitoring Program in Schedule J of the Water Licence and the MMER is described in the *Water Quality Monitoring Plan and Quality Assurance/ Quality Control Plan* (the Monitoring Plan). Samples are also collected from reference areas and downstream exposure areas, LUP-20, 21, 22, 24 and 25 (Figure 4). The Environmental Effects Monitoring (EEM) program of the MMER requires biological monitoring studies be completed in addition to the water quality studies. Cycle 4 of the EEM program is planned for 2013 and the study design was filed with Environment Canada in February 2013.

The TCA is also managed in compliance with Part E(6) of the Water Licence, which stipulates the following:

> 6. The TCA shall be constructed, operated and maintained to engineering standards such that:
>
> a. A freeboard limit of 1.0 m shall be maintain at all times or as recommended by a Geotechnical Engineer and as approved by the Nunavut Water Board (the Board) in writing;
> b. Seepage from the TCA is minimized;
> c. Any seepage that occurs is collected and returned immediately to the TCA;
> d. Erosion of constructed facilities is addressed immediately;
> e. The solids fraction of the mill Tailings shall be permanently contained within the TCA or underground as Backfill;
> f. Weekly inspections of the dam(s), Tailings line(s), and catchment basin(s) shall be carried out and records of these inspections shall be kept for review upon the request of an Inspector, or as otherwise approved by the Board. More frequent inspections shall be performed at the request of an Inspector; and
> g. An inspection of the TCA shall be carried out annually during ince free, open water conditions by a Geotechnical Engineer. The Engineer's report shall be submitted to the Board within sixty (60) days following the inspection and shall include a covering letter from the Licensee outlining an implementation plan to respond to the Engineer's recommendations.

5.2 Tailings Containment Area Discharge Procedures

5.2.1 Pre Discharge

The following procedures must be followed in preparation for discharge of tailings effluent from the Tailings Containment Area (TCA). Note that calendar months and dates are provided only as a guide. Specific dates will be based on environmental conditions.

One month prior to discharge (June)

1. Air Compressor Check
    - Inspect the portable air compressor to make sure it is working correctly. The compressor is needed to start the vacuum in the siphons. Get a spare jar for the compressor.
    - Transport the air compressor to Dam 1A.
2. Set-up Siphons
    - Check for holes in pipe, coupling integrity, plugged inlets and outlets (Only one 20" siphon worked in 2012).
    - Add four 8 inch siphons.
    - Ensure that a vacuum can be created in the pipe to induce siphon flow.
    - Correct any problems so that the siphon process can be started when needed.
    - Test and calibrate flow meters to confirm meter is working properly. Flow meters can be calibrated annually by the manufacturer prior to discharge. Calibration to MMER specifications is necessary. [1]
    - By 30 June, install the flow meter probes in the siphons and check to ensure that the meters are working (one in 20" pipe, and one in one of the 8" pipes).
3. Organize Water Quality Monitoring Equipment
    - Rent or purchase an immersion probe to measure pH, temperature, dissolved oxygen and conductivity with a 7.5 m cable to allow for profiling.
    - Ensure the immersion probe functions correctly and that the data logger can be downloaded.
    - Ensure the handheld pH, dissolved oxygen and conductivity meters and desktop pH meter function correctly. Order replacement meters or sensors if required.
    - Check expiry date on calibration and storage solutions and order fresh solutions as required.

[1] Flow meters can be calibrated manually by the manufacturer prior to discharge. Calibration to MMER specifications is necessary. Spare flow meters may be obtained directly from the manufacturer(s) or supplier(s) as back-up. See Environment Canada's *Guidance Document for Flow Measurement of Metal Mining Effluents*, EPS 2/MM/4, April 2001.

4. Contact Analytical Lab
    - Calculate the number and type of sample bottles that will be required for the sampling of monitoring program stations taking into consideration quality control samples such as field duplicates and trip blanks.
    - Order bottles from the analytical laboratory. Request an empty cooler be sent to site each week until requested by LMI to stop.
    - Ensure at least four large coolers to have on site before prior to discharge.
5. Contact Bioassay Lab
    - At least one month prior to discharge (before approximately 15 June), contact bioassay lab and order two sets of containers required for the Static pass/fail bioassay for Rainbow Trout (20 L) and one set of containers required the MMER LC50 bioassay for Rainbow Trout (40L).
    - Ensure there are sufficient 1 L bottles on site for the *Daphnia Magna* bioassays (1L for Static pass/fail and 2 L for MMER LC50).
6. Collect Pre-Discharge Samples
    - Sample Pond 2 as soon as ice is off for pH and all parameters as listed in Table 2.2 of the *Water Quality Plan and Quality Assurance/ Quality Control Plan* (Appendix A) and submit to the lab.
    - If the sample from Pond 2 meets the discharge criteria listed in Table 3 below and the pH range is between 6 and 9, collect the static pass/fail bioassay for Rainbow Trout and *Daphnia* following the procedures outlined in the Monitoring Plan. If the sample results to not meet discharge criteria wait to submit the bioassay until pH is above 6 following lime treatment.
    - Bioassay sample point is internal station 102, located approximately 100 m upstream from the siphon intake. UTM coordinates: 7289875N, 486196E.
    - The bioassay samples must be collected the morning of the plane day to account for sample holding times (there is a 3-day limit between taking the sample and start of analysis).
    - Inform the lab when the samples are shipped.
    - A “Pass” result must be received for the static pass/fail bioassay, Pond 2 sample analysis results must not exceed the limits listed in Table 3 and the pH of Pond 2 can be stabilized between 6.0 and 9.5 prior to commencing discharge.
7. Commence Lime Treatment
    - If the pH of Pond 2 is below 6 water treatment is to commence with the addition of a dilute lime slurry.
    - The pH, temperature and conductivity of Pond 2 is to be profiled at 1 m intervals in depth at various locations, including station 102 and a site near the siphon intake, to monitor the treatment rate.
8. Contact Environment Canada
    - Provide notice to the Environment Canada Enforcement Officer at least thirty (30) days in advance of the collecting the MMER LC50 bioassay samples.

Ten (10) days prior to discharge (July)

If pH is between 6.0 and 9.5, the results from the bioassay pass, and effluent quality at in Pond 2 does not exceed the limits listed in Table 3 additional steps to commencing discharge are to be undertaken.

- Provide notice to the AANDC Inspector at least ten (10) days prior to initiating discharge from the TCA including an estimated volume proposed for discharge and the receiving location, and copy the Environment Canada Enforcement Officer.
- Commence daily pH measurements with the portable pH meter in Pond 2 near the siphon intake to verify pH stability.
- As weather allows continue to profile Pond 2 at various locations to verify homogeneity.
- Continue water treatment to maintain a consistent pH throughout Pond 2 (ideally between pH 6.5 and 9).

5.2.2 Discharge

The following procedures must be followed during discharge from the Tailings Containment Area (TCA):

1. The discharge from the TCA at Monitoring Station LUP-10 shall commence no sooner than 15 July of any calendar year unless otherwise approved by the Board in writing.
2. Measure pH in Pond 2 near the siphon intakes. If pH is between 6.0 and 9.5, the results from the Rainbow Trout and *Daphnia* bioassay tests pass, and effluent quality at LUP-10 does not exceed the criteria provided in Table 3 below, start the siphons.
3. The discharge rate from the TCA shall not exceed 70,000 cubic metres per day, unless otherwise approved by the Board in writing.
4. Record the following information for the Discharge Siphon Log:
    a. Date and time that the siphons were started,
    b. pH reading from the portable meter,
    c. Flow volume from each siphon, and
    d. General condition of the discharge point.
5. Enter all information in the Discharge Siphon Log spreadsheet.
6. Collect daily, weekly, and monthly samples at LUP-10, 20, 21, 22, 24 and 25 including quality control samples (field duplicates, trip blanks) as outlined in the sampling event schedule (Table 2.2) of the *Water Quality Plan and Quality Assurance/ Quality Control Plan*. Follow the sampling procedures outline in that Monitoring Plan (Appendix A).
7. Prepare samples for shipment to the lab on weekly flight following the procedures outlined in the Monitoring Plan. Each shipment must include at least one duplicate sample and one trip blank.
8. Continue water treatment to maintain a consistent pH throughout Pond 2 (ideally between pH 6.5 and 9).
9. If field pH measurement is <6.0 or >9.5 at LUP-10, IMMEDIATELY shut down the siphons, employ the Spill Contingency Plan, and notify the following:
    a. Environment Canada MMER enforcement officer at 867-669-4794 or 867-446-0924,
    b. AANDC inspector at 867-975-4548, and
    c. 24 Hour Spill Report Line at (867)920-8130.

10. Upon receipt of analytical results for LUP-10 from the lab, compare analytical results to the effluent quality criteria outlined in the Table 3 below. If results exceed the effluent quality limits IMMEDIATELY shut down the siphons, employ the Spill Contingency Plan, and notify the following:
    c. Environment Canada MMER enforcement officer at 867-669-4794 or 867-446-0924,
    a. AANDC inspector at 867-975-4548, and
    d. 24 Hour Spill Report Line at (867)920-8130.

Table 3: Monitoring station LUP-10 effluent quality criteria.

Parameter	Maximum Average Concentration (mg/L)		Maximum Concentration of any Grab sample (mg/L)
Total Arsenic	0.50		1.00
Total Copper	0.15		0.30
Total Cyanide	0.80		1.60
Total Lead	0.10		0.20
Total Nickel	0.20		0.40
Total Zinc	0.40		0.80
Total Suspended Solids	15		30
Oil and Grease	Visual Sheen		
pH	6.0 to 9.5		
Parameter	**Max Mean Concentration**	**Max Concentration in a Composite Sample**	**Max Concentration in a Grab Sample**
Radium	0.37 Bq/L	0.74 Bq/L	1.11 Bq/L

Legend

Project Location

Coordinate System: NAD_1983_UTM_Zone_12N

Map Sources/Notes:
Various Canadian Government Websites - Feb 2012

0 60 120 240 360 480 600 Km

1:15,000,000

Approved By: SH
Prepared By: PW
Project No.: LUP
Date Revised: 21 Mar 2012
File Name: Lup-12-10-01-LocationMap-A.mxd

Project: **Lupin Project**
Location: Kitikmeot Region, Nunavut, Canada
Lupin Mine Annual Report - Water Licence 2AM-LUP0914

Location Map - Lupin Mine

Lupin Mines Incorporated

ELGIN MINING INC.

Figure: **1**
Rev: 120321

Legend

- Building
- Lake
- Stream
- Road
- Contour (10m)
- Tailings Line Route
- Fuel Pipe
- Boundary of Surface Lease 3594
- Cell Areas
- Location of Thermistor

N
W E
S

Map Sources/Notes:
Topographic features and site layout from Satellite image dated Aug 21, 2012

Coordinate System: NAD_1983_UTM_Zone_12N

0 50 100 200 300 400 500 Meters

1:12,500

Approved By: JCB
Prepared By: PW
Project No.: LUP
Date Revised: 15 Apr 2013
File Name: Lup-13-08-02-TailingsArea-B.mxd

Project: **Lupin Gold Mine**
Location: Kitikmeot Region, Nunavut, Canada

Mine Tailings Containment Area

Lupin Mines Incorporated

ELGIN MINING INC.

Figure: 2
Rev: 130415

Boot Lake
Lupin Winter Road Access
North Burn Pit
Portal
Salt Storage
Mine Laydown
Surface Storage
Surface Storage
RTL Shop
Water Service Canada Fuel Storage
Air Traffic Control Weather Station
Ball Field
Cafeteria
Reclaimed Open Stopes
Exhaust Fan
Third Party Drum Storage
Recreation
Offices
Accommodations
Fresh Water Line
Lupin Mine Site
Office Cabin
Kitchen
Cold Storage
Incinerator and Tank IND-08
Airstrip
Main Tank Farm
Emergency Spill Shack
WZ Open Stopes
Hoist House
Shaft House
Mill
Emergency Power House
Waste Hydrocarbon Storage Area
Lube Oil Storage Area
Power House
Waste Oil Tanks
Main Shop
Carpenter Shop
Mill Laydown
To Tailings Area
Satellite Tank Farm
Lumber Ya
Burn Pit
Landfill
Sewage Line
Tailings Line
Boneyard
Upper Sewage Lake
Dump Pond #1
Lower Sewage Lake - Chaffee Lake

Legend

- Building
- Tank Farm Berm Outline
- Lake
- Edge of Disturbed Area
- Stream
- Road
- Topographic Contour (5m)
- Topographic Contour (1m)
- Sewage Pipeline (6 in Diam)
- Tailings Line Route
- Water Pipeline (8 in Diam)

Pipe - Fuel Type, Status

- Diesel, Active
- Diesel, Abandoned
- Diesel, Uncertain
- Gasoline, Active
- Jet A, Active

Location of Tank - FuelType

- Diesel P-40
- Diesel P-50
- Diesel
- Water
- Jet-A
- Gas
- Glycol
- Waste Oil
- Empty
- Unknown

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W E
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Map Sources/Notes:
Topographic features and site layout from Satellite image dated Aug 21, 2012
Fuel tank and Fuel Containment layouts adapted from drawings by Emerson Engineering dated Oct 17, 2011 and from data updated to March 01 2013

Coordinate System: NAD_1983_UTM_Zone_12N

0 25 50 100 150 200 Meters

1:5,000

Approved By: JCB
Prepared By: PW
Project No.: LUP
Date Revised: 01 Apr 2013
File Name: Lup-13-04-01-SiteFacilities-B.mxd

Project: **Lupin Gold Mine**
Location: Kitikmeot Region, Nunavut, Canada

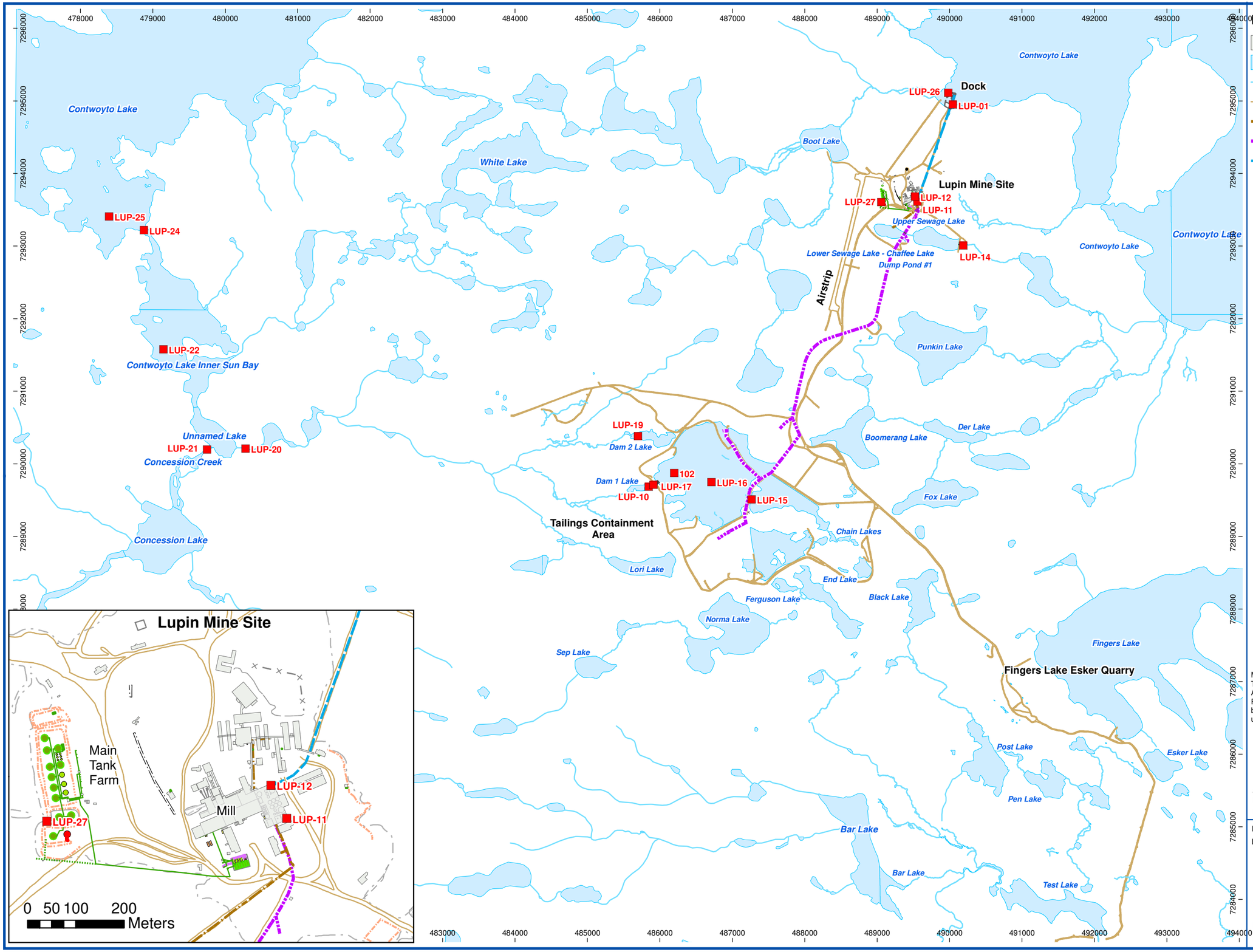
Fuel Containment Management Strategy

General Site Map - Lupin Mine

Lupin Mines Incorporated

ELGIN MINING INC.

Figure: **3**
Rev: 130401



Legend

- Building
- Lake
- Stream
- Road
- Sewage Pipeline (6 in Diam)
- Tailings Line Route
- Water Pipeline (8 in Diam)
- Water Sampling & Discharge Location

N
W E
S

Map Sources/Notes:
Topographic features and site layout from Satellite image dated Aug 21, 2012
Fuel tank and Fuel Containment layouts adapted from drawings by Emerson Engineering dated Oct 17, 2011 and from data updated to March 01 2013

Coordinate System: NAD_1983_UTM_Zone_12N

0 500 1,000 2,000 Meters

1:50,000

Approved By: AL
Prepared By: PW
Project No.: LUP
Date Revised: 15 Apr 2013
File Name: Lup-13-08-04-MonProgramStat-A.mxd

Project: **Lupin Gold Mine**
Location: Kitikmeot Region, Nunavut, Canada

Monitoring Program Stations

Lupin Mines Incorporated

ELGIN MINING INC.

Figure: 4
Rev: 130415

Appendix A: Water Quality Monitoring Plan and Quality Assurance/ Quality Control Plan

Lupin Mines Incorporated

A wholly owned indirect subsidary of Elgin Mining Inc.

Lupin Mine Site

Nunavut, Canada

Water Quality Monitoring Plan and Quality Assurance/ Quality Control Plan

(Care and Maintenance)

March 2013

Lupin Mines Incorporated
Elgin Mining Inc.
#201 - 750 West Pender Street
Vancouver, BC, V6C 2T7

Document Control

Revision No.	Date	Details	Author	Approver
1.0	30/03/13	Replaces Care and Maintenance Plan – *Sampling Procedure: Tailings Containment Area and Sewage Lakes Disposal Facility*, March 2012. Replaces the *Environmental Laboratory Quality Assurance / Control Plan*, Prepared: March 1993, Revised: December 1995. Update contact and general information. Revised to include bioassay sample requirements.	D. Vokey	W. Osborne

Table of Contents

Tables

Figures

Appendices

1 Introduction

Lupin Mines Incorporated (LMI), an indirect wholly owned subsidiary of Elgin Mining Inc. (Elgin), has prepared this Water Quality Monitoring Plan and Quality Assurance / Quality Control Plan (the Plan).

An annual review of the Plan takes place and revisions are submitted as necessary with the annual report. The current Type A Water Licence 2AM-LUP0914 (Water Licence) for the Lupin Gold Mine (Lupin or the Lupin Mine or the Site) is valid until March 31, 2014 and has been kept in good standing.

1.1 Project and Company Information

Elgin is a Canadian based company focused on the production at the Björkdal Gold Mine located in Sweden, and the exploration and development of the Lupin Gold Mine and Ulu Gold Project, both located in Nunavut, Canada.

Elgin purchased LMI, which owns the Lupin Mine, from MMG Resources Ltd. in July 2011. Lupin was in operation from 1982 to 2005 with temporary suspensions of activities between January 1998 and April 2000, and again between August 2003 and March 2004. The mine resumed production in March 2004 until February 2005. Since 2005, the Site has remained in Care and Maintenance.

General site maintenance and facilities upgrades are underway at the Lupin Mine in preparation for an underground exploration program. The activities underway were screened by the Nunavut Impact Review Board under file 99WR053 and approved by the Nunavut Water Board under Water Licence 2AM-LUP0914. Surface exploration is conducted under Water Licence 2BE-LEP1217. All camp infrastructure required for the surface exploration program currently exists at the Lupin Mine.

Company:	LMI
Project:	Lupin Mine, Nunavut
Company Address:	201 – 750 W Pender St, Vancouver, BC, V6C 2T7
Telephone:	604-682-3366
Email:	wosborne@elginmining.com
Attention:	Wayne Osborne, Project Manager
Effective date:	30 March 2013

Distribution List:

Patrick Downey	Chief Executive Officer
Jim Currie	Chief Operations Officer
Peter Tam	Chief Financial Officer
Wayne Osborne	Project Manager
Michele Jones	Manager, Corporate Affairs
David Vokey	Sr. Environmental Coordinator
Karyn Lewis	General Administration

Additional copies of this Plan are available from General Administration. The Plan is available at the LMI Environment Department office and a notice is posted in key locations at the site indicating where they can be found. All employees and contractors will be made aware of its contents.

1.2 Site Location

The Lupin Mine is located in Kitikmeot Region, Nunavut, 400 km north of Yellowknife, Northwest Territories and 285 km southeast of Kugluktuk. The airport serving this Site is at 65° 46'00" N and 111° 14'41" W. The Site is on the western shore of Contwoyto Lake, approximately 60 km south of the Arctic Circle (Figure 1).

1.3 *Environmental and Sustainable Development Policy*

Elgin Mining Inc. and its subsidiaries (collectively, "Elgin Mining") are committed to maintaining a safe, clean, compliant and respectful work environment. Elgin Mining looks to our employees, contractors and managers to adopt and grow a culture of social responsibility and environmental excellence. Together we achieve this by:

- Promoting environmental stewardship in all tasks. Nothing is too important that it cannot be done in a clean and responsible manner. We strive towards maintaining a zero-incident work place.
- Recognizing that we have a shared responsibility as stewards of the environment in which we operate. We will not walk away from a non-compliant act.
- Identifying, managing and mitigating environmental, business and social risks in an open, honest and transparent manner.
- Planning our work so it is done in the cleanest possible manner and executing work according to plan.
- Continually improving environmental and operational performance by setting and reviewing achievable targets.
- Providing appropriate and necessary resources in the form of training, personnel and capital, including that required for closure planning and reclamation.
- Managing our materials and waste streams, maintaining a high degree of emergency response preparedness and minimizing our operational footprint to maintain environmental protection at all stages of project development.
- Procuring goods and services locally, where available, and favouring suppliers with environmentally and socially responsible business practices.
- Seeking to understand, learn from and mitigate the root causes of environmental incidents and near misses when they do occur.
- Employing systems and technology to achieve compliance, increase efficiency and promote industry best practices in development, operations and environmental stewardship.
- Working with stakeholders to identify and pursue opportunities for sustainable social and economic development and capacity building.

- Conducting early and ongoing stakeholder engagement relevant to the stage of project and mine development and operation.
- Recognizing diversity in the workplace and building meaningful relationships with all stakeholders in a timely, collaborative and transparent manner.

Through implementation of this policy, Elgin Mining seeks to earn the public's trust and be recognized as a respectful and conscientious employer, neighbor and environmental steward.

Approved by the Board of Directors on August 10th, 2012

1.4 Purpose and Scope

This Plan is an appendix to the Care and Maintenance Plan. The purpose of this Plan is to identify water quality monitoring requirements for the Site and minimize the impacts of potential sampling and analytical errors by providing a set of standardized procedures for sampling, analysis and reporting. These procedures are to be implemented by any personnel involved in monitoring for the purpose of regulatory compliance or internal environmental management.

The Plan documents Quality Assurance (QA) and Quality Control (QC) procedures for the Lupin Mine Monitoring Program as required by Type A Water Licence 2AM-LUP0914 Part J, Items 5, 6 and 7. The Plan also documents QA/QC procedures for the Lupin Mine Monitoring Program as required by the *Metal Mine Effluent Regulations* (MMER) under the *Fisheries* Act Part 2 Division 1 Item 11 and Part 2 Division 2 Items 12(2), 14(1), 17(1), and 19(3).

QA/QC planning has been developed in accordance with the Indian and Northern Affairs Canada (INAC), *Quality Assurance (QA) and Quality Control (QC) Guidelines for use by Class 'A' Licensees in meeting SNP Requirements and for Submission of a QA/QC Plan*, July 1996 which defines QA and QC as follows:

> Quality Assurance: is the system of activities designed to better ensure that quality control is one effectively.
>
> Quality Control: is the use of established procedures to achieve standards of measurement for the three principal components of quality: precision, accuracy and reliability.

Overall this Plan outlines field sample collection procedures including sampling requirements and methods; field sample identification, preservation and transport procedures; field sampling quality control measures; analytical laboratory information; and reporting requirements.

2 Field Sampling

2.1 Sample Collection

2.1.1 Sampling Station Locations, Requirements and Parameters

Sampling station locations, requirements, and parameter analyses are set out in the Type A Water Licence 2AM-LUP0914 Table 1 of Schedule J and in the MMER Part 2 Division 2 Items 12 thru 18 and Schedules 4 and 5.

Generally, samples are required from the following locations:

- Freshwater intake at Contwoyto Lake,
- Tailings Containment Area (TCA):
    - TCA prior to discharge;
    - TCA during discharge;
    - Reference areas; and
    - Downstream exposure areas,
- Sewage Lakes Disposal Facility, and
- Bulk Fuel Storage Facility.

The monitoring requirements outlined in the Water Licence and MMER effluent monitoring requirements are outlined in Table 1. Water sampling under the Environmental Effects Monitoring Program of the MMER will accompany any planned discharges from the TCA.

A sample event schedule is also provided in Table 2 which outlines the Water Licence and MMER effluent monitoring requirements as well as field monitoring and QC sample requirements (see Section 3 of this Plan for more details about QC monitoring). This table is intended to serve as a guide to on-site personnel with sampling responsibilities.

Regulatory authorities are to be notified of planned discharge events. Table 3 provides the notification schedule.

Table 1: Sample collection requirements

Station	Description	Samples											Frequency
		Routine[1]	Total Metals[2]	Nutrient[3]	Hg	CN	^{226}Ra[6]	BOD_5[7]	Faecal Coliform	Bio-assay[8]	BTEX[9]	OG[10]	
LUP-01	Freshwater intake from Contwoyto Lake	pH, Conductivity, TSS	X		X				X				Annually
LUP-10	TCA Pond 2 discharge at Dam 1A	pH, TSS	X			X							Daily during periods of discharge
		Daily	Daily	NH_4			X						Weekly during periods of discharge
		Daily, hardness, Alkalinity, NO_2, NO_3	Daily	Weekly		X				X			Monthly (no less than one month intervals) beginning at start of decant
LUP-10/ 102[11]	Internal station in TCA Pond 2 approximately 100 m upstream from siphon intake.	X	X	X	X	X	X			Static pass/ fail test			Twice per year, prior to initiation of decant and just prior to termination of decant
LUP-11	Minewater discharge at automatic sampler in the mill	INACTIVE											
LUP-12	Mill tailings taken at the mill	INACTIVE											
LUP-14	Decant structure from the Sewage Lakes Disposal Facilities	pH, TSS, Alkalinity, Hardness, NO_2, NO_3	X	NH_4, TKN, TP, OPO_4				X	X				First day of discharge and then monthly thereafter during periods of flow
LUP-15	Discharge from TCA Pond 1 (east pond) into TCA Pond 2 (west pond)	INACTIVE											
LUP-16	TCA Pond 2 at center	INACTIVE											
LUP-17	TCA Pond 2 upstream of station LUP-10	INACTIVE											
LUP-19	East end of Seep Creek in Dam 2 Lake	INACTIVE											
LUP-20	West end of Seep Creek before discharge into Unnamed Lake	pH, TSS, Alkalinity, hardness	X	NH_4		X							Weekly during discharge from the TCA

Station	Description	Samples											Frequency
		Routine[1]	Total Metals[2]	Nutrient[3]	Hg	CN	^{226}Ra[6]	BOD_5[7]	Faecal Coliform	Bio-assay[8]	BTEX[9]	OG[10]	
LUP-21	North end of Concession Creek before discharge into Unnamed Lake[12]	pH, TSS, Alkalinity, hardness	X	NH_4		X							Weekly during discharge from the TCA
		Weekly, NO_3	X	Weekly		X	X						Monthly at mid-depth and when bioassay sample is collected at LUP-10 just prior to termination of decant
LUP-22	Inner Sun Bay near centre midway between end of peninsula and west shore	pH, TSS, Alkalinity, hardness	X	NH_4		X							Weekly at mid-depth, commencing one week prior to discharge from the TCA and concluding two weeks after cessation of discharge
LUP-24	Inner Sun Bay near narrows[12]	pH, TSS, Alkalinity, hardness	X	NH_4		X							Weekly at mid-depth, commencing one week prior to discharge from the TCA and concluding two weeks after cessation of discharge and when bioassay sample is collected at LUP-10 just prior to termination of decant
		Weekly, NO_3	X	Weekly		X	X						Monthly at mid-depth
LUP-25	Outer Sun Bay	pH, TSS, Alkalinity, hardness	X	NH_4		X							Weekly at mid-depth commencing one week prior to discharge from the TCA and concluding two weeks after cessation of discharge
LUP-26	Contwoyto Lake in bay east of water intake	INACTIVE											
LUP-27	Bulk Fuel Storage Facility	pH, TSS, Alkalinity, hardness, NO_2, NO_3	X	NH_4							X	X	Once prior to discharge and weekly during periods of discharge

Notes:

(1) Routine sampling may include analyses for pH, temperature, Total Suspended Solids, alkalinity, hardness, Nitrite (NO_2), Nitrate (NO_3);
(2) Total metals refers to a whole suite of metals unless otherwise specified;
(3) Nutrient means Ammonium (NH_4), Total Kjeldahl Nitrogen (TKN), Total Phosphorus (TP), and Orthophosphate (OPO_4);
(7) BOD_5 means five (5) day Biological Oxygen Demand;
(8) Bioassay means static pass/fail bioassay for both rainbow trout and *Daphnia* species under the Water Licence and acute lethality testing and *Daphnia magna* monitoring tests under the MMER;
(9) BTEX means Benzene, Toluene, Ethylbenzene and Xlyene
(10) OG means Oil and Grease;
(11) Water licence erroneously refers to this station as LUP-10; and
(12) Field temperature and dissolved oxygen are also required.

Table 2: Sampling event schedule.

Sampling Events	Station	Samples and Parameters	Quality Control[(1)]
TAILINGS CONTAINMENT FACILITY			
One month prior to discharge	Station 102	Field pH, temperature, conductivity	1 field duplicate
		pH, TSS, alkalinity, hardness, NO_2, NO_3	
		Total Metals	
		CN (total cyanide)	
		NH_4	
		Total Hg	
		^{226}Ra	
Daily during water treatment prior to discharge	Station 102	Field pH, temperature and conductivity	
Upon receipt of results meeting discharge criteria and not less than one week prior to discharge	Station 102	Static pass/ fail Bioassay	
One week prior to discharge	Station 102	Field pH, temperature, and conductivity (Daily)	1 field duplicate
		Field observation of visual sheen	
	LUP-22, 24, 25 (at mid-depth)	pH, TSS, alkalinity, hardness	
		Total Metals	
		NH_4	
		CN	
Daily during discharge	LUP-10	Field pH, temperature, and conductivity	1 field duplicate per week
		Field observation of visual sheen	
		flow rate m^3	
		pH and TSS	
		CN	
		Total Metals (As, Cu, Zn)	
First day of discharge [(2)] (in addition to daily sampling)	LUP-10	Alkalinity, Hardness, NO_2, NO_3	1 field duplicate
		NH_4	
		Total Metals	
		Total Hg	
		MMER Bioassay LC50	
		^{226}Ra	
		Field dissolved oxygen	
	LUP-20, 21 (surface), LUP-22, 24, 25 (at mid-depth)	pH, TSS, alkalinity, hardness	
		Total Metals	
		NH_4	
		CN	
	LUP-21 (surface), LUP-24 (at mid-depth)	NO_3	
		Total Hg	
		^{226}Ra	
		Field pH, temperature, conductivity, dissolved oxygen	

Sampling Events	Station	Samples and Parameters	Quality Control[1]
Weekly during discharge (in addition to daily sampling)	LUP-10	Alkalinity, hardness, NO_2, NO_3	1 field duplicate
		NH_4	
		Total Metals (Pb, Ni, Cd)	
	LUP-20, 21 (surface), LUP-22, 24, 25 (at mid-depth)	pH, TSS, alkalinity, hardness	
		Total Metals	
		NH_4	
		CN	
Monthly during discharge (in addition to daily and weekly sampling)	LUP-10	Total Metals	1 field duplicate
		MMER Bioassay LC50	
		Total Hg	
		^{226}Ra	
		Field dissolved oxygen	
	LUP-21 (surface), LUP-24 (at mid-depth)	NO_3	
		Total Hg	
		^{226}Ra	
		Field pH, temperature, conductivity, dissolved oxygen	
Last day of discharge (in addition to daily sampling)	LUP-10	Static Pass/ Fail Bioassay	
Weekly for two weeks following termination of discharge	LUP-22, 24, 25 (at mid-depth)	pH, TSS, alkalinity, hardness	1 field duplicate
		Total Metals	
		NH_4	
		CN	
SEWAGE LAKES DISPOSAL FACILITY			
Three weeks prior to discharge	LUP-14	Field pH, temperature, conductivity	1 field duplicate
		Field observation for visual sheen	
		pH, TSS, alkalinity, hardness, NO_2, NO_3	
		Total Metals (As, Cd, Cu, Ni, Pb, Zn)	
		Nutrient for NH_4, TKN, TP, OPO_4	
		BOD_5	
		Faecal Coliforms	
Daily during discharge		Field flow rate in m^3	
		Field pH, temperature, conductivity	
		Field observation for visual sheen	
First day of discharge[2] and Monthly thereafter (in addition to daily sampling)		pH, TSS, alkalinity, hardness, NO_2, NO_3	1 field duplicate
		Total Metals	
		BOD_5	
		Faecal Coliforms	
		Nutrient for NH_4, TKN, TP, OPO_4	

Sampling Events	Station	Samples and Parameters	Quality Control[(1)]
FRESHWATER INTAKE FACILITY			
Daily during intake	LUP-01	Field flow rate in m^3	
Annually		Field pH, temperature, conductivity,	1 field duplicate
		pH, TSS	
		Total Metals (As, Cd, Cu, Ni, Pb, Zn)	
		Total Hg	
		Faecal Coliforms	
BULK FUEL STORAGE FACILITY			
One week prior to discharge (RUSH 48 hour turnaround for sample results are to be requested of the laboratory)	LUP-27	Field pH, temperature, conductivity	1 field duplicate
		Field observation for visual sheen	
		pH. TSS	
		Total Lead	
		Total Oil and Grease	
		BTEX	
		Nutrient for NH_4	
Daily during discharge		Field flow rate in m^3	
		Field pH, temperature, conductivity	
		Field observation for visual sheen	
Weekly during discharge (in addition to daily testing)		Field pH, TSS	1 field duplicate
		Total Lead	
		Oil and Grease	
		BTEX	
		Nutrient for NH_4	

Notes:

(1) Duplicate samples must be collected for approximately every ten (10) field samples collected across the range of parameters. At least one duplicate must be submitted per sample shipment.

(2) Samples are be collected on the morning of the next plane departure after discharge commences.

Table 3: Discharge notification schedule.

Discharge Event	Schedule	Action Required
TAILINGS CONTAINMENT AREA	30 days prior to MMER Bioassay	Provide notice to Environment Canada of planned sample date.
	10 days prior to discharge	Provide notice to the AANDC inspector, include analytical results and estimated volume of discharge.
LOWER SEWAGE LAKE	10 days prior to discharge	Provide notice to the AANDC inspector, include analytical results and estimated volume of discharge.
BULK FUEL STORAGE FACILITY	10 days prior to discharge	Provide notice to the AANDC inspector and estimated volume of discharge [(1)]. Analytical results will be provided upon receipt and no discharge to occur prior to AANDC acknowledgment of receipt.

Note:

(1) Discharge from the bulk fuel storage facilities needs to commence as soon as possible when water starts accumulating in the spring.

Active monitoring (sampling) station locations as shown in Figure 2.1 are clearly identified in the field with permanent stakes and appropriate signage.

Samples must always be collected from the same locations, unless the sampling locations are relocated at the request of the designated AANDC Inspector or sampling location modifications are approved in writing by the Nunavut Water Board.

The following Table 4 summarizes the current UTM coordinates of the active sampling locations:

Table 4: Water quality monitoring program station locations.

Monitoring Station No.	Description	UTM Northing	UTM Easting
LUP-01	Freshwater intake from Contwoyto Lake	7294933	490030
LUP-10	TCA Pond 2 discharge at Dam 1A	7289689	485843
LUP-14	Decant structure from the Sewage Lakes Disposal Facilities	7293013	490187
LUP-20	West end of Seep Creek before discharge into Unnamed Lake	7290197	480149
LUP-21	North end of Concession Creek before discharge into Unnamed Lake	7290217	479841
LUP-22	Inner Sun Bay near centre midway between end of peninsula and west shore	7291749	479175
LUP-24	Inner Sun Bay near narrows	7293121	479017
LUP-25	Outer Sun Bay	7293765	478352
LUP-27	Bulk Fuel Storage Facility	7293609	489072
Station 102	Approximately 100 m upstream from the siphon intake in TCA Pond 2	7289875	486196

2.1.2 Field Measurements and Field Log Book

Where required by the monitoring program, pH, temperature and, conductivity and dissolved oxygen of water is measured and recorded in the field directly from the water body being sampled wherever possible. Where it is not possible to take field measurements directly from the water body, the measurements can be taken from the sample bottle.

The pH and conductivity meters must be calibrated in advance of each day's sampling activities according to the manufactures instructions, using fresh standard calibration solutions. Any discrepancies must be recorded in the Field Log Book along with the sampling data; however recorded field measurements must not be altered due to calibration issues. Refer to the pH and conductivity meter manuals for instructions regarding how to calibrate and take measurements with the particular devices.

Details of all sampling activities are recorded in the Field Log Book including:

- Date and time of each sample collected,
- Sampling location visited,
- Weather conditions and air temperature,
- Flow rates where applicable,
- Integrity of sample location and water observations,

- Samples collected at each location including identification number (see Section 2.2), whether the sample will be submitted for analysis, and type of analysis as well and sample preservation measures,
- Sample depth where applicable, and
- Field measurements (i.e. pH, conductivity, temperature, dissolved oxygen) as well as any calibration discrepancies with the field meters.

Immediately following field activities, an electronic copy of the Field Log data must be made. Field log entries in the Field Log Book must not be altered; pages must not be removed; space or pages left blank must be labeled as such and crossed with a diagonal line; and errors must be crossed out, not erased.

2.1.3 Sample Containers

Sample container sizes and materials of construction depend upon the parameter(s) of the sample to be analyzed. A summary of sample container requirements for various parameters is provided in Table 2.5 (Section 2.3 of this Plan).

All water quality sample containers will be prepared and supplied by the contracted laboratory. Only clean, unused containers should be used to limit contamination and preservation errors. Samples analyzed for faecal coliform tests must be contained in bottles provided by the laboratory to ensure that the bottle is sterilized prior to use. Toxicity samples are to be collected in food grade containers, such as water jugs or buckets. The food grade containers must be thoroughly cleaned and rinsed and then triple rinsed with the sample water prior to being filled.

2.1.4 Sampling Methods

Water quality sampling methods are as follows:

- Record details of the sampling activity and field measurements in the Field Log Book (see Section 2.1.2 for details).
- In the field, disposable nitrile sampling gloves must be worn during handling of all the bottles and equipment.
- Triple rinse sample bottles with the source water prior to sample collection, except for those bottles with preservative already added by the laboratory (i.e. BTEX), as well as those bottles for Oil and Grease or Feacal Coliform analysis.
- Collect samples off-shore as much as possible without disturbing bottom sediments.
- When collecting samples from flowing bodies of waters (i.e. stream, creeks):
    - The sample must be collected as close as possible to the middle of the flowing water body. To prevent the stirring up of sediment, use a container attached to a pole extension. Otherwise, if wading into the stream is unavoidable, wait for the sediment to settle or flow away before collecting the sample.
    - When rinsing, plunge the sample bottle into the flowing water toward the current allowing it to fill at a depth of approximately half the stream depth. If the stream depth is too shallow to collect a clean sample without disturbing sediment or too shallow to fill the bottle completely, use a smaller bottle and transfer the water to the larger sample bottle.

- Empty rinse water downstream of the sample locations so as not to disturb sediments.

- When collecting samples from surface water bodies (ponds, lakes) follow the same procedures as above for flowing bodies of water, ensuring that subsequent samples are collected at the same location, and by plunging the sample bottle into the water to a depth of about six (6) inches below the water surface.
- Sample bottles must be filled with room left for preservative addition and mixing. Add preservatives after filling as directed by the laboratory (unless the bottle was provided pre-loaded with preservatives by the laboratory).
- Record field measurements (pH, temperature, conductivity, dissolved oxygen) and any deviations from the sample collection method in the Field Log Book.

2.2 Sample Identification

All water samples must be provided with a unique sample identification number based on the following example:

Example: LUP-22-130801-50

LUP-22 Refers to the monitoring station.

130801 Refers to the date that the sample was collected (yy/mm/dd). In this example the date the sample was collected was August 1, 2013.

50 Refers to the depth in centimeters from surface which the same was collected. If the depth of the sample is not applicable do not include the suffix.

Sample labels including at a minimum: sample identification number, location, date, and parameters for analyses should be prepared as much as possible before entering the field for the sampling event with a waterproof, non-smear pen. Then, sample labels, bottles and preservatives should be packed, preferably in a cooler to maintain constant temperature, for transport to the field.

Sample bottle labels must be clearly and consistently labeled prior to being sent to the external laboratory with the following information:

- Company name,
- Site name,
- Sample Station Number,
- Sample Number,
- Sample Date and Time, and
- Analysis required.

Quality Control (QC) samples (i.e. field blanks, trip blanks, duplicates) are provided with unique sample identification numbers and note of the sample as a QC sample is recorded in the Field Log Book.

2.3 Sample Preservation

Water quality samples must be preserved, either by laboratory issued chemical preservative or temperature control, immediately following sample collection to ensure that the quality of the water sample remains similar to the source water. The following Table 2.5 summarizes the required containers, preservatives, holding times, and minimum sample volumes for each parameter as outlined in ALS Environmental's Western Canada Sampling/ Handling Guide, May 2012.

Table 5: Required sample containers, preservation, holding times, and sample volumes for analysis of specific parameters.

Parameter	Container Type	Preservative	Holding Time	Min. Sample Volume
pH [1,6]	0.5 – 1 L plastic	4° C	0.25 hours	50 mL
TSS [1]	0.5 – 1 L plastic	4° C	7 days	200 mL
Conductivity [1,6]	0.5 – 1 L plastic	4° C	28 days	50 mL
Total Metals and Hardness [2,5]	250 mL plastic	3 mL 1:3 Nitric Acid	6 months	200 mL
Mercury	250 mL plastic	3 mL 1:3 Nitric Acid	28 days	50 mL
Radium^{226}	1 L plastic	9 mL 1:3 Nitric Acid	6 months	1 L
Cyanide (Total, WAD or Free)	250 – 500 mL plastic	1 – 2 mL 6N Sodium Hydroxide	14 days	100 mL
Cyanide (Total or WAD (low level))	1 L plastic	3 mL 6N Sodium Hydroxide	14 days	750 mL
Alkalinity [1]	0.5 – 1 L plastic	4° C	14 days	150 mL
Total Ammonia Nitrogen	250 mL plastic/glass	1 mL 1:1 Sulphuric Acid	28 days	100 mL
Nitrate, Nitrite, Ammonia (unpreserved) [1]	0.5 – 1 L plastic	4° C	2 days	50 mL
Kjeldahl or Organic Nitrogen	250 mL plastic or glass	1 mL 1:1 Sulphuric Acid	28 days	200 mL
Total Nitrogen	250 mL plastic or glass	1 mL 1:1 Hydrochloric Acid	28 days	200 mL
Total Phosphorus	250 mL plastic	1 mL 1:1 Sulphuric Acid	28 days	100 mL
Ortho Phosphate[1]	0.5 – 1 L plastic	4° C	2 days	50 mL
BOD_5 [1]	0.5 – 1 L plastic	4° C	2 days	500 mL
Faecal Coliforms	250 mL sterilized plastic	Sodium Thiosulphate	30 hours	250 mL
Oil and Grease	2 x 0.5-1 L amber glass	2 mL 1:1 HCL or 1:1 H_2SO_4	28 days	1 L
BTEX [3,4]	2-3 x 40 mL glass vials	Sodium Bisulphate or Thiosulphate	14 days	40 mL
Daphnia Magna (pass/fail, LC50) [7]	1-2 L glass or plastic	4° C	5 days	1 – 2 L
Rainbow Trout (pass/ fail, LC50) [8]	1-2 20 L bladder	4° C	5 days	20 – 40 L

Notes:

(1) Parameters may be analyzed from a single unpreserved bottle.
(2) For dissolved parameters, samples must be field filtered before preservation.
(3) 40 mL glass vials must be filled with no headspace. May contain preservative. Do not pre-rinse with sample. If sample is chlorinated use thiosulphate preservative.
(4) All volatile organics in water (chlorinated aromatics, BTEX, volatile organics, THMs and halogenated aliphatics) can be analysed from the same set of vials. Consult ALS whether 2 or 3 vials are required.
(5) If field filtering is not possible, or poses unacceptable risks for sample contamination, then send the samples unfiltered to and unpreserved to the laboratory as soon as possible.
(6) Testing in the field is recommended.
(7) For Daphnia Magna (LC50), require 2 L minimum volume. For Daphnia Magna (Pass/Fail), require 1 L minimum volume.
(8) For Rainbow Trout (LC50), 2 x 20 L bladder and 40 L minimum volume required. For Rainbow Trout (Pass/Fail), 1 x 20 L bladder and 20 L minimum volume required.

2.4 Sample Transportation

Sample integrity will be preserved from the time of sample collection to completion of delivery to the laboratory by limiting exposure of samples to heat, light, and agitation.

Sample bottles will be packed standing upright and immobile in a new or laboratory issued portable cooler. Samples suspected of elevated contaminant levels, such as a sewage sample, will be shipped separately from clean samples. All samples will be stored and transported at 10°C to 1°C in the coolers with ice packs and the cooler will be securely closed prior to shipping. Samples will be shipped as soon as possible following sample collection with appropriate transportation instructions such as “refrigerate” and “do not freeze”.

2.5 Chain of Custody Forms

A Chain of Custody Form containing the following information is completed by the sampler for every cooler shipment of samples:

- Company name and contact information,
- Analytical laboratory name, address , and contact person,
- Invoicing instructions,
- Report format requested,
- Project information,
- Sampler’s name,
- Sample identification number, time and date of sampling, sample type, and analyses requested,
- Any special instructions, and
- Name of person releasing the shipment as well as date and time of release. Each person relinquishing and receiving the samples, including the courier, must sign the Chain of Custody form.

Each cooler shipped must have a Chain of Custody form indicating those samples contained in the particular cooler. Chain of Custody forms should be enclosed in a Ziploc bag to protect them from possible water damage during shipment.

One copy of the Chain of Custody form is included with the shipment and one copy must remain at the mine site for recording keeping. An example of the Chain of Custody Form is provided in Appendix A.

3 Field Quality Control

3.1 Trip or Travel Blanks

Travel blanks are supplied and shipped by the laboratory to test for possible contamination that might arise during the handling, transport, or storage of the samples. The identity of these samples must be recorded in the Field Log Book.

One travel blank must be submitted per sample shipment.

3.2 Duplicates or Replicates

Duplicate or replicate sampling is the collection of more than one sample for a given analysis at a given location to test the validity of sampling procedures and laboratory methodology. Duplicates are collected, handled, and analysed using the same procedures applied to routine samples. Duplicates are submitted to the laboratory with a unique (ficticious) identifier to prevent association of the paired samples. The identity of these samples must be recorded in the Field Log Book.

Duplicate samples must be collected for approximately every ten (10) field samples collected across the range of parameters. At least one duplicate must be submitted per sample shipment.

4 Laboratory Analyses

ALS Environmental laboratories (ALS) located in Edmonton, AB performs the required environmental analyses for the Lupin Mine, with the exception of MMER toxicity testing which is subcontracted by ALS to Nautilus Environmental in Burnaby, BC.

ALS is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) and conforms to the requirements of ISO/IEC Standard 17025. Attached in Appendix B is a copy of the ALS Edmonton laboratory scope of accreditation. The scope of accreditation of all ALS laboratories is available from their website at http://www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Quality-Assurance.

Nautilus Environmental is accredited by the CALA to conduct acute lethality and Daphnia magna monitoring tests and conforms to the requirements of ISO/IEC Standard 17025. Attached in Appendix B is a copy of the Nautilus Environmental Burnaby laboratory scope of accreditation.

The scope of accreditation of Nautilus Environmental laboratories is available from their website at http://www.nautilusenvironmental.com/accreditation.aspx.

Taiga's drinking water package covers the drinking water standards of the Department of Health and Social Services requirements for the sampling and testing of drinking water. Attached in Appendix B is a copy of the Taiga Environmental Laboratory accreditation for feacal coliform analysis.

All analyses are conducted in accordance with methods prescribed in the current edition of Standard Methods for the Examination of Water and Wastewater including regular QA/QC during the analysis of

field samples including a program of method blanks, laboratory control samples, instrument calibration samples, matrix spikes, and duplicates.

5 Reporting

All analytical results will be forwarded in electronic format from ALS to LMI for data collection and management. Upon receipt, LMI will review the results to identify any anomalies. Anomalous results will be either re-analyzed by the laboratory or new samples will be collected to confirm the analytical results.

Any analytical results that indicate exceedance of regulatory criteria will be reported to the appropriate agencies including the NWB and the AANDC inspector.

Part J Item 9 of the Lupin Mine Water Licence requires LMI to include in its Annual Report (due March 31st), all data, monitoring results and information required by Part J of the Water Licence. Under the MMER effluent monitoring reporting of all tests and monitoring conducted during each quarter is to be reported not later than 45 days after the end of a quarter. A report summarizing the previous calendar year is also required under the MMER to Environment Canada (due March 31st).

To facilitate the required annual reporting, LMI prepares written monthly reports supported by laboratory analyses results table summaries and quality assurance review. Each monthly report includes the following:

- A description of the sample activities undertaken,
- Description of the existing conditions at each sampling station,
- Tabular summary of analytical lab result including the results of the quality control samples (travel blank, field blank, duplicate samples), and
- Interpretation of the analytical lab results including comparison of the results with water licence criteria and assessment of the reliability of the results.

Within the annual report, the acceptability of samples will be evaluated qualitatively by examination of the trip blanks and field duplicate sample data. Reproducibility of samples will be expressed as relative percent difference (RPD):

$$RPD = 100 * ((X_1 – X_2) / (X_1 + X_2) / 2)$$

Where X_1 is the original sample concentration, X_2 is the duplicate sample concentration, and X_1-X_2 denotes the absolute value of the difference between these two concentrations.

Legend

Project Location

Coordinate System: NAD_1983_UTM_Zone_12N

Map Sources/Notes:
Various Canadian Government Websites - Feb 2012

0 60 120 240 360 480 600 Km

1:15,000,000

Approved By: SH
Prepared By: PW
Project No.: LUP
Date Revised: 21 Mar 2012
File Name: Lup-12-10-01-LocationMap-A.mxd

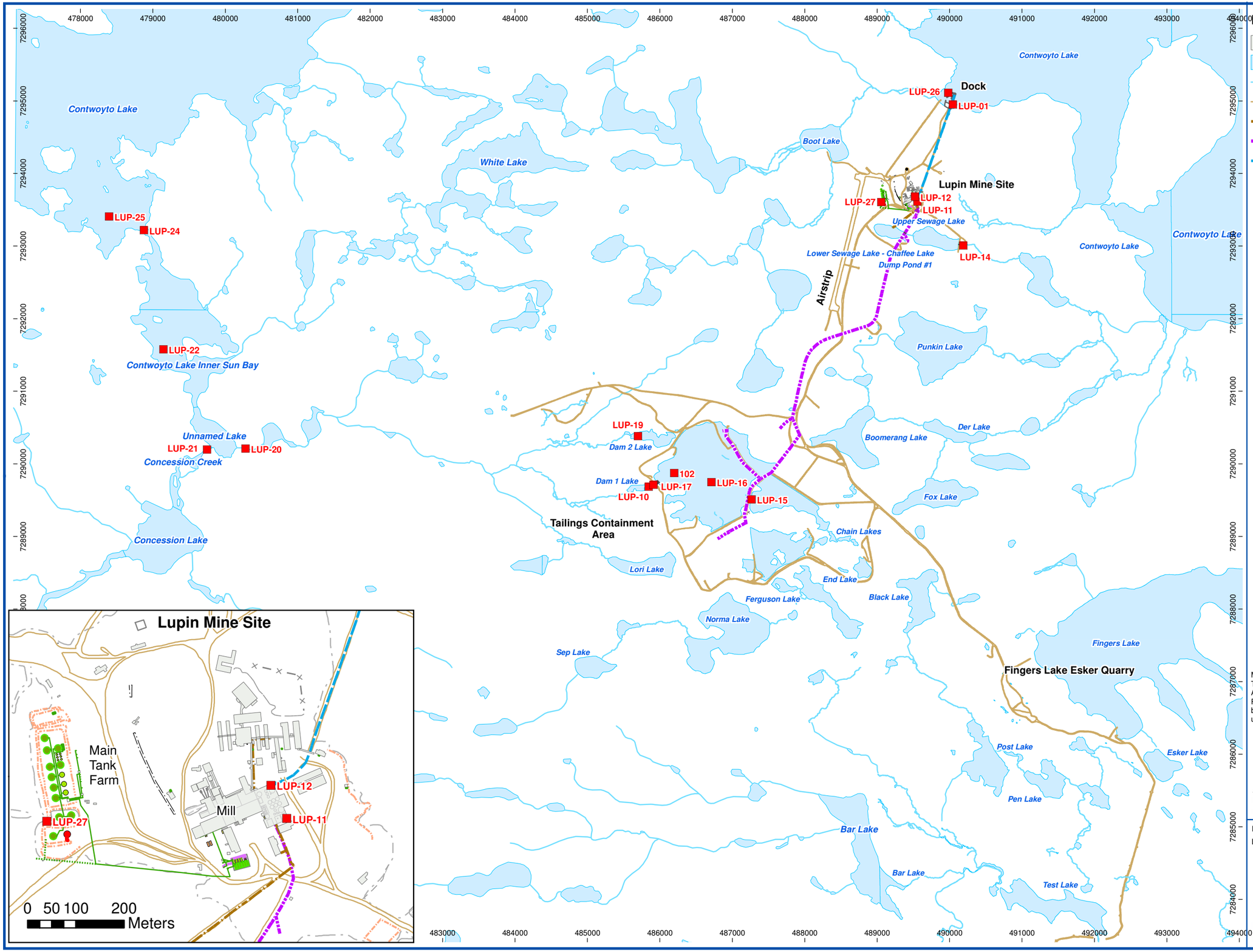
Project: **Lupin Project**
Location: Kitikmeot Region, Nunavut, Canada
Lupin Mine Annual Report - Water Licence 2AM-LUP0914

Location Map - Lupin Mine

Lupin Mines Incorporated

ELGIN MINING INC.

Figure: **1**
Rev: 120321



Legend

- Building
- Lake
- Stream
- Road
- Sewage Pipeline (6 in Diam)
- Tailings Line Route
- Water Pipeline (8 in Diam)
- Water Sampling & Discharge Location

N
W E
S

Map Sources/Notes:
Topographic features and site layout from Satellite image dated Aug 21, 2012
Fuel tank and Fuel Containment layouts adapted from drawings by Emerson Engineering dated Oct 17, 2011 and from data updated to March 01 2013

Coordinate System: NAD_1983_UTM_Zone_12N

0 500 1,000 2,000 Meters

1:50,000

Approved By: AL
Prepared By: PW
Project No.: LUP
Date Revised: 15 Apr 2013
File Name: Lup-13-08-04-MonProgramStat-A.mxd

Project: **Lupin Gold Mine**
Location: Kitikmeot Region, Nunavut, Canada

Monitoring Program Stations

Lupin Mines Incorporated

ELGIN MINING INC.

Figure: 2
Rev: 130415

Appendices

Appendix A: Chain of Custody

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Page 1 of 1

Report To		**Report Format / Distribution**	**Service Requested** (Rush for routine analysis subject to availability)
Company:	Elgin Mining - Lupin Mine	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	D. Vokey	☑ PDF ☑ Excel ☐ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	201 - 750 W. Pender St.	Email 1: dvokey@elginmining.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6T 2T7	Email 2: jbartlett@elginmining.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	778-372-3272 Fax:	Email 3:	
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**	**Analysis Request**
Hardcopy of Invoice with Report?	☑ Yes ☐ No	Job #: Lupin	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:	
Contact:	P. Law; plaw@elginmining.com	LSD:	
Address:	Same as Report		
Phone:	604-682-3366 Fax: 604-682-3363	Quote #: Q35666	
Lab Work Order # (lab use only)		**ALS Contact:** B. Stuart	**Sampler:** name

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	pH, TSS	T-Metals, hardness	Hg	Faecal Coliform	NH4, NO2	T-Lead	BOD5	Alkalinity	TKN, OPO4, T-Phosphorus	T-Nitrogen	Oil and Grease	BETX	Number of Containers
						P	P	P		P			P	P	P		
	LUP-01-yymmdd	dd-mmm-yy	hh:mm	Water	X	X	X	X									4
	LUP-14-yymmdd	dd-mmm-yy	hh:mm	Water	X	X		X	X		X	X	X	X	X		9
	LUP-27-yymmdd	dd-mmm-yy	hh:mm	Water	X				X	X					X	X	7
	LUP-00-yymmdd	dd-mmm-yy	hh:mm	Water	X				X						X		3
	Travel Blank-yymmdd	dd-mmm-yy	hh:mm	Water		X		X									2

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

drinking water standards for LUP-01, CCME FWAL for others.

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
D. Vokey	dd-mmm-yyy	hh:mmm				°C				

Appendix B: Scope of Accreditations

ALS Quality Control Protocols

08 May, 2012

Quality control samples are introduced into batches of samples at critical points of sample handling, preparation and analysis to demonstrate the processes are performing as expected. In general, quality control samples are considered either Instrument QC or Method QC.

Instrument QC:

Instrument QC samples demonstrate control for the instrumental portion of a method. Instrument QC requirements must be successfully met before the analysis of Method QC or samples may proceed.

- Verification of initial calibration - criteria varies with each test.
- 2nd source Calibration Verification Standard (CVS) – at minimum, with each initial calibration.
- Continuing Calibration Verification (CCV) – frequency varies by test.
- Instrument Blanks – usage and frequency varies by test.

Method QC:

Method QC samples encompass the entire method and are initiated at the earliest point of the method where appropriate. Refer to the QC Definitions below. One set of Method QC is included for each batch of up to 20 client samples. Each set includes:

- 1 Method Blank.
- 1 Sample Duplicate. *
- 1 Lab Control Sample.
- 1 Reference Material or Matrix Spike. **
- Surrogate Compounds.

* Duplicate analyses are not performed where sub-sampling is not possible – e.g. most tests for organics in water.
** Spikes and Reference Materials are unavailable for Microbiology tests.

Method QC must be successfully analyzed before sample results are approved. Method QC results are normally reported to ALS clients with data reports.

Data Quality Objectives (DQOs):

DQOs are established for each QC sample, based on a combination of reference method objectives, customer requirements and historical test method performance. Where applicable, prescriptive elements of reference methods take precedence over internal DQOs. Current DQOs are available upon request.

Detailed descriptions of how DQOs are evaluated for different types of Quality Control samples are described on the following pages.

Types of Quality Control – Definitions and Evaluation Protocols

Method Blank (MB) - A blank sample prepared to represent the sample matrix as closely as possible and analyzed exactly like the calibration standards, samples, and quality control (QC) samples. Results of Method Blanks provide an estimate of the within batch variability of the blank response and an indication of bias introduced by the analytical procedure.

Except in special cases (as outlined in ALS DQO summary documents) the ALS DQO for Method Blanks is for all results to lie below the Limit of Reporting (LOR).

Laboratory Sample Duplicate (DUP) - A second portion of sample taken from the same container as the sub-sample used for the primary analysis, that is analyzed independently through all steps of the laboratory's sampling and analytical procedures. Duplicate samples are used to assess variance of the total method including sampling and analysis.

Duplicate precision is normally measured as Relative Percent Difference (RPD), where RPD = |(Result2 - Result1) / Mean| * 100. Duplicate samples should normally agree to within the ALS Precision DQO for the test and parameter (expressed as RPD), or within ± 2 x the LOR (for low level results). Refer to the ALS DQOs for Precision for specific limits for any given test.

ALS does not establish DQOs for Field Sample Duplicates. However, it is generally understood and accepted that the variability of Field Sample Duplicates is significantly more than what is observed with Laboratory Sample Duplicates.[1]

Laboratory Control Sample (LCS) - A known matrix spiked with compound(s) representative of the target analytes. An LCS is used to verify the accuracy of the laboratory's performance of the test.

LCS accuracy is calculated as the measured amount divided by the target concentration, and is normally expressed as percent recovery. LCS recoveries should normally lie within the ALS Accuracy DQOs for the test and parameter. For a low level LCS, the result should lie within ± 1 x the LOR of the target concentration. Refer to the ALS Accuracy DQOs for specific limits for any given test.

Reference Material (RM) – A material or substance, one or more of whose property values are sufficiently homogeneous and well established to be used for the calibration of an apparatus, the assessment of a measurement method, or for assigning values to materials. An RM is similar to an LCS, but encompasses a representative sample matrix. Similar to an LCS, an RM is used to verify the accuracy of the laboratory's performance of the test, but including the challenges of a complex sample matrix.

RM accuracy is calculated, expressed, and evaluated similarly to LCS accuracy. Refer to ALS Accuracy DQOs for specific limits for any given test.

Matrix Spike (MS) - A sample prepared by adding a known amount of a target analyte to a specified amount of a sample for which an independent estimate of the target analyte concentration is available. Spiked samples are used, for example, to determine the effect of the sample matrix on a method's recovery efficiency.

Matrix Spike results are calculated and expressed as percent recovery, by dividing the measured result (minus any analyte contribution from the unspiked sample) by the target analyte concentration. Matrix Spike results should normally lie within the ALS Accuracy DQOs for Matrix

[1] Depending on the type of Field Sample Duplicates being evaluated (e.g. Co-located versus Split Sample Duplicates), ALS recommends DQOs for Field Sample Duplicates that are between 1.5 – 2.0 times higher than our Laboratory Sample Duplicate DQOs. Co-located Sample Duplicates generally require higher DQOs than Split Sample Duplicates.

Spikes. Matrix Spike results cannot be calculated or reported in cases where the background concentration of the test parameter in the sample is too high relative to the spike level.

Surrogate Compounds (SURR) – Surrogate Compounds are added to every sample where applicable (organics tests only). They are substances with properties that mimic the analyte of interest, and which are unlikely to be found in environmental samples. They are added at known concentration to samples to establish that the analytical method has been properly performed.

Surrogate results are calculated and expressed as percent recovery, by dividing the measured result against the expected target concentration. Refer to ALS Accuracy DQOs for specific limits for any given test.

Automated Relational Checks

In addition to all our standard Quality Control checks, ALS also employs dozens of "Relational Checks", which are programmed into our Laboratory Information Systems (LIMS) to automatically highlight any situations where the expected relationships between different test parameters are violated, which can often point to errors. Such errors may originate with field sampling, or from laboratory processes, but should always be identified and pro-actively investigated.

Total versus Dissolved Metals ("D > T" Check) – One of the most important and common relational checks we do is a check for situations where Dissolved Metal concentrations significantly exceed Total Metal concentrations. By definition, this situation should not occur. However, there are a few reasons why this can occur:

i) Circumstances where Dissolved Metals slightly exceed Total Metals are expected in a small percentage of samples, simply due to normal random variability. In fact, when all metals in a test sample exist in the dissolved form, we expect that Dissolved Metals measurements will numerically exceed Total Metals measurements exactly half the time (by a small margin), simply due to random chance.

ii) Samples to be analyzed for Dissolved Metals must be filtered, which is normally done in the field. Filtration processes are a common source of low level metals contaminants. Contamination of a sample during filtration is the most common source of significant D > T issues.

iii) Field samples for Dissolved and Total Metals are normally collected independently, so variability of the sampling process is another common cause of D > T issues.

If none of the above causes can explain a situation where Dissolved Metals exceed Total Metals, then another type of error may be indicated, either with the collection of the sample in the field, or with sample containers or preservatives, or with the laboratory testing process.

ALS automatically highlights and investigates all circumstances where a Dissolved Metal result exceeds the Total Metal result by 20% RPD or more, but only if the absolute difference between the two results is greater than the sum of the Limits of Reporting (Detection Limits) of the two results.

The mechanism of this relational check is derived from the ALS Duplicate DQOs for Metals in Water.

All D > T relational checks that violate the rule above are flagged internally, and are investigated by ALS before sample results will be released to our clients. In most cases, results will be re-analyzed to confirm or correct the anomalous relationship. If results are confirmed by re-analysis, the following data qualifier is applied:

DTC: Dissolved concentration exceeds total. Results were confirmed by re-analysis.

Other Important Relational Checks Conducted by ALS

ALS employs dozens of other relational checks to highlight anomalous relationships between test parameters. Some of more common checks include the following:

- *Total Ammonia should not exceed Total Kjeldahl Nitrogen*
- *Weak Acid Dissociable Cyanide should not exceed Total Cyanide*
- *E. coli should not exceed Fecal Coliforms*
- *Nitrate + Nitrite should not exceed Total Nitrogen*
- *Hexavalent Chromium should not exceed Total Chromium*
- *True Colour should not exceed Apparent Colour*
- *Mineral Oil and Grease should not exceed Total Oil and Grease*
- *Reactive Phosphorus should not exceed Total Phosphorus*

CALA

Canadian Association for Laboratory Accreditation Inc.

CALA Directory of Laboratories

Membership Number: 1352
Laboratory Name: ALS Environmental (Edmonton)
Parent Institution: ALS Canada Ltd.
Address: 9936 - 67th Ave. NW Edmonton AB T6E 0P5
Contact: Ms. Anne Beaubien
Phone: (780) 413-5988
Fax: (780) 437-2311
Email: alsed.quality@alsglobal.com

Standard: Conforms with requirements of ISO/IEC 17025
Clients Served: All Interested Parties
Revised On: November 27, 2012
Valid To: May 28, 2015

Scope of Accreditation

Air (Inorganic)
Dustfall - Air (120)
ED-TM-1030; modified from AB ENVIRONMENT 32020
GRAVIMETRIC
Dustfall, Fixed
Dustfall, Total

Air (Inorganic)
Fluoride - Air (188)
ISOP 145, ISOP 117; modified from SM 4500-F C
SELECTIVE ION ELECTRODE
Fluoride

Air (Inorganic)
Mercury - Air Filter (190)
ISOP32/ISOP160; modified from NIOSH 6009/EPA 245.1
COLD VAPOUR AA - DIGESTION
Mercury

Air (Inorganic)
Metals - Air Filter (016)
ISOP 32/ISOP 96; modified from EPA 200.8, NIOSH 7303
ICP/MS - DIGESTION
Aluminum
Barium
Beryllium
Cadmium
Calcium
Chromium
Cobalt

† "OSDWA" indicates the appendix is used for the analysis of Ontario drinking water samples, which is subject to the rules and related regulations under the Ontario "Safe Drinking Water Act" (2002).

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Copper
Iron
Lead
Magnesium
Manganese
Molybdenum
Nickel
Potassium
Silver
Sodium
Strontium
Thallium
Tin
Vanadium
Zinc

Air (Organic)

Dioxins and Furans (PCDD/PCDF) - Air (138)

EX-TM-1605/EX-TM-1606; modified from EPA 1613 AND ENVIRONMENT CANADA, EPS 1/RM/19

GC-HRMS-EXTRACTION

1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
1,2,3,4,6,7,8-Heptachlorodibenzofuran
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
1,2,3,4,7,8-Hexachlorodibenzofuran
1,2,3,4,7,8,9-Heptachlorodibenzofuran
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
1,2,3,6,7,8-Hexachlorodibenzofuran
1,2,3,7,8-Pentachlorodibenzofuran
1,2,3,7,8-Pentachlorodibenzo-p-dioxin
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
1,2,3,7,8,9-Hexachlorodibenzofuran
2,3,4,6,7,8-Hexachlorodibenzofuran
2,3,4,7,8-Pentachlorodibenzofuran
2,3,7,8-Tetrachlorodibenzo-p-dioxin
2,3,7,8-Tetrachlorodibenzofuran
Heptachlorodibenzo-p-dioxins (Total)
Heptachlorodibenzofurans (Total)
Hexachlorodibenzo-p-dioxins (Total)
Hexachlorodibenzofurans (Total)
Octachlorodibenzo-p-dioxin
Octachlorodibenzofuran
Pentachlorodibenzo-p-dioxins (Total)
Pentachlorodibenzofurans (Total)
Tetrachlorodibenzo-p-dioxins (Total)
Tetrachlorodibenzofurans (Total)

Biological Tissue (Inorganic)

Metals - Tissue (186)

NA-TP-2003/ISOP 100; modified from EPA 200.3/EPA 200.7

ICP - DIGESTION

Aluminum
Beryllium
Cadmium
Calcium
Chromium

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Cobalt
Copper
Iron
Magnesium
Manganese
Phosphorus
Potassium
Sodium
Strontium
Titanium
Zinc

Oil (Organic)
Polychlorinated Biphenyls (PCB) - Oil (002)
MSOP 8; modified from EPA 8082, ASTM D4059
GC/ECD - EXTRACTION
Aroclor 1016
Aroclor 1221
Aroclor 1232
Aroclor 1242
Aroclor 1248
Aroclor 1254
Aroclor 1260
Aroclor 1262
Aroclor 1268
Total PCB

Paint
Lead - Paint (153)
ISOP 100, ISOP 165; modified from EPA 200.2, EPA 200.7
ICP - DIGESTION
Lead

Serum
Perfluorinated Organics (PFC) - Serum (147)
EX-TM-1603; modified from ENVIRO. SCI. TECH, 38, 3698-3704
LC-MS/MS - EXTRACTION
Perfluorobutane sulfonate
Perfluorobutanoic acid
Perfluorodecane sulfonate
Perfluorodecanoic acid
Perfluorododecanoic acid
Perfluoroheptanoic acid
Perfluorohexane sulfonate
Perfluorohexanoic acid
Perfluorononanoic acid
Perfluorooctane sulfonamide
Perfluorooctane sulfonate
Perfluorooctanoic acid
Perfluoroundecanoic acid

Solids (Inorganic)
Ammonia - Soil (177)
ISOP 49/70; modified from CSSS 15.2.1/SM 4500-NH3
COLORIMETRIC (SATURATED PASTE)
Ammonia

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Solids (Inorganic)
Anions - Soil (176)
ISOP 49, NA-TM-1001; modified from CSSS 15.2.1/SM 4110 B
ION CHROMATOGRAPHY (SATURATED PASTE)
Nitrate
Nitrite
Sulfate

Solids (Inorganic)
Barium - Soil (172)
ISOP 158, ISOP 100; modified from SSSA PART 3, 1996, PG 202
ICP - FUSION
Barium

Solids (Inorganic)
Barium (Extractable) - Soil (182)
ISOP 164, ISOP 100; modified from BARITE WASTE GUIDELINES
ICP - EXTRACTION
Barium

Solids (Inorganic)
Chloride - Saturated Paste, Soil (168)
ISOP 49/ED-TM-1032; modified from CSSS 15.2.1/SM 4500 - CL E
COLORIMETRIC
Chloride

Solids (Inorganic)
Conductivity - Soil (156)
ISOP 49/ISOP19; modified from CARTER CSSS 15.2.1, 15.3
SATURATED PASTE, METER
Conductivity

Solids (Inorganic)
Conductivity - Soil (157)
ISOP 19; modified from CARTER CSSS 15.3
1:2 EXTRACTION, METER
Conductivity

Solids (Inorganic)
Density - Soil (170)
ISOP 114; modified from ASTM D5057
GRAVIMETRIC
Density

Solids (Inorganic)
Grain Size - Soil (028)
ISOP 68; modified from ASTM D422-63
SIEVING
Grain Size

Solids (Inorganic)
Hexavalent Chromium - Soil (148)
ISOP 108; modified from EPA 3060 A
IC-ALKALINE DIGESTION
Chromium

Solids (Inorganic)
Hot Water Soluble Boron - Soil (145)
ISOP144/ISOP100; modified from KEREN 1996 METHODS OF SOIL ANALYSIS
ICP - EXTRACTION
Boron

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Solids (Inorganic)
Mercury - Soil (164)
ISOP165, ISOP 160; modified from EPA 200.2, EPA 245.1
COLD VAPOUR AA - DIGESTION
Mercury

Solids (Inorganic)
Metals - Soil (023)
ISOP165/ISOP 96; modified from EPA 200.2/6020
ICP/MS - DIGESTION
Aluminum
Antimony
Arsenic
Barium
Beryllium
Bismuth
Boron
Cadmium
Calcium
Chromium
Cobalt
Copper
Iron
Lead
Lithium
Magnesium
Manganese
Molybdenum
Nickel
Phosphorus
Potassium
Selenium
Silver
Sodium
Strontium
Thallium
Tin
Titanium
Uranium
Vanadium
Zinc

Solids (Inorganic)
Oil and Grease - Soil (029)
MSOP176; modified from SM 5520
GRAVIMETRIC - EXTRACTION
Oil and Grease

Solids (Inorganic)
Particle Size - Soil (110)
ISOP 162; modified from CARTER CSSS 47.3
PARTICLE SIZE
% Clay
% Sand
% Silt

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Solids (Inorganic)
Percent Moisture - Soil (179)
MSOP104; modified from ASTM D2216-80
GRAVIMETRIC
% Moisture

Solids (Inorganic)
Percent Saturation - Soil (169)
ISOP 49; modified from CSSS 15.2.1
GRAVIMETRIC
% Saturation

Solids (Inorganic)
pH - Soil (099)
ISOP 49/ISOP 18; modified from CARTER CSSS 15.2.1,16.2
SATURATED PASTE, METER
pH

Solids (Inorganic)
pH - Soil (100)
ISOP 18; modified from CARTER CSSS 16.2
1:2 EXTRACTION, METER
pH

Solids (Inorganic)
pH (1:2 CaCl2) - Soil (163)
ISOP 69; modified from CSSS 16.3
1:2 CaCl2 EXTRACTION - METER
pH (1:2 CaCl2)

Solids (Inorganic)
Salinity - Soil (160)
ISOP 49/ISOP 100; modified from CARTER CSSS 15.2.1, EPA 200.7
ICP (SATURATED PASTE)
Calcium
Magnesium
Potassium
Sodium
Sulfur SO4

Solids (Inorganic)
Sulfate - Solids (173)
ISOP 155; modified from CSA A23.2
IC - DIGESTION
Sulfate

Solids (Organic)
Aldehydes - Soil (180)
ED-TM-1110; EPA 8270
GC/MS
Acetaldehyde
Formaldehyde

Solids (Organic)
Dioxins, Furans (PCDD/PCDF) - Soil, Sediment (085)
EX-TM-1605/EX-TM-1606; modified from EPA 1613, EPS 1/RM/19
HRGC/HRMS - EXTRACTION
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
1,2,3,4,6,7,8-Heptachlorodibenzofuran
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin

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1,2,3,4,7,8-Hexachlorodibenzofuran
1,2,3,4,7,8,9-Heptachlorodibenzofuran
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
1,2,3,6,7,8-Hexachlorodibenzofuran
1,2,3,7,8-Pentachlorodibenzofuran
1,2,3,7,8-Pentachlorodibenzo-p-dioxin
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
1,2,3,7,8,9-Hexachlorodibenzofuran
2,3,4,6,7,8-Hexachlorodibenzofuran
2,3,4,7,8-Pentachlorodibenzofuran
2,3,7,8-Tetrachlorodibenzo-p-dioxin
2,3,7,8-Tetrachlorodibenzofuran
Heptachlorodibenzo-p-dioxins (Total)
Heptachlorodibenzofurans (Total)
Hexachlorodibenzo-p-dioxins (Total)
Hexachlorodibenzofurans (Total)
Octachlorodibenzo-p-dioxin
Octachlorodibenzofuran
Pentachlorodibenzo-p-dioxins (Total)
Pentachlorodibenzofurans (Total)
Tetrachlorodibenzo-p-dioxins (Total)
Tetrachlorodibenzofurans (Total)

Solids (Organic)
Extractable Petroleum Hydrocarbons (EPH) - Soil (109)
MSOP 119; modified from BC MELP EPH IN SOLIDS BY GC/FID
GC/FID - EXTRACTION
EPH 10-19
EPH 19-32

Solids (Organic)
Petroleum Hydrocarbons (PHC) - Soil (154)
MSOP 173; CCME
GC/MS - HEADSPACE
Benzene
Ethylbenzene
m/p-xylene
o-xylene
Toluene

Solids (Organic)
Petroleum Hydrocarbons (PHC) - Soil (155)
MSOP 173; CCME
GC/FID - HEADSPACE
F1: C6-C10
VH: C6-C10

Solids (Organic)
Petroleum Hydrocarbons (PHC) - Soil (158)
NA-TM-1100, NA-TP-2100; CCME
GC/FID - EXTRACTION TUMBLER
F2: C10-C16
F3: C16-C34
F4: C34-C50

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Solids (Organic)
Petroleum Hydrocarbons (PHC) - Soil (171)
NA-TM-1100, NA-TP-2100; CCME
GRAVIMETRIC - TUMBLER
F4: Gravimetric

Solids (Organic)
Phenols - Soil (077)
MSOP70; modified from EPA 8270/3540
GC/MS - EXTRACTION
2-Chlorophenol
2-Methylphenol (o-Cresol)
2-Nitrophenol
2,3-Dichlorophenol
2,3,4-Trichlorophenol
2,3,4,5-Tetrachlorophenol
2,3,4,6 Tetrachlorophenol
2,3,5-Trichlorophenol
2,3,5,6-Tetrachlorophenol
2,3,6-Trichlorophenol
2,4 & 2,5-Dichlorophenol
2,4-Dimethylphenol
2,4-Dinitrophenol
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
2,6-Dichlorophenol
3-Chlorophenol
3-Methylphenol (m-Cresol)
3,4-Dichlorophenol
3,4,5-Trichlorophenol
3,5-Dichlorophenol
4-Chloro-3-methylphenol
4-Chlorophenol
4-Methylphenol (p-Cresol)
4-Nitrophenol
4,6-Dinitro-2-methylphenol
Pentachlorophenol
Phenol

Solids (Organic)
Polychlorinated Biphenyls (PCB) - Soil (097)
MSOP 7; modified from EPA 3550/8082
GC/ECD - EXTRACTION
Aroclor 1016
Aroclor 1221
Aroclor 1232
Aroclor 1242
Aroclor 1248
Aroclor 1254
Aroclor 1260
Aroclor 1262
Aroclor 1268
Total PCB

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Solids (Organic)
Polychlorinated Biphenyls (PCB) - Soil, Sediment (088)
EX-TM-1605/EX-TM-1607; modified from EPA 1668A
HRGC/HRMS - EXTRACTION

PCB 1
PCB 100
PCB 101
PCB 102
PCB 103
PCB 104
PCB 105
PCB 106
PCB 108/86/125
PCB 11
PCB 110
PCB 111/117
PCB 112
PCB 113
PCB 114
PCB 115
PCB 116
PCB 118
PCB 12
PCB 120
PCB 122
PCB 123/107/109
PCB 124
PCB 126
PCB 127
PCB 128/162
PCB 13
PCB 130
PCB 131/142/133
PCB 132
PCB 134
PCB 135
PCB 136
PCB 137
PCB 138
PCB 139/143
PCB 14
PCB 140
PCB 141
PCB 144
PCB 145
PCB 146
PCB 147/149
PCB 148
PCB 15
PCB 150
PCB 151
PCB 152
PCB 153/168

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PCB 154
PCB 155
PCB 156
PCB 157
PCB 158/129
PCB 159
PCB 16
PCB 160/163
PCB 161
PCB 164
PCB 165
PCB 166
PCB 167
PCB 169
PCB 17
PCB 170
PCB 171
PCB 172
PCB 173
PCB 174
PCB 175/182
PCB 176
PCB 177
PCB 178
PCB 179
PCB 18
PCB 180
PCB 181
PCB 183
PCB 184
PCB 185
PCB 186
PCB 187
PCB 188
PCB 189
PCB 19
PCB 190
PCB 191
PCB 192
PCB 193
PCB 194
PCB 195
PCB 197
PCB 198
PCB 199
PCB 2
PCB 200
PCB 201/204
PCB 202
PCB 203/196
PCB 205
PCB 206
PCB 208

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PCB 209
PCB 21/20/23
PCB 22
PCB 23
PCB 24
PCB 25
PCB 26
PCB 27
PCB 28
PCB 29
PCB 3
PCB 30
PCB 31
PCB 32
PCB 34
PCB 35
PCB 36
PCB 37
PCB 38
PCB 39
PCB 4/10
PCB 40/68
PCB 41
PCB 43/52
PCB 44
PCB 45
PCB 46
PCB 47
PCB 48/49
PCB 5
PCB 50
PCB 51
PCB 53
PCB 54
PCB 55
PCB 56
PCB 57
PCB 58/67
PCB 59/42
PCB 6
PCB 60
PCB 61
PCB 63/76
PCB 64
PCB 66
PCB 69
PCB 7
PCB 70
PCB 71
PCB 72
PCB 74
PCB 75/65/62
PCB 77

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PCB 78
PCB 79
PCB 8
PCB 80
PCB 81
PCB 82
PCB 83/119
PCB 84/89
PCB 85
PCB 87
PCB 88/121
PCB 9
PCB 90/101
PCB 91
PCB 92
PCB 93
PCB 94
PCB 95
PCB 96
PCB 97
PCB 98
PCB 99

Solids (Organic)

Polycyclic Aromatic Hydrocarbons (PAH) - Soil (064)
MSOP 143; modified from EPA 8270/3540

GC/MS - EXTRACTION

1,3-Dimethylnaphthalene
1,3-Methylnaphthalene
2-Methylanthracene
2-Methylnaphthalene
3-Methylcholanthrene
Acenaphthene
Acenaphthylene
Anthracene
Benzo (a) anthracene
Benzo (a) pyrene
Benzo (b,j) fluoranthene
Benzo (g,h,i) perylene
Benzo (k) fluoranthene
Carbazole
Chrysene
Dibenzo (a,h) anthracene
Dibenzofuran
Fluoranthene
Fluorene
Indeno (1,2,3 - cd) pyrene
Naphthalene
Phenanthrene
Pyrene
Quinoline

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Solids (Organic)
Volatile Organic Compounds (VOC) - Soil (167)
MSOP 50; modified from EPA 5021/8260
GC/MS - HEADSPACE/EXTRACTION

1,1-Dichloroethane
1,1-dichloroethylene
1,1-Dichloropropene
1,1,1-Trichloroethane
1,1,1,2-Tetrachloroethane
1,1,2-Trichloroethane
1,1,2,2-Tetrachloroethane
1,2-Dibromo-3-chloropropane
1,2-dichlorobenzene
1,2-dichloroethane
1,2-Dichloropropane
1,2,3-Trichlorobenzene
1,2,3-Trichloropropane
1,2,4-Trichlorobenzene
1,2,4-Trimethylbenzene
1,3-Dichlorobenzene
1,3-Dichloropropane
1,3,5-Trimethylbenzene
1,4-dichlorobenzene
2-Chlorotoluene
2-Hexanone
2,2-Dichloropropane
4-Chlorotoluene
Acetone (2-Propanone)
Acrylonitrile
Benzene
Bromobenzene
Bromochloromethane
Bromodichloromethane
Bromoform
Bromomethane
Carbon Disulphide
Carbon Tetrachloride
Chlorobenzene
Chlorodibromomethane
Chloroethane
Chloroform
Chloromethane
cis-1,3-Dichloropropene
cis-1,4-Dichloro-2-Butene
Dibromomethane
Dichlorodifluoromethane
Dichloromethane
Ethyl Alcohol
Ethyl Methacrylate
Ethylbenzene
Ethylene Dibromide
Hexachlorobutadiene
Isopropylbenzene

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m/p-xylene
Methyl Ethyl Ketone
Methyl Iodide
Methyl isobutyl Ketone
n-butylbenzene
n-propylbenzene
o-xylene
p-Isopropyltoluene
sec-butylbenzene
Styrene
tert-butylbenzene
Tetrachloroethylene
Toluene
trans-1,2-Dichloroethylene
trans-1,3-Dichloropropene
Trans-1,4-Dichloro-2-Butene
Trichloroethylene
Trichlorofluoromethane
Vinyl Chloride

Tissue (Inorganic)
Mercury - Biological (054)
NA-TP-2003, ISOP151, ISOP 160; modified from EPA 200.3, 245.1, 245.7
COLD VAPOR AA - DIGESTION
Mercury

Tissue (Inorganic)
Metals - Biological (060)
NA-TP-2003, ISOP 96; modified from EPA 200.3, 6020
ICP/MS - DIGEST
Aluminum
Antimony
Arsenic
Barium
Beryllium
Cadmium
Calcium
Chromium
Cobalt
Copper
Lead
Lithium
Magnesium
Manganese
Molybdenum
Nickel
Selenium
Silver
Strontium
Thallium
Uranium
Vanadium
Zinc

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Tissue (Organic)
Dioxins/Furans (PCDD/PCDF) - Biological (086)
EX-TM-1605/EX-TM-1606; modified from EPA 1613, EPS 1/RM/19
HRGC/HRMS - EXTRACTION
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
1,2,3,4,6,7,8-Heptachlorodibenzofuran
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
1,2,3,4,7,8-Hexachlorodibenzofuran
1,2,3,4,7,8,9-Heptachlorodibenzofuran
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
1,2,3,6,7,8-Hexachlorodibenzofuran
1,2,3,7,8-Pentachlorodibenzofuran
1,2,3,7,8-Pentachlorodibenzo-p-dioxin
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
1,2,3,7,8,9-Hexachlorodibenzofuran
2,3,4,6,7,8-Hexachlorodibenzofuran
2,3,4,7,8-Pentachlorodibenzofuran
2,3,7,8-Tetrachlorodibenzo-p-dioxin
2,3,7,8-Tetrachlorodibenzofuran
Heptachlorodibenzo-p-dioxins (Total)
Heptachlorodibenzofurans (Total)
Hexachlorodibenzo-p-dioxins (Total)
Hexachlorodibenzofurans (Total)
Octachlorodibenzo-p-dioxin
Octachlorodibenzofuran
Pentachlorodibenzo-p-dioxins (Total)
Pentachlorodibenzofurans (Total)
Tetrachlorodibenzo-p-dioxins (Total)
Tetrachlorodibenzofurans (Total)

Tissue (Organic)
Polychlorinated Biphenyls (PCB) - Biological (089)
EX-TM-1605/EX-TM-1607; modified from EPA 1668A
HRGC/HRMS - EXTRACTION
PCB 1
PCB 100
PCB 102
PCB 103
PCB 104
PCB 105
PCB 106
PCB 108/86/125
PCB 11
PCB 110
PCB 111/117
PCB 112
PCB 113
PCB 114
PCB 115
PCB 116
PCB 118
PCB 12
PCB 120
PCB 122

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PCB 123/107/109
PCB 124
PCB 126
PCB 127
PCB 128/162
PCB 13
PCB 130
PCB 131/142/133
PCB 132
PCB 134
PCB 135
PCB 136
PCB 137
PCB 138
PCB 139/143
PCB 14
PCB 140
PCB 141
PCB 144
PCB 145
PCB 146
PCB 147/149
PCB 148
PCB 15
PCB 150
PCB 151
PCB 152
PCB 153/168
PCB 154
PCB 155
PCB 156
PCB 157
PCB 159
PCB 16
PCB 160/163
PCB 161
PCB 164
PCB 165
PCB 166
PCB 167
PCB 169
PCB 17
PCB 170
PCB 171
PCB 172
PCB 173
PCB 174
PCB 175/182
PCB 176
PCB 177
PCB 178
PCB 179
PCB 18

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PCB 180
PCB 181
PCB 183
PCB 184
PCB 185
PCB 186
PCB 187
PCB 188
PCB 189
PCB 19
PCB 190
PCB 191
PCB 192
PCB 193
PCB 194
PCB 195
PCB 197
PCB 198
PCB 199
PCB 2
PCB 200
PCB 201/204
PCB 202
PCB 205
PCB 206
PCB 208
PCB 209
PCB 21/20/23
PCB 22
PCB 23
PCB 24
PCB 25
PCB 26
PCB 27
PCB 28
PCB 29
PCB 3
PCB 30
PCB 31
PCB 32
PCB 34
PCB 35
PCB 36
PCB 37
PCB 38
PCB 39
PCB 4/10
PCB 40/68
PCB 41
PCB 43/52
PCB 44
PCB 45
PCB 46

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PCB 47
PCB 48/49
PCB 5
PCB 50
PCB 51
PCB 52
PCB 53
PCB 54
PCB 55
PCB 56
PCB 57
PCB 58/67
PCB 59/42
PCB 6
PCB 60
PCB 61
PCB 63/76
PCB 64
PCB 66
PCB 69
PCB 7
PCB 70
PCB 71
PCB 72
PCB 73
PCB 74
PCB 75/65/62
PCB 77
PCB 78
PCB 79
PCB 8
PCB 80
PCB 81
PCB 82
PCB 83/119
PCB 84/89
PCB 85
PCB 87
PCB 88/121
PCB 9
PCB 90/101
PCB 91
PCB 92
PCB 93
PCB 94
PCB 95
PCB 96
PCB 97
PCB 98
PCB 99

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Waste
BTEX - TCLP Leachate - Waste (135)
ISOP74/MSOP173, NA-TM-1103; modified from EPA 1311, EPA 8260 B
GC/MS - TCLP
Benzene
Ethylbenzene
m/p - xylene
o-xylene
Toluene

Waste
Flashpoint - Waste (055)
ED-TM-1012; modified from ASTM 93-D
PENSKE-MARTEN CLOSED CUP
Flashpoint

Waste
Metals - TCLP Leachate - Waste (141)
ISOP 74, ISOP 96; modified from EPA 1311, EPA 6020
ICP/MS - TCLP
Antimony
Arsenic
Barium
Beryllium
Boron
Cadmium
Chromium
Cobalt
Copper
Iron
Lead
Nickel
Selenium
Silver
Thallium
Uranium
Vanadium
Zinc
Zirconium

Waste (Inorganic)
Mercury - TCLP - Waste (162)
ISOP 74/ISOP 151/160; modified from EPA 1311, 245.1, 245.7
COLD VAPOUR AA - DIGESTION - TCLP
Mercury

Waste (Inorganic)
Specific Gravity - Waste (174)
ISOP 114; modified from SM 2710 F
GRAVIMETRIC
Specific Gravity

Water (Inorganic)
Alkalinity - Water (004)
ED-TM-1026; modified from SM 2320 B
TITRIMETRIC
Alkalinity (pH 4.5)
Alkalinity (pH 8.3)

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Water (Inorganic)
Ammonia - Water (178)
ED-TM-1016; modified from SM 4500 NH3
COLORIMETRIC
Ammonia

Water (Inorganic)
Anions - Water (005)
NATM 1001; modified from SM 4110 B
ION CHROMATOGRAPHY
Bromide
Chloride
Fluoride
Nitrate
Nitrite
Sulfate

Water (Inorganic)
Biochemical Oxygen Demand (BOD) - Water (013)
ED-TM-1007/ISOP135; modified from SM 5210B
D.O. METER
BOD (5 day)
BODu (ultimate)
CBOD (5 day)

Water (Inorganic)
Carbon - Water (118)
ED-TM-1002; modified from SM 5310 B
IR - COMBUSTION
Inorganic Carbon
Organic Carbon
Total Carbon (TC)

Water (Inorganic)
Chemical Oxygen Demand (COD) - Water (051)
ED-TM-1009; modified from SM 5220 D
COLORIMETRIC - DIGESTION
COD

Water (Inorganic)
Chlorine - Water (123)
ISOP134; modified from SM 4500 CL-A,F,G
COLORIMETRIC
Free Chlorine
Total Chlorine

Water (Inorganic)
Colour - Water (152)
ED-TM-1038; modified from SM 2120 A, C
SPECTROPHOTOMETRIC
True Colour

Water (Inorganic)
Conductivity - Water (006)
ED-TM-1026; modified from SM 2510 B
CONDUCTIVITY METER
Conductivity (25°C)

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Water (Inorganic)
Disinfection By-Products - Water (056)
ED-TM-1006; modified from EPA 300.B
ION CHROMATOGRAPHY
Bromate
Chlorate
Chlorite

Water (Inorganic)
Dissolved Metals - Water (007)
ISOP 96; modified from EPA 6020
ICP/MS
Aluminum
Antimony
Arsenic
Barium
Beryllium
Bismuth
Boron
Cadmium
Chromium
Cobalt
Copper
Lead
Lithium
Molybdenum
Nickel
Selenium
Silver
Strontium
Thallium
Tin
Titanium
Uranium
Vanadium
Zinc

Water (Inorganic)
Dissolved Metals - Water (083)
ISOP 100, NA-TP-2002; modified from SM 3120B
ICP
Calcium
Iron
Magnesium
Manganese
Potassium
Silicon
Sodium
Sulfur

Water (Inorganic)
Hexavalent Chromium- Water (035)
ISOP 108; modified from SM 3500-CR,C
ION CHROMATOGRAPHY
Chromium (Hexavalent)

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Water (Inorganic)
Mercury - Water (149)
ISOP 151, ISOP 160; modified from EPA 245.7, EPA 245.1
COLD VAPOUR AA, COLD OXIDATION
Mercury

Water (Inorganic)
Metals (Ultra Trace) - Water (061)
ISOP 96, NA-TP-2002; modified from EPA 6020
ICP/MS
Calcium
Dissolved Aluminum
Dissolved Barium
Dissolved Beryllium
Dissolved Boron
Dissolved Cadmium
Dissolved Chromium
Dissolved Cobalt
Dissolved Copper
Dissolved Lead
Dissolved Manganese
Dissolved Molybdenum
Dissolved Nickel
Dissolved Silver
Dissolved Thallium
Dissolved Tin
Dissolved Vanadium
Dissolved Zinc
Magnesium
Potassium
Sodium
Strontium
Total Antimony
Total Arsenic
Total Selenium
Uranium

Water (Inorganic)
Microtox - Water (161)
ISOP 157; modified from WCMUC (1991)
BIOLUMINESCENCE
Microtox IC50 (15 min)

Water (Inorganic)
Nitrate/Nitrite - Water (057)
ISOP 80; modified from SM 4500-NO2,B / SM 4500-NO3,H
COLORIMETRIC
Nitrate plus Nitrite
Nitrite

Water (Inorganic)
Oil and Grease - Water (038)
MSOP177; modified from SM 5520 A,B,F
GRAVIMETRIC
Total Oil and Grease

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Water (Inorganic)
Oil and Grease - Water (159)
MSOP178; modified from SM 5520 C, F
INFRA-RED
Hydrocarbon Oil and Grease
Total Oil and Grease

Water (Inorganic)
pH - Water (015)
ED-TM-1026; modified from SM 4500-A,B
pH METER
pH

Water (Inorganic)
Phenols - Water (146)
ISOP149; modified from ALBERTA ENVIRONMENT 154
COLORIMETRIC
Total Phenolics

Water (Inorganic)
Phosphate - Water (084)
ED-TM-1031; modified from SM 4500-P
COLORIMETRIC
Phosphate

Water (Inorganic)
Phosphates (Low) - Water (183)
ISOP 80; modified from SM 4500-P
COLORIMETRIC - TECHNICON
Phosphate

Water (Inorganic)
Phosphorus - Water (011)
ED-TM-1031; modified from SM 4500-P,B,E
COLORIMETRIC - DIGESTION
Total Dissolved Phosphorus
Total Phosphorus

Water (Inorganic)
Phosphorus - Water (119)
ED-TM-1031; modified from SM 4500-A B, E
COLORIMETRIC
Inorganic Phosphorus

Water (Inorganic)
Phosphorus - Water (184)
ISOP 85; modified from SM 4500, P, B, E
COLORIMETRIC - TECHNICON
Total Dissolved Phosphorus
Total Phosphorus

Water (Inorganic)
Solids - Water (012)
ED-TM-1005; modified from SM 2540 A,B,C,D,E
GRAVIMETRIC
Fixed Suspended Solids
Total Dissolved Solids
Total Suspended Solids
Volatile Suspended Solids

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Water (Inorganic)
Sulfide - Water (033)
ED-TM-1001; modified from SM 4500-S2 A, D,E
COLORIMETRIC
Sulfide

Water (Inorganic)
Total Kjeldahl Nitrogen (TKN) - Water (010)
ED-TM-1017; modified from AB ENVIR. 235
COLORIMETRIC - DIGESTION
Dissolved Kjeldahl Nitrogen
Total Kjeldahl Nitrogen

Water (Inorganic)
Total Metals - Water (081)
NA-TP-2001/ISOP 100; modified from APHA 3030 E/3120 B
ICP - DIGESTION
Calcium
Iron
Magnesium
Manganese
Potassium
Silicon
Sodium
Sulfur

Water (Inorganic)
Total Metals - Water (082)
NA-TP-2001, ISOP 96; modified from EPA 6020, APHA 3030 E
ICP/MS - DIGESTION
Aluminum
Antimony
Arsenic
Barium
Beryllium
Bismuth
Boron
Cadmium
Chromium
Cobalt
Copper
Lead
Lithium
Molybdenum
Nickel
Selenium
Silver
Strontium
Thallium
Tin
Titanium
Uranium
Vanadium
Zinc

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Water (Inorganic)
Total Nitrogen - Water (195)
ED-TM-1002; modified from EN12260
IR - COMBUSTION
Total Nitrogen

Water (Inorganic)
Turbidity - Water (078)
ED-TM-1011; modified from SM 2130 A,B
TURBIDIMETRIC
Turbidity

Water (Organic)
Alkylated & Nitro PAHs - Water (181)
ED-TM-1135; modified from EPA 3570/8270
GC/MS
Acridine
C2 Alkyl subst'd Carbazoles
C2 Alkyl subst'd Quinolines
C3 Alkyl subst'd Quinolines
Carbazole
Methyl Acridine
Methyl Carbazoles
Methyl Quinolines
Phenanthridine
Quinoline

Water (Organic)
Base Neutral Extractables - Water (117)
MSOP 161; modified from EPA 3510/8270
GC/MS - EXTRACTION
1,2,3-Trichlorobenzene
1,2,4-Trichlorobenzene
2-Chloronaphthalene
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane
Pentachlorobenzene

Water (Organic)
Chlorophenols - Water (019)
MSOP 42; modified from EPA 1653 AND ALBERTA ENVIRONMENT 130.0
GC/MS - EXTRACTION
2-Chlorophenol
2-Chlorosyringaldehyde
2,4,5-Trichlorophenol
2,6-Dichlorophenol
2,6-Dichlorosyringaldehyde
3,4-Dichlorocatechol
3,4-Dichloroguaiacol
3,4,5-Trichlorocatechol
3,4,5-Trichloroguaiacol
3,4,5-Trichloroveratrole
3,4,6-Trichlorocatechol

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3,4,6-Trichloroguaiacol
3,5-Dichlorocatechol
3,6-Dichlorocatechol
4-Chlorocatechol
4-Chloroguaiacol
4-Chlorophenol
4,5-Dichlorocatechol
4,5-Dichloroguaiacol
4,5-Dichloroveratrole
4,5,6-Trichloroguaiacol
4,5,6-Trichlorosyringol
4,6-Dichloroguaiacol
5-Chlorovanillin
5,6-Dichlorovanillin
6-Chlorovanillin
Tetrachlorocatechol
Tetrachloroguaiacol
Tetrachloroveratrole
Trichlorotrimethoxybenzene

Water (Organic)
Dioxins and Furans (PCDD/PCDF) - Water (049)
EX-TM-1604/EX-TM-1606; modified from EPA 1613, EPS 1/RM/19
GC/HRMS - EXTRACTION
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
1,2,3,4,6,7,8-Heptachlorodibenzofuran
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
1,2,3,4,7,8-Hexachlorodibenzofuran
1,2,3,4,7,8,9-Heptachlorodibenzofuran
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
1,2,3,6,7,8-Hexachlorodibenzofuran
1,2,3,7,8-Pentachlorodibenzo-p-dioxin
1,2,3,7,8-Pentachlorodibenzofuran
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
1,2,3,7,8,9-Hexachlorodibenzofuran
2,3,4,6,7,8-Hexachlorodibenzofuran
2,3,4,7,8-Pentachlorodibenzofuran
2,3,7,8-Tetrachlorodibenzo-p-dioxin
2,3,7,8-Tetrachlorodibenzofuran
Heptachlorodibenzo-p-dioxins (Total)
Heptachlorodibenzofurans (Total)
Hexachlorodibenzo-p-dioxins (Total)
Hexachlorodibenzofurans (Total)
Octachlorodibenzo-p-dioxin
Octachlorodibenzofuran
Pentachlorodibenzo-p-dioxins (Total)
Pentachlorodibenzofurans (Total)
Tetrachlorodibenzo-p-dioxins (Total)
Tetrachlorodibenzofurans (Total)

Water (Organic)
Extractable Petroleum Hydrocarbons (EPH) - Water (108)
MSOP 125; modified from BC MELP EPH IN WATER BY GC/FID
GC/FID - EXTRACTION
EPH 10-19

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EPH 19-32

Water (Organic)
Formaldehyde - Water (116)
MSOP47; modified from ENVIRONMENTAL SCIENCE AND TECHNOLOGY, 1989, 23:838-847
GC/MS - EXTRACTION
Formaldehyde

Water (Organic)
Low Level PAHs and Alkylated PAHs - Water (185)
EX-TM-1600; modified from EPA 3510/8270
GC/MS
1-Methylnaphthalene
2-Methylnaphthalene
Acenaphthene
Acenaphthylene
Acridine
Anthracene
Benzo (a) anthracene
Benzo (a) pyrene
Benzo(b&j)fluoranthene
Benzo(e)pyrene
Benzo (g,h,i) perylene
Benzo (k) fluoranthene
Biphenyl
C1 Acenapthenes
C1 Benz(a)Anthracenes/Chrysenes
C1 Benzofluoranthenes/Benzopyrenes
C1 Biphenyls
C1 Dibenzothiophenes
C1 Fluoranthenes/Pyrenes
C1 Fluorenes
C1 Phenanthrenes/Anthracenes
C2 Benzofluoranthenes/Benzopyrenes
C2 Biphenyls
C2 Bnz(a)Anthracenes/Chrysenes
C2 Dibenzothiophenes
C2 Fluoranthenes/Pyrenes
C2 Fluorenes
C2 Naphthalenes
C2 Phenanthrenes/Anthracenes
C3 Benzanthracenes/Chrysenes
C3 Dibenzothiophenes
C3 Naphthalenes
C3 Phenanthrenes/Anthracenes
C4 Benzanthracenes/Chrysenes
C4 Dibenzothiophenes
C4 Naphthalenes
C4 Phenanthrenes/Anthracenes
Chrysene
Dibenzo (a,h) anthracene
Dibenzothiophene
Fluoranthene
Fluorene
Indeno (1,2,3 - cd) pyrene

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Naphthalene
Perylene
Phenanthrene
Pyrene
Quinoline
Retene

Water (Organic)
Petroleum Hydrocarbons (PHC) - Water (075)
NA-TM-1104; modified from EPA 3510/8015
GC/FID - EXTRACTION
F2: C10-C16
F3: C16-C34
F4: C34-C50

Water (Organic)
Petroleum Hydrocarbons (PHC) - Water (165)
NA-TM-1103; modified from EPA 5021/8260
GC/FID - HEADSPACE
F1: C6-C10
VH: C6-C10

Water (Organic)
Phenols - Water (076)
MSOP71; modified from EPA 8270/3510
GC/MS - EXTRACTION
2-Chlorophenol
2-Methylphenol (o-Cresol)
2-Nitrophenol
2,3-Dichlorophenol
2,3,4-Trichlorophenol
2,3,4,5-Tetrachlorophenol
2,3,4,6-tetrachlorophenol
2,3,5-Trichlorophenol
2,3,5,6-Tetrachlorophenol
2,3,6-Trichlorophenol
2,4 & 2,5-Dichlorophenol
2,4-Dimethylphenol
2,4-Dinitrophenol
2,4,5-Trichlorophenol
2,4,6-trichlorophenol
2,6-Dichlorophenol
3-Chlorophenol
3-Methylphenol (m-Cresol)
3,4-Dichlorophenol
3,4,5-Trichlorophenol
3,5-Dichlorophenol
4-Chloro-3-methylphenol
4-Chlorophenol
4-Methylphenol (p-Cresol)
4-Nitrophenol
4,6-Dinitro-2-methylphenol
Pentachlorophenol
Phenol

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Water (Organic)

Polychlorinated Biphenyls (PCB) - Water (087)

EX-TM-1604/EX-TM-1607; modified from EPA 1668 A

HRGC/HRMS - EXTRACTION

PCB 1
PCB 100
PCB 102
PCB 103
PCB 104
PCB 105
PCB 106
PCB 108/86/125
PCB 11
PCB 110
PCB 111/117
PCB 112
PCB 113
PCB 114
PCB 115
PCB 116
PCB 118
PCB 12
PCB 120
PCB 122
PCB 123/107/109
PCB 124
PCB 126
PCB 127
PCB 128/162
PCB 13
PCB 130
PCB 131/142/133
PCB 132
PCB 134
PCB 135
PCB 136
PCB 137
PCB 138
PCB 139/143
PCB 14
PCB 140
PCB 141
PCB 144
PCB 145
PCB 146
PCB 147/149
PCB 148
PCB 15
PCB 150
PCB 151
PCB 152
PCB 153/168
PCB 154

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PCB 155
PCB 156
PCB 157
PCB 158/129
PCB 159
PCB 16
PCB 160/163
PCB 161
PCB 164
PCB 165
PCB 166
PCB 167
PCB 168
PCB 169
PCB 17
PCB 170
PCB 171
PCB 172
PCB 173
PCB 174
PCB 175/182
PCB 176
PCB 177
PCB 178
PCB 179
PCB 18
PCB 180
PCB 181
PCB 183
PCB 184
PCB 185
PCB 186
PCB 187
PCB 188
PCB 189
PCB 19
PCB 190
PCB 191
PCB 192
PCB 193
PCB 194
PCB 195
PCB 197
PCB 198
PCB 199
PCB 2
PCB 200
PCB 201/204
PCB 202
PCB 203/196
PCB 205
PCB 206
PCB 207

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PCB 208
PCB 209
PCB 21/20/23
PCB 22
PCB 23
PCB 24
PCB 25
PCB 26
PCB 27
PCB 28
PCB 29
PCB 3
PCB 30
PCB 31
PCB 32
PCB 34
PCB 35
PCB 36
PCB 37
PCB 38
PCB 39
PCB 4/10
PCB 40/68
PCB 41
PCB 43/52
PCB 44
PCB 45
PCB 46
PCB 47
PCB 48/49
PCB 5
PCB 50
PCB 51
PCB 53
PCB 54
PCB 55
PCB 56
PCB 57
PCB 58/67
PCB 59/42
PCB 6
PCB 60
PCB 61
PCB 63/76
PCB 64
PCB 66
PCB 69
PCB 7
PCB 70
PCB 71
PCB 72
PCB 73
PCB 74

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PCB 75/65/62
PCB 77
PCB 78
PCB 79
PCB 8
PCB 80
PCB 81
PCB 82
PCB 83/119
PCB 84/89
PCB 85
PCB 87
PCB 88/121
PCB 9
PCB 90/101
PCB 91
PCB 92
PCB 93
PCB 94
PCB 95
PCB 96
PCB 97
PCB 98
PCB 99

Water (Organic)
Polychlorinated Biphenyls (PCB) - Water (096)
MSOP4; modified from EPA 3510/8082
GC/ECD - EXTRACTION
Aroclor 1016
Aroclor 1221
Aroclor 1232
Aroclor 1242
Aroclor 1248
Aroclor 1254
Aroclor 1260
Aroclor 1262
Aroclor 1268
Total PCB

Water (Organic)
Polycyclic Aromatic Hydrocarbons (PAH) - Water (003)
MSOP 5; modified from EPA 8270/3510
GC/MS - EXTRACTION
1-Methylnaphthalene
1,3-Dimethylnaphthalene
2-Methylanthracene
2-Methylnaphthalene
3-Methylcholanthrene
Acenaphthene
Acenaphthylene
Anthracene
Benzo (a) anthracene
Benzo (a) pyrene
Benzo(b&j)fluoranthene

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Benzo (g,h,i) perylene
Benzo (k) fluoranthene
Carbazole
Chrysene
Dibenzo (a,h) anthracene
Dibenzofuran
Fluoranthene
Fluorene
Indeno (1,2,3 - cd) pyrene
Naphthalene
Phenanthrene
Pyrene
Quinoline

Water (Organic)
Resin and Fatty Acids - Water (020)
MSOP 26; modified from ALBERTA ENVIRONMENT 129.0
GC/MS - EXTRACTION
12-Chlorodehydroabietic Acid
12,14-Dichlorodehydroabietic Acid
14-Chlorodehydroabietic Acid
9,10-Dichlorostearic Acid
Abietic Acid
Arachidic Acid
Dehydroabietic Acid
Isopimaric Acid
Levopimaric Acid
Linoleic Acid
Linolenic Acid
Myristic Acid
Neoabietic Acid
Oleic Acid
Palmitic Acid
Palustric Acid
Pimaric Acid
Sandaracopimaric Acid
Stearic Acid

Water (Organic)
Resin and Fatty Acids - Water (132)
ED-TM-1106; modified from ALBERTA ENVIRONMENT 129.0
GC/MS - EXTRACTION (RFA-Low ED)
12-Chlorodehydroabietic acid
12,14-Dichlorodehydroabietic acid
14-Chlorodehydroabietic acid
9,10-Dichlorostearic acid
Abietic acid
Arachidic acid
Dehydroabietic Acid
Isopimaric acid
Levopimaric acid
Linoleic Acid
Linolenic Acid
Myristic acid
Neoabietic acid

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Oleic Acid
Palmitic Acid
Palustric acid
Pimaric acid
Sandaracopimaric acid
Stearic Acid

Water (Organic)
Volatile Organic Compounds (VOC) - Water (166)
MSOP 50; modified from EPA 5021/8260
GC/MS - HEADSPACE
1,1-Dichloroethane
1,1-dichloroethylene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
1,1,2,2-Tetrachloroethane
1,2-dichlorobenzene
1,2-dichloroethane
1,2-Dichloropropane
1,2,3-Trichloropropane
1,3-Dichlorobenzene
1,4-dichlorobenzene
2-Hexanone
Acetone (2-Propanone)
Acrylonitrile
Benzene
Bromodichloromethane
Bromoform
Bromomethane
Carbon Disulphide
Carbon Tetrachloride
Chlorobenzene
Chlorodibromomethane
Chloroethane
Chloroform
Chloromethane
cis-1,3-Dichloropropene
cis-1,4-Dichloro-2-Butene
Dibromomethane
Dichlorodifluoromethane
Dichloromethane
Ethyl Alcohol
Ethyl Methacrylate
Ethylbenzene
Ethylene Dibromide
m/p-xylene
Methyl Ethyl Ketone
Methyl Iodide
Methyl isobutyl Ketone
o-xylene
Styrene
Tetrachloroethylene
Toluene
trans-1,2-Dichloroethylene

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trans-1,3-Dichloropropene
Trans-1,4-Dichloro-2-Butene
Trichloroethylene
Trichlorofluoromethane
Vinyl Chloride

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CALA

Canadian Association for
Laboratory Accreditation Inc.

CALA Directory of Laboratories

Membership Number: 3525
Laboratory Name: Nautilus Environmental Inc.
Parent Institution:
Address: 8664 Commerce Court Burnaby BC V5A 4N7
Contact: Ms. Julianna Kalocai
Phone: (604) 420-8773
Fax: (604) 357-1361
Email: julianna@nautilusenvironmental.com

Standard: Conforms with requirements of ISO/IEC 17025
Clients Served: All Interested Parties
Revised On: September 13, 2011
Valid To: March 13, 2014

Scope of Accreditation

Water (Toxicology)
Ceriodaphnia dubia - Water (003)
209; EPS 1/RM/21
SURVIVAL AND REPRODUCTION
Cerodaphnia dubia (7d)

Water (Toxicology)
Daphnia magna - Water (002)
205; EPS 1/RM/11, EPS 1/RM/14
ACUTE LETHALITY (SURVIVAL)
Daphnia LC50 (48 h)

Water (Toxicology)
Fathead Minnow - Water (007)
220; EPS 1/RM/22
SURVIVAL AND GROWTH
Fathead Minnow (7d)

Water (Toxicology)
Lemna minor - Water (005)
215; EPS 1/RM/37
GROWTH INHIBITION
Lemna minor (7d)

Water (Toxicology)
Pseudokirchneriella subcapitata - Water (006)
213; EPS 1/RM/25
GROWTH INHIBITION
Pseudokirchneriella subcapitata (72h)

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Water (Toxicology)
Rainbow Trout - Water (001)
201; EPS 1/RM/9, EPS 1/RM/13
ACUTE LETHALITY (SURVIVAL)
Trout LC50 (96 h)

Water (Toxicology)
Salmonid - Water (004)
203; EPS 1/RM/28
EARLY LIFE STAGE
Salmonid embryo (7d)

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CALA
Canadian Association for Laboratory Accreditation Inc.

CALA Directory of Laboratories

Membership Number: 2800
Laboratory Name: HydroQual Laboratories Ltd.
Parent Institution: Golder Associates Ltd.
Address: #4, 6125 12th St. S.E. Calgary AB T2H 2K1
Contact: Mrs. Tamara McClure
Phone: (403) 253-7121
Fax: (403) 252-9363
Email: tmcclure@golder.com; tanya_harvey@golder.com

Standard: Conforms with requirements of ISO/IEC 17025
Clients Served: All Interested Parties
Revised On: September 28, 2012
Valid To: March 24, 2014

Scope of Accreditation

Air (Mycology)
Mould - Air (043)
AIR-ME-002; POWERS, E.M. 1995. APPL. & ENV. MICRO 61(10): 3756-3758
CULTURABLE AIR MICROBES
fungal genus
fungal species

Air (Mycology)
Mould - Air (047)
AIR-ME-001; ZEFON ANALYTICAL ACCESSORIES/ ASTM D7391-09
DIRECT MICROSCOPE IDENTIFICATION (AIR-O-CELL)
fungal genus

Solids (Toxicology)
Chironomids - Sediment (013)
WTR-ME-026; EPS 1/RM/32
SURVIVAL AND GROWTH
Chironomus

Solids (Toxicology)
Earthworm - Soil (022)
SOIL-ME-017; EPS 1/RM/43
SURVIVAL
Eisenia andrei
Eisenia fetida

Solids (Toxicology)
Earthworm - Soil (049)
SOIL-ME-009; EPS 1/RM/43
SURVIVAL AND REPRODUCTION
Eisenia andrei

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Solids (Toxicology)
Hyalella azteca - Sediment (014)
WTR-ME-021; EPS 1/RM/33
SURVIVAL AND GROWTH
Hyalella azteca

Solids (Toxicology)
Plant Growth - Soil (050)
SOIL-ME-023; EPS 1/RM/45
EMERGENCE
Lettuce
Northern wheatgrass

Water (Microbiology)
Cryptosporidium and Giardia - Water (025)
WTQR-ME-014; EPA 815-R-05-002.METHOD 1623
FILTRATION/IMS/FA
Cryptosporidium
Giardia

Water (Microbiology)
Escherichia coli (E. coli) - Water (027)
WTRQ-ME-009; modified from SM 9223 B
MOST PROBABLE NUMBER
Escherichia coli (E. coli)

Water (Microbiology)
Microcystins - Water (037)
WTRQ-ME-005; AN AND CARMICHAEL (1994) TOXICON, 32, 1495-1507.
PROTEIN PHOSPHATASE INHIBITION
Microcystins

Water (Microbiology)
Total Coliforms - Water (052)
WTRQ-ME-009; modified from SM 9223 B
MOST PROBABLE NUMBER
Total Coliforms

Water (Toxicology)
Ceriodaphnia dubia - Water (006)
WTR-ME-018; EPS 1/RM/21
SURVIVAL AND REPRODUCTION
Ceriodaphnia dubia

Water (Toxicology)
Daphnia magna - Water (002)
WTR-ME-015; EPS 1/RM/11, EPS 1/RM/14
ACUTE LETHALITY (SURVIVAL)
Daphnia LC50 (48 h)

Water (Toxicology)
Fathead Minnow - Water (007)
WTR-ME-046; EPS 1/RM/22
GROWTH AND SURVIVAL
Fathead minnow

Water (Toxicology)
Lemna minor - Water (017)
WTR-ME-030; EPS 1/RM/37
GROWTH INHIBITION
Lemna minor

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Water (Toxicology)
Microtox - Liquid Phase - Water (003)
SOIL-ME-001; EPS 1/RM/24
BIOLUMINESCENCE
Microtox IC50 (15 min)

Water (Toxicology)
Pseudokirchneriella subcapitata - Water (008)
WTR-ME-034; EPS 1/RM/25
GROWTH INHIBITION
Pseudokirchneriella subcapitata

Water (Toxicology)
Rainbow Trout - Water (001)
WTR-ME-041; EPS 1/RM/9, EPS 1/RM/13
ACUTE LETHALITY (SURVIVAL)
Trout LC50 (96 h)

Water (Toxicology)
Salmonid - Water (026)
WTR-ME-044; EPS 1/RM/28
EARLY LIFE STAGE
Salmonid eggs
Salmonid embryo

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State of Utah

Department of Health

Environmental Laboratory Certification Program

Certification is hereby granted to

ALS Laboratory Group, Environmental Division (Fort Collins, CO)

225 Commerce Drive
Fort Collins, CO 80524

Has conformed with the
2009 TNI Standard
Scope of accreditiation is limited to the
State of Utah Accredited Fields of Accreditiation
Which accompanies this Certificate

EPA Number: CO00078
Expiration Date: 11/30/2013
Certificate Number: CO000782013-7

Robyn M. Atkinson, Ph.D, HCLD
Director, Unified State Laboratories: Public Health

Continued accredited status depends on successful ongoing particitpation in the program.

UTAH DEPARTMENT OF HEALTH

Utah Department of Health
W. David Patton Ph.D
Executive Director

Disease Control and Prevention
Robyn M. Atkinson, Ph.D, HCLD
Director, Unified State Laboratories: Public Health

Bureau of Laboratory Improvement
David B Mendenhall, MPA, MT (ASCP)
Bureau Director

State of Utah
Gary R Herbert
Governor
Gregory S Bell
Lieutenant Governor

EPA Number: *CO00078* **Attachment to Certificate Number: CO000782013-7**

ALS Laboratory Group, Environmental Division (Fort Collins, CO)

	Start Date	Expires	AB
Program/Matrix: *CWA (Non Potable Water)*			
Method EPA 120.1			
Conductivity	7/1/2012	11/30/2013	UT
Method EPA 150.1			
pH	7/1/2012	11/30/2013	UT
Method EPA 160.1			
Residue-filterable (TDS)	7/1/2012	11/30/2013	UT
Method EPA 160.2			
Residue-nonfilterable (TSS)	7/1/2012	11/30/2013	UT
Method EPA 160.3			
Residue-total	7/1/2012	11/30/2013	UT
Method EPA 1664A (HEM)			
Oil & Grease	7/1/2012	11/30/2013	UT
Method EPA 200.7			
Aluminum	7/1/2012	11/30/2013	UT
Antimony	7/1/2012	11/30/2013	UT
Arsenic	7/1/2012	11/30/2013	UT
Barium	7/1/2012	11/30/2013	UT
Beryllium	7/1/2012	11/30/2013	UT
Boron	7/1/2012	11/30/2013	UT
Cadmium	7/1/2012	11/30/2013	UT
Calcium	7/1/2012	11/30/2013	UT
Chromium	7/1/2012	11/30/2013	UT
Cobalt	7/1/2012	11/30/2013	UT
Copper	7/1/2012	11/30/2013	UT
Iron	7/1/2012	11/30/2013	UT
Lead	7/1/2012	11/30/2013	UT
Lithium	7/1/2012	11/30/2013	UT
Magnesium	7/1/2012	11/30/2013	UT
Manganese	7/1/2012	11/30/2013	UT
Molybdenum	7/1/2012	11/30/2013	UT
Nickel	7/1/2012	11/30/2013	UT
Potassium	7/1/2012	11/30/2013	UT
Selenium	7/1/2012	11/30/2013	UT
Silica as SiO2	7/1/2012	11/30/2013	UT
Silver	7/1/2012	11/30/2013	UT

ALS Laboratory Group, Environmental Division (Fort Collins, CO)	Start Date	Expires	AB
Program/Matrix: ***CWA (Non Potable Water)***			
Sodium	7/1/2012	11/30/2013	UT
Strontium	7/1/2012	11/30/2013	UT
Thallium	7/1/2012	11/30/2013	UT
Tin	7/1/2012	11/30/2013	UT
Titanium	7/1/2012	11/30/2013	UT
Total hardness as CaCO3	7/1/2012	11/30/2013	UT
Vanadium	7/1/2012	11/30/2013	UT
Zinc	7/1/2012	11/30/2013	UT
Method EPA 200.8			
Aluminum	7/1/2012	11/30/2013	UT
Antimony	7/1/2012	11/30/2013	UT
Arsenic	7/1/2012	11/30/2013	UT
Barium	7/1/2012	11/30/2013	UT
Beryllium	7/1/2012	11/30/2013	UT
Cadmium	7/1/2012	11/30/2013	UT
Calcium	7/1/2012	11/30/2013	UT
Chromium	7/1/2012	11/30/2013	UT
Cobalt	7/1/2012	11/30/2013	UT
Copper	7/1/2012	11/30/2013	UT
Iron	7/1/2012	11/30/2013	UT
Lead	7/1/2012	11/30/2013	UT
Magnesium	7/1/2012	11/30/2013	UT
Manganese	7/1/2012	11/30/2013	UT
Molybdenum	7/1/2012	11/30/2013	UT
Nickel	7/1/2012	11/30/2013	UT
Potassium	7/1/2012	11/30/2013	UT
Selenium	7/1/2012	11/30/2013	UT
Silver	7/1/2012	11/30/2013	UT
Sodium	7/1/2012	11/30/2013	UT
Strontium	7/1/2012	11/30/2013	UT
Thallium	7/1/2012	11/30/2013	UT
Thorium	7/1/2012	11/30/2013	UT
Tin	7/1/2012	11/30/2013	UT
Uranium	7/1/2012	11/30/2013	UT
Vanadium	7/1/2012	11/30/2013	UT
Zinc	7/1/2012	11/30/2013	UT
Method EPA 245.1			
Mercury	7/1/2012	11/30/2013	UT
Method EPA 300.0			
Bromide	7/1/2012	11/30/2013	UT
Chloride	7/1/2012	11/30/2013	UT
Fluoride	7/1/2012	11/30/2013	UT
Nitrate as N	7/1/2012	11/30/2013	UT
Nitrite as N	7/1/2012	11/30/2013	UT
Orthophosphate as P	7/1/2012	11/30/2013	UT
Sulfate	7/1/2012	11/30/2013	UT
Method EPA 310.1			
Alkalinity as CaCO3	7/1/2012	11/30/2013	UT

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	Start Date	Expires	AB
Program/Matrix: ***CWA (Non Potable Water)***			
Method EPA 335.2			
Cyanide	7/1/2012	11/30/2013	UT
Method EPA 340.2			
Fluoride	7/1/2012	11/30/2013	UT
Method EPA 350.1			
Ammonia as N	7/1/2012	11/30/2013	UT
Method EPA 353.2			
Nitrate-nitrite	7/1/2012	11/30/2013	UT
Method EPA 354.1			
Nitrite as N	7/1/2012	11/30/2013	UT
Method EPA 365.2			
Orthophosphate as P	7/1/2012	11/30/2013	UT
Phosphorus, total	7/1/2012	11/30/2013	UT
Method EPA 376.1			
Sulfide	7/1/2012	11/30/2013	UT
Method EPA 415.1			
Total organic carbon	7/1/2012	11/30/2013	UT
Method EPA 608			
4,4'-DDD	7/1/2012	11/30/2013	UT
4,4'-DDE	7/1/2012	11/30/2013	UT
4,4'-DDT	7/1/2012	11/30/2013	UT
Aldrin	7/1/2012	11/30/2013	UT
alpha-BHC (alpha-Hexachlorocyclohexane)	7/1/2012	11/30/2013	UT
Aroclor-1016 (PCB-1016)	7/1/2012	11/30/2013	UT
Aroclor-1221 (PCB-1221)	7/1/2012	11/30/2013	UT
Aroclor-1232 (PCB-1232)	7/1/2012	11/30/2013	UT
Aroclor-1242 (PCB-1242)	7/1/2012	11/30/2013	UT
Aroclor-1248 (PCB-1248)	7/1/2012	11/30/2013	UT
Aroclor-1254 (PCB-1254)	7/1/2012	11/30/2013	UT
Aroclor-1260 (PCB-1260)	7/1/2012	11/30/2013	UT
beta-BHC (beta-Hexachlorocyclohexane)	7/1/2012	11/30/2013	UT
Chlordane (tech.)	7/1/2012	11/30/2013	UT
delta-BHC	7/1/2012	11/30/2013	UT
Dieldrin	7/1/2012	11/30/2013	UT
Endosulfan I	7/1/2012	11/30/2013	UT
Endosulfan II	7/1/2012	11/30/2013	UT
Endosulfan sulfate	7/1/2012	11/30/2013	UT
Endrin	7/1/2012	11/30/2013	UT
Endrin aldehyde	7/1/2012	11/30/2013	UT
Endrin ketone	7/1/2012	11/30/2013	UT
gamma-BHC (Lindane, gamma-HexachlorocyclohexanE)	7/1/2012	11/30/2013	UT
Heptachlor	7/1/2012	11/30/2013	UT
Heptachlor epoxide	7/1/2012	11/30/2013	UT
Methoxychlor	7/1/2012	11/30/2013	UT
Toxaphene (Chlorinated camphene)	7/1/2012	11/30/2013	UT
Method EPA 615			

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	Start Date	Expires	AB
Program/Matrix: ***CWA (Non Potable Water)***			
2,4,5-T	7/1/2012	11/30/2013	UT
2,4-D	7/1/2012	11/30/2013	UT
2,4-DB	7/1/2012	11/30/2013	UT
Dalapon	7/1/2012	11/30/2013	UT
Dicamba	7/1/2012	11/30/2013	UT
Dichloroprop (Dichlorprop)	7/1/2012	11/30/2013	UT
MCPA	7/1/2012	11/30/2013	UT
MCPP	7/1/2012	11/30/2013	UT
Silvex (2,4,5-TP)	7/1/2012	11/30/2013	UT
Method EPA 900			
Gross-alpha	7/1/2012	11/30/2013	UT
Gross-beta	7/1/2012	11/30/2013	UT
Method EPA 901.1			
Gamma Emitters	7/1/2012	11/30/2013	UT
Method EPA 903			
Radium-226	7/1/2012	11/30/2013	UT
Total radium	7/1/2012	11/30/2013	UT
Method EPA 903.1			
Radium-226	7/1/2012	11/30/2013	UT
Method EPA 904			
Radium-228	7/1/2012	11/30/2013	UT
Method EPA 906.0			
Tritium	7/1/2012	11/30/2013	UT
Method HASL 300 U-02-RC			
Uranium	7/1/2012	11/30/2013	UT
Method SM 2320 B			
Alkalinity as CaCO3	7/1/2012	11/30/2013	UT
Method SM 2340 B			
Total hardness as CaCO3	7/1/2012	11/30/2013	UT
Method SM 2510 B			
Conductivity	7/1/2012	11/30/2013	UT
Method SM 2540 B			
Residue-total	7/1/2012	11/30/2013	UT
Method SM 2540 C			
Residue-filterable (TDS)	7/1/2012	11/30/2013	UT
Method SM 2540 D			
Residue-nonfilterable (TSS)	7/1/2012	11/30/2013	UT
Method SM 3500-Cr D			
Chromium VI	7/1/2012	11/30/2013	UT
Method SM 4500-CN^- C			
Cyanide	7/1/2012	11/30/2013	UT
Method SM 4500-CN^- E			
Cyanide	7/1/2012	11/30/2013	UT
Method SM 4500-CN^- G			
Cyanide	7/1/2012	11/30/2013	UT

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	Start Date	Expires	AB
Program/Matrix: ***CWA (Non Potable Water)***			
Method SM 4500-F^- C			
Fluoride	7/1/2012	11/30/2013	UT
Method SM 4500-H+ B			
pH	7/1/2012	11/30/2013	UT
Method SM 4500-NH3 H			
Ammonia as N	7/1/2012	11/30/2013	UT
Method SM 4500-$NO2^-$ B			
Nitrite as N	7/1/2012	11/30/2013	UT
Method SM 4500-P E			
Orthophosphate as P	7/1/2012	11/30/2013	UT
Phosphorus, total	7/1/2012	11/30/2013	UT
Method SM 4500-$S2^-$ F			
Sulfide	7/1/2012	11/30/2013	UT
Method SM 5310 C			
Total organic carbon	7/1/2012	11/30/2013	UT
Method SM 7500-3H B			
Tritium	7/1/2012	11/30/2013	UT
Method SM 7500-Rn B			
Radon-222	7/1/2012	11/30/2013	UT

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Program/Matrix: ***RCRA (Non Potable Water)***			
Method ASTM D3972-90			
Thorium-228	7/1/2012	11/30/2013	UT
Thorium-230	7/1/2012	11/30/2013	UT
Thorium-232	7/1/2012	11/30/2013	UT
Method EPA 053917 p. 33 EMSL LV			
Thorium-228	7/1/2012	11/30/2013	UT
Thorium-230	7/1/2012	11/30/2013	UT
Thorium-232	7/1/2012	11/30/2013	UT
Method EPA 1010A			
Ignitability	7/1/2012	11/30/2013	UT
Method EPA 1110A			
Corrosivity toward steel	7/1/2012	11/30/2013	UT
Method EPA 1311			
Toxicity Characteristic Leaching Procedure Metals	7/1/2012	11/30/2013	UT
Toxicity Characteristic Leaching Procedure Semi-Volatiles	7/1/2012	11/30/2013	UT
Toxicity Characteristic Leaching Procedure Volatiles	7/1/2012	11/30/2013	UT
Method EPA 1312			
Preparation/Extraction	7/1/2012	11/30/2013	UT
Method EPA 1664A			
Total recoverable petroleum hydrocarbons (TRPH)	7/1/2012	11/30/2013	UT
Method EPA 1664A (HEM)			
Oil & Grease	7/1/2012	11/30/2013	UT
Method EPA 3005A			
Preparation/Extraction	7/1/2012	11/30/2013	UT
Method EPA 3010A			
Preparation/Extraction	7/1/2012	11/30/2013	UT
Method EPA 3510C			
Preparation/Extraction	7/1/2012	11/30/2013	UT
Method EPA 3520C			
Preparation/Extraction	7/1/2012	11/30/2013	UT
Method EPA 3620B			
Preparation/Extraction	7/1/2012	11/30/2013	UT
Method EPA 3630C			
Preparation/Extraction	7/1/2012	11/30/2013	UT
Method EPA 3640A			
Preparation/Extraction	7/1/2012	11/30/2013	UT
Method EPA 3660A			
Preparation/Extraction	7/1/2012	11/30/2013	UT
Method EPA 5030C			
Preparation/Extraction	7/1/2012	11/30/2013	UT
Method EPA 6010B			
Aluminum	7/1/2012	11/30/2013	UT
Antimony	7/1/2012	11/30/2013	UT
Arsenic	7/1/2012	11/30/2013	UT

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	Start Date	Expires	AB
Program/Matrix: ***RCRA (Non Potable Water)***			
Barium	7/1/2012	11/30/2013	UT
Beryllium	7/1/2012	11/30/2013	UT
Boron	7/1/2012	11/30/2013	UT
Cadmium	7/1/2012	11/30/2013	UT
Calcium	7/1/2012	11/30/2013	UT
Chromium	7/1/2012	11/30/2013	UT
Cobalt	7/1/2012	11/30/2013	UT
Copper	7/1/2012	11/30/2013	UT
Iron	7/1/2012	11/30/2013	UT
Lead	7/1/2012	11/30/2013	UT
Lithium	7/1/2012	11/30/2013	UT
Magnesium	7/1/2012	11/30/2013	UT
Manganese	7/1/2012	11/30/2013	UT
Molybdenum	7/1/2012	11/30/2013	UT
Nickel	7/1/2012	11/30/2013	UT
Phosphorus, total	7/1/2012	11/30/2013	UT
Potassium	7/1/2012	11/30/2013	UT
Selenium	7/1/2012	11/30/2013	UT
Silica as SiO2	7/1/2012	11/30/2013	UT
Silicon	7/1/2012	11/30/2013	UT
Silver	7/1/2012	11/30/2013	UT
Sodium	7/1/2012	11/30/2013	UT
Strontium	7/1/2012	11/30/2013	UT
Thallium	7/1/2012	11/30/2013	UT
Tin	7/1/2012	11/30/2013	UT
Titanium	7/1/2012	11/30/2013	UT
Vanadium	7/1/2012	11/30/2013	UT
Zinc	7/1/2012	11/30/2013	UT
Method EPA 6020A			
Aluminum	7/1/2012	11/30/2013	UT
Antimony	7/1/2012	11/30/2013	UT
Arsenic	7/1/2012	11/30/2013	UT
Cadmium	7/1/2012	11/30/2013	UT
Calcium	7/1/2012	11/30/2013	UT
Copper	7/1/2012	11/30/2013	UT
Iron	7/1/2012	11/30/2013	UT
Lead	7/1/2012	11/30/2013	UT
Magnesium	7/1/2012	11/30/2013	UT
Molybdenum	7/1/2012	11/30/2013	UT
Nickel	7/1/2012	11/30/2013	UT
Potassium	7/1/2012	11/30/2013	UT
Selenium	7/1/2012	11/30/2013	UT
Silver	7/1/2012	11/30/2013	UT
Strontium	7/1/2012	11/30/2013	UT
Thallium	7/1/2012	11/30/2013	UT
Thorium	7/1/2012	11/30/2013	UT
Uranium	7/1/2012	11/30/2013	UT
Vanadium	7/1/2012	11/30/2013	UT

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	Start Date	Expires	AB
Program/Matrix: ***RCRA (Non Potable Water)***			
Method EPA 7196A			
Chromium VI	7/1/2012	11/30/2013	UT
Method EPA 7470A			
Mercury	7/1/2012	11/30/2013	UT
Method EPA 8015D			
Diesel range organics (DRO)	7/1/2012	11/30/2013	UT
Ethylene glycol	7/1/2012	11/30/2013	UT
Gasoline range organics (GRO)	7/1/2012	11/30/2013	UT
Method EPA 8081A			
4,4'-DDD	7/1/2012	11/30/2013	UT
4,4'-DDE	7/1/2012	11/30/2013	UT
4,4'-DDT	7/1/2012	11/30/2013	UT
Aldrin	7/1/2012	11/30/2013	UT
alpha-BHC (alpha-Hexachlorocyclohexane)	7/1/2012	11/30/2013	UT
alpha-Chlordane	7/1/2012	11/30/2013	UT
beta-BHC (beta-Hexachlorocyclohexane)	7/1/2012	11/30/2013	UT
Chlordane (tech.)	7/1/2012	11/30/2013	UT
delta-BHC	7/1/2012	11/30/2013	UT
Dieldrin	7/1/2012	11/30/2013	UT
Endosulfan I	7/1/2012	11/30/2013	UT
Endosulfan II	7/1/2012	11/30/2013	UT
Endosulfan sulfate	7/1/2012	11/30/2013	UT
Endrin	7/1/2012	11/30/2013	UT
Endrin aldehyde	7/1/2012	11/30/2013	UT
Endrin ketone	7/1/2012	11/30/2013	UT
gamma-BHC (Lindane, gamma-HexachlorocyclohexanE)	7/1/2012	11/30/2013	UT
gamma-Chlordane	7/1/2012	11/30/2013	UT
Heptachlor	7/1/2012	11/30/2013	UT
Heptachlor epoxide	7/1/2012	11/30/2013	UT
Methoxychlor	7/1/2012	11/30/2013	UT
Toxaphene (Chlorinated camphene)	7/1/2012	11/30/2013	UT
Method EPA 8082			
Aroclor-1016 (PCB-1016)	7/1/2012	11/30/2013	UT
Aroclor-1221 (PCB-1221)	7/1/2012	11/30/2013	UT
Aroclor-1232 (PCB-1232)	7/1/2012	11/30/2013	UT
Aroclor-1242 (PCB-1242)	7/1/2012	11/30/2013	UT
Aroclor-1248 (PCB-1248)	7/1/2012	11/30/2013	UT
Aroclor-1254 (PCB-1254)	7/1/2012	11/30/2013	UT
Aroclor-1260 (PCB-1260)	7/1/2012	11/30/2013	UT
Aroclor-1268 (PCB-1268)	7/1/2012	11/30/2013	UT
PCBs	7/1/2012	11/30/2013	UT
Method EPA 8141A			
Azinphos-methyl (Guthion)	7/1/2012	11/30/2013	UT
Bolstar (Sulprofos)	7/1/2012	11/30/2013	UT
Chlorpyrifos	7/1/2012	11/30/2013	UT
Coumaphos	7/1/2012	11/30/2013	UT
Demeton-o	7/1/2012	11/30/2013	UT

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	Start Date	Expires	AB
Program/Matrix: ***RCRA (Non Potable Water)***			
Demeton-s	7/1/2012	11/30/2013	UT
Diazinon	7/1/2012	11/30/2013	UT
Dichlorovos (DDVP, Dichlorvos)	7/1/2012	11/30/2013	UT
Disulfoton	7/1/2012	11/30/2013	UT
Ethoprop	7/1/2012	11/30/2013	UT
Fensulfothion	7/1/2012	11/30/2013	UT
Fenthion	7/1/2012	11/30/2013	UT
Malathion	7/1/2012	11/30/2013	UT
Merphos	7/1/2012	11/30/2013	UT
Methyl parathion (Parathion, methyl)	7/1/2012	11/30/2013	UT
Mevinphos	7/1/2012	11/30/2013	UT
Naled	7/1/2012	11/30/2013	UT
Phorate	7/1/2012	11/30/2013	UT
Ronnel	7/1/2012	11/30/2013	UT
Tetrachlorvinphos (Stirophos, Gardona) Z-isomer	7/1/2012	11/30/2013	UT
Tokuthion (Prothiophos)	7/1/2012	11/30/2013	UT
Trichloronate	7/1/2012	11/30/2013	UT
Method EPA 8151A			
2,4,5-T	7/1/2012	11/30/2013	UT
2,4-D	7/1/2012	11/30/2013	UT
2,4-DB	7/1/2012	11/30/2013	UT
Dalapon	7/1/2012	11/30/2013	UT
Dicamba	7/1/2012	11/30/2013	UT
Dichloroprop (Dichlorprop)	7/1/2012	11/30/2013	UT
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	7/1/2012	11/30/2013	UT
MCPA	7/1/2012	11/30/2013	UT
MCPP	7/1/2012	11/30/2013	UT
Silvex (2,4,5-TP)	7/1/2012	11/30/2013	UT
Method EPA 8260C			
1,1,1,2-Tetrachloroethane	7/1/2012	11/30/2013	UT
1,1,1-Trichloroethane	7/1/2012	11/30/2013	UT
1,1,2,2-Tetrachloroethane	7/1/2012	11/30/2013	UT
1,1,2-Trichloroethane	7/1/2012	11/30/2013	UT
1,1-Dichloroethane	7/1/2012	11/30/2013	UT
1,1-Dichloroethylene	7/1/2012	11/30/2013	UT
1,2,3-Trichlorobenzene	7/1/2012	11/30/2013	UT
1,2,3-Trichloropropane	7/1/2012	11/30/2013	UT
1,2,3-Trimethylbenzene	7/1/2012	11/30/2013	UT
1,2,4-Trichlorobenzene	7/1/2012	11/30/2013	UT
1,2-Dibromo-3-chloropropane (DBCP)	7/1/2012	11/30/2013	UT
1,2-Dibromoethane (EDB, Ethylene dibromide)	7/1/2012	11/30/2013	UT
1,2-Dichlorobenzene (o-Dichlorobenzene)	7/1/2012	11/30/2013	UT
1,2-Dichloroethane (Ethylene dichloride)	7/1/2012	11/30/2013	UT
1,2-Dichloropropane	7/1/2012	11/30/2013	UT
1,3,5-Trimethylbenzene	7/1/2012	11/30/2013	UT
1,3-Dichlorobenzene	7/1/2012	11/30/2013	UT
1,3-Dichloropropane	7/1/2012	11/30/2013	UT
1,4-Dichlorobenzene	7/1/2012	11/30/2013	UT

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	Start Date	Expires	AB
Program/Matrix: ***RCRA (Non Potable Water)***			
1,4-Dioxane (1,4- Diethyleneoxide)	7/1/2012	11/30/2013	UT
1-Chlorobutane	1/23/2013	11/30/2013	UT
1-Chlorohexane	7/1/2012	11/30/2013	UT
2,2-Dichloropropane	7/1/2012	11/30/2013	UT
2-Butanone (Methyl ethyl ketone, MEK)	7/1/2012	11/30/2013	UT
2-Chloroethyl vinyl ether	7/1/2012	11/30/2013	UT
2-Chlorotoluene	7/1/2012	11/30/2013	UT
2-Hexanone	7/1/2012	11/30/2013	UT
4-Chlorotoluene	7/1/2012	11/30/2013	UT
4-Isopropyltoluene (p-Cymene,p-Isopropyltoluene)	7/1/2012	11/30/2013	UT
4-Methyl-2-pentanone (MIBK)	7/1/2012	11/30/2013	UT
Acetone	7/1/2012	11/30/2013	UT
Acetonitrile	7/1/2012	11/30/2013	UT
Acrolein (Propenal)	7/1/2012	11/30/2013	UT
Acrylonitrile	7/1/2012	11/30/2013	UT
Allyl chloride (3-Chloropropene)	7/1/2012	11/30/2013	UT
Benzene	7/1/2012	11/30/2013	UT
Bromobenzene	7/1/2012	11/30/2013	UT
Bromochloromethane	7/1/2012	11/30/2013	UT
Bromodichloromethane	7/1/2012	11/30/2013	UT
Bromoform	7/1/2012	11/30/2013	UT
Carbon disulfide	7/1/2012	11/30/2013	UT
Carbon tetrachloride	7/1/2012	11/30/2013	UT
Chloroacetonitrile	1/23/2013	11/30/2013	UT
Chlorobenzene	7/1/2012	11/30/2013	UT
Chlorodibromomethane	7/1/2012	11/30/2013	UT
Chloroethane (Ethyl chloride)	7/1/2012	11/30/2013	UT
Chloroform	7/1/2012	11/30/2013	UT
Chloroprene (2-Chloro-1,3-butadiene)	7/1/2012	11/30/2013	UT
cis-1,2-Dichloroethylene	7/1/2012	11/30/2013	UT
cis-1,3-Dichloropropene	7/1/2012	11/30/2013	UT
Dibromomethane (Methylene bromide)	7/1/2012	11/30/2013	UT
Dichlorodifluoromethane (Freon-12)	7/1/2012	11/30/2013	UT
Diethyl ether	7/1/2012	11/30/2013	UT
Ethanol	7/1/2012	11/30/2013	UT
Ethyl methacrylate	7/1/2012	11/30/2013	UT
Ethylbenzene	7/1/2012	11/30/2013	UT
Hexachlorobutadiene	7/1/2012	11/30/2013	UT
Hexachloroethane	7/1/2012	11/30/2013	UT
Iodomethane (Methyl iodide)	7/1/2012	11/30/2013	UT
Isobutyl alcohol (2-Methyl-1-propanol)	7/1/2012	11/30/2013	UT
Isopropylbenzene	7/1/2012	11/30/2013	UT
Methacrylonitrile	7/1/2012	11/30/2013	UT
Methyl acrylate	1/23/2013	11/30/2013	UT
Methyl bromide (Bromomethane)	7/1/2012	11/30/2013	UT
Methyl chloride (Chloromethane)	7/1/2012	11/30/2013	UT
Methyl methacrylate	7/1/2012	11/30/2013	UT
Methyl tert-butyl ether (MTBE)	7/1/2012	11/30/2013	UT
Methylene chloride (Dichloromethane)	7/1/2012	11/30/2013	UT

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	Start Date	Expires	AB
Program/Matrix: *RCRA (Non Potable Water)*			
m-Xylene	7/1/2012	11/30/2013	UT
Naphthalene	7/1/2012	11/30/2013	UT
n-Butyl alcohol (1-Butanol, n-Butanol)	7/1/2012	11/30/2013	UT
n-Butylbenzene	7/1/2012	11/30/2013	UT
n-Propylbenzene	7/1/2012	11/30/2013	UT
o-Xylene	7/1/2012	11/30/2013	UT
Pentafluorobenzene	1/23/2013	11/30/2013	UT
Propionitrile (Ethyl cyanide)	7/1/2012	11/30/2013	UT
p-Xylene	7/1/2012	11/30/2013	UT
sec-Butylbenzene	7/1/2012	11/30/2013	UT
Styrene	7/1/2012	11/30/2013	UT
Tetrachloroethylene (Perchloroethylene)	7/1/2012	11/30/2013	UT
Toluene	7/1/2012	11/30/2013	UT
trans-1,2-Dichloroethylene	7/1/2012	11/30/2013	UT
trans-1,3-Dichloropropylene	7/1/2012	11/30/2013	UT
trans-1,4-Dichloro-2-butene	7/1/2012	11/30/2013	UT
Trichloroethene (Trichloroethylene)	7/1/2012	11/30/2013	UT
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	7/1/2012	11/30/2013	UT
Vinyl acetate	7/1/2012	11/30/2013	UT
Vinyl chloride	7/1/2012	11/30/2013	UT
Xylene (total)	7/1/2012	11/30/2013	UT
Method EPA 8270D			
1,2,4,5-Tetrachlorobenzene	7/1/2012	11/30/2013	UT
1,2,4-Trichlorobenzene	7/1/2012	11/30/2013	UT
1,2-Dichlorobenzene (o-Dichlorobenzene)	7/1/2012	11/30/2013	UT
1,2-Dinitrobenzene	7/1/2012	11/30/2013	UT
1,3,5-Trinitrobenzene (1,3,5-TNB)	7/1/2012	11/30/2013	UT
1,3-Dichlorobenzene	7/1/2012	11/30/2013	UT
1,3-Dinitrobenzene (1,3-DNB)	7/1/2012	11/30/2013	UT
1,4-Dichlorobenzene	7/1/2012	11/30/2013	UT
1,4-Dinitrobenzene	7/1/2012	11/30/2013	UT
1-Methylnaphthalene	7/1/2012	11/30/2013	UT
1-Naphthylamine	7/1/2012	11/30/2013	UT
2,3,4,6-Tetrachlorophenol	7/1/2012	11/30/2013	UT
2,4,5-Trichlorophenol	7/1/2012	11/30/2013	UT
2,4,6-Trichlorophenol	7/1/2012	11/30/2013	UT
2,4-Dichlorophenol	7/1/2012	11/30/2013	UT
2,4-Dimethylphenol	7/1/2012	11/30/2013	UT
2,4-Dinitrophenol	7/1/2012	11/30/2013	UT
2,4-Dinitrotoluene (2,4-DNT)	7/1/2012	11/30/2013	UT
2,6-Dichlorophenol	7/1/2012	11/30/2013	UT
2,6-Dinitrotoluene (2,6-DNT)	7/1/2012	11/30/2013	UT
2-Acetylaminofluorene	7/1/2012	11/30/2013	UT
2-Chloronaphthalene	7/1/2012	11/30/2013	UT
2-Chlorophenol	7/1/2012	11/30/2013	UT
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	7/1/2012	11/30/2013	UT
2-Methylnaphthalene	7/1/2012	11/30/2013	UT
2-Methylphenol (o-Cresol)	7/1/2012	11/30/2013	UT

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	Start Date	Expires	AB
Program/Matrix: *RCRA (Non Potable Water)*			
2-Naphthylamine	7/1/2012	11/30/2013	UT
2-Nitroaniline	7/1/2012	11/30/2013	UT
2-Nitrophenol	7/1/2012	11/30/2013	UT
3,3'-Dichlorobenzidine	7/1/2012	11/30/2013	UT
3-Methylcholanthrene	7/1/2012	11/30/2013	UT
3-Methylphenol (m-Cresol)	7/1/2012	11/30/2013	UT
3-Nitroaniline	7/1/2012	11/30/2013	UT
4-Bromophenyl phenyl ether	7/1/2012	11/30/2013	UT
4-Chloro-3-methylphenol	7/1/2012	11/30/2013	UT
4-Chloroaniline	7/1/2012	11/30/2013	UT
4-Chlorophenyl phenylether	7/1/2012	11/30/2013	UT
4-Methylphenol (p-Cresol)	7/1/2012	11/30/2013	UT
4-Nitroaniline	7/1/2012	11/30/2013	UT
4-Nitrophenol	7/1/2012	11/30/2013	UT
5-Nitro-o-toluidine	7/1/2012	11/30/2013	UT
7,12-Dimethylbenz(a) anthracene	7/1/2012	11/30/2013	UT
Acenaphthene	7/1/2012	11/30/2013	UT
Acenaphthylene	7/1/2012	11/30/2013	UT
Acetophenone	7/1/2012	11/30/2013	UT
Aniline	7/1/2012	11/30/2013	UT
Anthracene	7/1/2012	11/30/2013	UT
Azobenzene (1,2-Diphenylhydrazine)	7/1/2012	11/30/2013	UT
Benzidine	7/1/2012	11/30/2013	UT
Benzo(a)anthracene	7/1/2012	11/30/2013	UT
Benzo(a)pyrene	7/1/2012	11/30/2013	UT
Benzo(b)fluoranthene	7/1/2012	11/30/2013	UT
Benzo(g,h,i)perylene	7/1/2012	11/30/2013	UT
Benzo(k)fluoranthene	7/1/2012	11/30/2013	UT
Benzoic acid	7/1/2012	11/30/2013	UT
Benzyl alcohol	7/1/2012	11/30/2013	UT
bis(2-Chloroethoxy)methane	7/1/2012	11/30/2013	UT
bis(2-Chloroethyl) ether	7/1/2012	11/30/2013	UT
bis(2-Chloroisopropyl) ether	7/1/2012	11/30/2013	UT
bis(2-Ethylhexyl) phthalate (DEHP)	7/1/2012	11/30/2013	UT
Butyl benzyl phthalate	7/1/2012	11/30/2013	UT
Carbazole	7/1/2012	11/30/2013	UT
Chrysene	7/1/2012	11/30/2013	UT
Dibenz(a,h) anthracene	7/1/2012	11/30/2013	UT
Dibenzofuran	7/1/2012	11/30/2013	UT
Diethyl phthalate	7/1/2012	11/30/2013	UT
Dimethyl phthalate	7/1/2012	11/30/2013	UT
Di-n-butyl phthalate	7/1/2012	11/30/2013	UT
Di-n-octyl phthalate	7/1/2012	11/30/2013	UT
Ethyl methanesulfonate	7/1/2012	11/30/2013	UT
Fluoranthene	7/1/2012	11/30/2013	UT
Fluorene	7/1/2012	11/30/2013	UT
Hexachlorobenzene	7/1/2012	11/30/2013	UT
Hexachlorobutadiene	7/1/2012	11/30/2013	UT
Hexachlorocyclopentadiene	7/1/2012	11/30/2013	UT

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	Start Date	Expires	AB
Program/Matrix: ***RCRA (Non Potable Water)***			
Hexachloroethane	7/1/2012	11/30/2013	UT
Hexachloropropene	7/1/2012	11/30/2013	UT
Indeno(1,2,3-cd) pyrene	7/1/2012	11/30/2013	UT
Isophorone	7/1/2012	11/30/2013	UT
Isosafrole	7/1/2012	11/30/2013	UT
Methyl methanesulfonate	7/1/2012	11/30/2013	UT
Naphthalene	7/1/2012	11/30/2013	UT
Nitrobenzene	7/1/2012	11/30/2013	UT
n-Nitrosodiethylamine	7/1/2012	11/30/2013	UT
n-Nitrosodimethylamine	7/1/2012	11/30/2013	UT
n-Nitroso-di-n-butylamine	7/1/2012	11/30/2013	UT
n-Nitrosodi-n-propylamine	7/1/2012	11/30/2013	UT
n-Nitrosodiphenylamine	7/1/2012	11/30/2013	UT
n-Nitrosomethylethalamine	7/1/2012	11/30/2013	UT
n-Nitrosomorpholine	7/1/2012	11/30/2013	UT
n-Nitrosopiperidine	7/1/2012	11/30/2013	UT
n-Nitrosopyrrolidine	7/1/2012	11/30/2013	UT
Pentachlorobenzene	7/1/2012	11/30/2013	UT
Pentachloronitrobenzene	7/1/2012	11/30/2013	UT
Pentachlorophenol	7/1/2012	11/30/2013	UT
Phenacetin	7/1/2012	11/30/2013	UT
Phenanthrene	7/1/2012	11/30/2013	UT
Phenol	7/1/2012	11/30/2013	UT
Pyrene	7/1/2012	11/30/2013	UT
Pyridine	7/1/2012	11/30/2013	UT
Safrole	7/1/2012	11/30/2013	UT
Method EPA 901.1			
Cesium-134	7/1/2012	11/30/2013	UT
Cesium-137	7/1/2012	11/30/2013	UT
Cobalt-60	7/1/2012	11/30/2013	UT
Method EPA 9010C			
Cyanide	7/1/2012	11/30/2013	UT
Method EPA 9013A			
Preparation/Extraction	7/1/2012	11/30/2013	UT
Method EPA 9014			
Cyanide	7/1/2012	11/30/2013	UT
Method EPA 9034			
Total sulfides	7/1/2012	11/30/2013	UT
Method EPA 9040C			
pH	7/1/2012	11/30/2013	UT
Method EPA 9050A			
Conductivity	7/1/2012	11/30/2013	UT
Method EPA 9056A			
Bromide	7/1/2012	11/30/2013	UT
Chloride	7/1/2012	11/30/2013	UT
Fluoride	7/1/2012	11/30/2013	UT
Nitrate as N	7/1/2012	11/30/2013	UT

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	Start Date	Expires	AB
Program/Matrix: *RCRA (Non Potable Water)*			
Nitrite as N	7/1/2012	11/30/2013	UT
Orthophosphate as P	7/1/2012	11/30/2013	UT
Sulfate	7/1/2012	11/30/2013	UT
Method EPA 906.0			
Tritium	7/1/2012	11/30/2013	UT
Method EPA 9060A			
Total organic carbon	7/1/2012	11/30/2013	UT
Method EPA 9214			
Fluoride	7/1/2012	11/30/2013	UT
Method EPA 9310			
Gross alpha-beta	7/1/2012	11/30/2013	UT
Method EPA 9315			
Total alpha radium	7/1/2012	11/30/2013	UT
Method EPA 9320			
Radium-228	7/1/2012	11/30/2013	UT
Method EPA RSK-175 (GC/FID)			
Ethane	7/1/2012	11/30/2013	UT
Ethene	7/1/2012	11/30/2013	UT
Methane	7/1/2012	11/30/2013	UT
n-Propane	7/1/2012	11/30/2013	UT
Method HASL 300 Ga-01-R sec 4.5.2.3			
Cesium-134	7/1/2012	11/30/2013	UT
Cesium-137	7/1/2012	11/30/2013	UT
Cobalt-60	7/1/2012	11/30/2013	UT
Method HASL 300 Sr-01-RC (GPC)			
Strontium-89, 90	7/1/2012	11/30/2013	UT
Method HASL 300 U-02-RC			
Americium-241	7/1/2012	11/30/2013	UT
Plutonium	7/1/2012	11/30/2013	UT
Thorium-228	7/1/2012	11/30/2013	UT
Thorium-230	7/1/2012	11/30/2013	UT
Thorium-232	7/1/2012	11/30/2013	UT
Method SM 7500-Ra C (SC)			
Radium-226	7/1/2012	11/30/2013	UT

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	Start Date	Expires	AB
Program/Matrix: *RCRA (Solid & Hazardous Material)*			
Method ASTM D3972-90			
Thorium-228	7/1/2012	11/30/2013	UT
Thorium-230	7/1/2012	11/30/2013	UT
Thorium-232	7/1/2012	11/30/2013	UT
Method EPA 053917 p. 33 EMSL LV			
Thorium-228	7/1/2012	11/30/2013	UT
Thorium-230	7/1/2012	11/30/2013	UT
Thorium-232	7/1/2012	11/30/2013	UT
Method EPA 1010A			
Ignitability	7/1/2012	11/30/2013	UT
Method EPA 1110A			
Corrosivity toward steel	7/1/2012	11/30/2013	UT
Method EPA 1311			
Toxicity Characteristic Leaching Procedure Metals	7/1/2012	11/30/2013	UT
Toxicity Characteristic Leaching Procedure Semi-Volatiles	7/1/2012	11/30/2013	UT
Toxicity Characteristic Leaching Procedure Volatiles	7/1/2012	11/30/2013	UT
Method EPA 1312			
Preparation/Extraction	7/1/2012	11/30/2013	UT
Method EPA 3050B			
Preparation/Extraction	7/1/2012	11/30/2013	UT
Method EPA 3060A			
Preparation/Extraction	7/1/2012	11/30/2013	UT
Method EPA 3540C			
Preparation/Extraction	7/1/2012	11/30/2013	UT
Method EPA 3580A			
Preparation/Extraction	7/1/2012	11/30/2013	UT
Method EPA 3620B			
Preparation/Extraction	7/1/2012	11/30/2013	UT
Method EPA 3630C			
Preparation/Extraction	7/1/2012	11/30/2013	UT
Method EPA 3640A			
Preparation/Extraction	7/1/2012	11/30/2013	UT
Method EPA 3660A			
Preparation/Extraction	7/1/2012	11/30/2013	UT
Method EPA 5035A			
Preparation/Extraction	1/23/2013	11/30/2013	UT
Method EPA 6010B			
Aluminum	7/1/2012	11/30/2013	UT
Antimony	7/1/2012	11/30/2013	UT
Arsenic	7/1/2012	11/30/2013	UT
Barium	7/1/2012	11/30/2013	UT
Beryllium	7/1/2012	11/30/2013	UT
Boron	7/1/2012	11/30/2013	UT
Cadmium	7/1/2012	11/30/2013	UT
Calcium	7/1/2012	11/30/2013	UT

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	Start Date	Expires	AB
Program/Matrix: ***RCRA (Solid & Hazardous Material)***			
Chromium	7/1/2012	11/30/2013	UT
Cobalt	7/1/2012	11/30/2013	UT
Copper	7/1/2012	11/30/2013	UT
Iron	7/1/2012	11/30/2013	UT
Lead	7/1/2012	11/30/2013	UT
Lithium	7/1/2012	11/30/2013	UT
Magnesium	7/1/2012	11/30/2013	UT
Manganese	7/1/2012	11/30/2013	UT
Molybdenum	7/1/2012	11/30/2013	UT
Nickel	7/1/2012	11/30/2013	UT
Phosphorus, total	7/1/2012	11/30/2013	UT
Potassium	7/1/2012	11/30/2013	UT
Selenium	7/1/2012	11/30/2013	UT
Silica as SiO2	7/1/2012	11/30/2013	UT
Silicon	7/1/2012	11/30/2013	UT
Silver	7/1/2012	11/30/2013	UT
Sodium	7/1/2012	11/30/2013	UT
Strontium	7/1/2012	11/30/2013	UT
Thallium	7/1/2012	11/30/2013	UT
Tin	7/1/2012	11/30/2013	UT
Titanium	7/1/2012	11/30/2013	UT
Vanadium	7/1/2012	11/30/2013	UT
Zinc	7/1/2012	11/30/2013	UT
Method EPA 6020A			
Aluminum	7/1/2012	11/30/2013	UT
Antimony	7/1/2012	11/30/2013	UT
Arsenic	7/1/2012	11/30/2013	UT
Cadmium	7/1/2012	11/30/2013	UT
Calcium	7/1/2012	11/30/2013	UT
Copper	7/1/2012	11/30/2013	UT
Iron	7/1/2012	11/30/2013	UT
Lead	7/1/2012	11/30/2013	UT
Magnesium	7/1/2012	11/30/2013	UT
Molybdenum	7/1/2012	11/30/2013	UT
Nickel	7/1/2012	11/30/2013	UT
Potassium	7/1/2012	11/30/2013	UT
Selenium	7/1/2012	11/30/2013	UT
Silver	7/1/2012	11/30/2013	UT
Strontium	7/1/2012	11/30/2013	UT
Thallium	7/1/2012	11/30/2013	UT
Thorium	7/1/2012	11/30/2013	UT
Uranium	7/1/2012	11/30/2013	UT
Vanadium	7/1/2012	11/30/2013	UT
Method EPA 7196A			
Chromium VI	7/1/2012	11/30/2013	UT
Method EPA 7471A			
Mercury	7/1/2012	11/30/2013	UT
Method EPA 8015D			

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Program/Matrix: *RCRA (Solid & Hazardous Material)*			
Diesel range organics (DRO)	7/1/2012	11/30/2013	UT
Ethylene glycol	7/1/2012	11/30/2013	UT
Gasoline range organics (GRO)	7/1/2012	11/30/2013	UT
Method EPA 8081A			
4,4'-DDD	7/1/2012	11/30/2013	UT
4,4'-DDE	7/1/2012	11/30/2013	UT
4,4'-DDT	7/1/2012	11/30/2013	UT
Aldrin	7/1/2012	11/30/2013	UT
alpha-BHC (alpha-Hexachlorocyclohexane)	7/1/2012	11/30/2013	UT
alpha-Chlordane	7/1/2012	11/30/2013	UT
beta-BHC (beta-Hexachlorocyclohexane)	7/1/2012	11/30/2013	UT
Chlordane (tech.)	7/1/2012	11/30/2013	UT
delta-BHC	7/1/2012	11/30/2013	UT
Dieldrin	7/1/2012	11/30/2013	UT
Endosulfan I	7/1/2012	11/30/2013	UT
Endosulfan II	7/1/2012	11/30/2013	UT
Endosulfan sulfate	7/1/2012	11/30/2013	UT
Endrin	7/1/2012	11/30/2013	UT
Endrin aldehyde	7/1/2012	11/30/2013	UT
Endrin ketone	7/1/2012	11/30/2013	UT
gamma-BHC (Lindane, gamma-HexachlorocyclohexanE)	7/1/2012	11/30/2013	UT
gamma-Chlordane	7/1/2012	11/30/2013	UT
Heptachlor	7/1/2012	11/30/2013	UT
Heptachlor epoxide	7/1/2012	11/30/2013	UT
Methoxychlor	7/1/2012	11/30/2013	UT
Toxaphene (Chlorinated camphene)	7/1/2012	11/30/2013	UT
Method EPA 8082			
Aroclor-1016 (PCB-1016)	7/1/2012	11/30/2013	UT
Aroclor-1221 (PCB-1221)	7/1/2012	11/30/2013	UT
Aroclor-1232 (PCB-1232)	7/1/2012	11/30/2013	UT
Aroclor-1242 (PCB-1242)	7/1/2012	11/30/2013	UT
Aroclor-1248 (PCB-1248)	7/1/2012	11/30/2013	UT
Aroclor-1254 (PCB-1254)	7/1/2012	11/30/2013	UT
Aroclor-1260 (PCB-1260)	7/1/2012	11/30/2013	UT
Aroclor-1268 (PCB-1268)	7/1/2012	11/30/2013	UT
PCBs	7/1/2012	11/30/2013	UT
Method EPA 8141A			
Azinphos-methyl (Guthion)	7/1/2012	11/30/2013	UT
Bolstar (Sulprofos)	7/1/2012	11/30/2013	UT
Chlorpyrifos	7/1/2012	11/30/2013	UT
Coumaphos	7/1/2012	11/30/2013	UT
Demeton-o	7/1/2012	11/30/2013	UT
Demeton-s	7/1/2012	11/30/2013	UT
Diazinon	7/1/2012	11/30/2013	UT
Dichlorovos (DDVP, Dichlorvos)	7/1/2012	11/30/2013	UT
Disulfoton	7/1/2012	11/30/2013	UT
Ethoprop	7/1/2012	11/30/2013	UT
Fensulfothion	7/1/2012	11/30/2013	UT

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	Start Date	Expires	AB
Program/Matrix: ***RCRA (Solid & Hazardous Material)***			
Fenthion	7/1/2012	11/30/2013	UT
Malathion	7/1/2012	11/30/2013	UT
Merphos	7/1/2012	11/30/2013	UT
Methyl parathion (Parathion, methyl)	7/1/2012	11/30/2013	UT
Mevinphos	7/1/2012	11/30/2013	UT
Naled	7/1/2012	11/30/2013	UT
Phorate	7/1/2012	11/30/2013	UT
Ronnel	7/1/2012	11/30/2013	UT
Tetrachlorvinphos (Stirophos, Gardona) Z-isomer	7/1/2012	11/30/2013	UT
Tokuthion (Prothiophos)	7/1/2012	11/30/2013	UT
Trichloronate	7/1/2012	11/30/2013	UT
Method EPA 8151A			
2,4,5-T	7/1/2012	11/30/2013	UT
2,4-D	7/1/2012	11/30/2013	UT
2,4-DB	7/1/2012	11/30/2013	UT
Dalapon	7/1/2012	11/30/2013	UT
Dicamba	7/1/2012	11/30/2013	UT
Dichloroprop (Dichlorprop)	7/1/2012	11/30/2013	UT
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	7/1/2012	11/30/2013	UT
MCPA	7/1/2012	11/30/2013	UT
MCPP	7/1/2012	11/30/2013	UT
Silvex (2,4,5-TP)	7/1/2012	11/30/2013	UT
Method EPA 8260C			
1,1,1,2-Tetrachloroethane	7/1/2012	11/30/2013	UT
1,1,1-Trichloroethane	7/1/2012	11/30/2013	UT
1,1,2,2-Tetrachloroethane	7/1/2012	11/30/2013	UT
1,1,2-Trichloroethane	7/1/2012	11/30/2013	UT
1,1-Dichloroethane	7/1/2012	11/30/2013	UT
1,1-Dichloroethylene	7/1/2012	11/30/2013	UT
1,2,3-Trichlorobenzene	7/1/2012	11/30/2013	UT
1,2,3-Trichloropropane	7/1/2012	11/30/2013	UT
1,2,3-Trimethylbenzene	7/1/2012	11/30/2013	UT
1,2,4-Trichlorobenzene	7/1/2012	11/30/2013	UT
1,2-Dibromo-3-chloropropane (DBCP)	7/1/2012	11/30/2013	UT
1,2-Dibromoethane (EDB, Ethylene dibromide)	7/1/2012	11/30/2013	UT
1,2-Dichlorobenzene (o-Dichlorobenzene)	7/1/2012	11/30/2013	UT
1,2-Dichloroethane (Ethylene dichloride)	7/1/2012	11/30/2013	UT
1,2-Dichloropropane	7/1/2012	11/30/2013	UT
1,3,5-Trimethylbenzene	7/1/2012	11/30/2013	UT
1,3-Dichlorobenzene	7/1/2012	11/30/2013	UT
1,3-Dichloropropene	7/1/2012	11/30/2013	UT
1,4-Dichlorobenzene	7/1/2012	11/30/2013	UT
1,4-Dioxane (1,4- Diethyleneoxide)	7/1/2012	11/30/2013	UT
1-Chlorobutane	1/23/2013	11/30/2013	UT
1-Chlorohexane	7/1/2012	11/30/2013	UT
2,2-Dichloropropane	7/1/2012	11/30/2013	UT
2-Butanone (Methyl ethyl ketone, MEK)	7/1/2012	11/30/2013	UT
2-Chloroethyl vinyl ether	7/1/2012	11/30/2013	UT

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	Start Date	Expires	AB
Program/Matrix: ***RCRA (Solid & Hazardous Material)***			
2-Chlorotoluene	7/1/2012	11/30/2013	UT
2-Hexanone	7/1/2012	11/30/2013	UT
4-Chlorotoluene	7/1/2012	11/30/2013	UT
4-Isopropyltoluene (p-Cymene,p-Isopropyltoluene)	7/1/2012	11/30/2013	UT
4-Methyl-2-pentanone (MIBK)	7/1/2012	11/30/2013	UT
Acetone	7/1/2012	11/30/2013	UT
Acetonitrile	7/1/2012	11/30/2013	UT
Acrolein (Propenal)	7/1/2012	11/30/2013	UT
Acrylonitrile	7/1/2012	11/30/2013	UT
Allyl chloride (3-Chloropropene)	7/1/2012	11/30/2013	UT
Benzene	7/1/2012	11/30/2013	UT
Bromobenzene	7/1/2012	11/30/2013	UT
Bromochloromethane	7/1/2012	11/30/2013	UT
Bromodichloromethane	7/1/2012	11/30/2013	UT
Bromoform	7/1/2012	11/30/2013	UT
Carbon disulfide	7/1/2012	11/30/2013	UT
Carbon tetrachloride	7/1/2012	11/30/2013	UT
Chloroacetonitrile	1/23/2013	11/30/2013	UT
Chlorobenzene	7/1/2012	11/30/2013	UT
Chlorodibromomethane	7/1/2012	11/30/2013	UT
Chloroethane (Ethyl chloride)	7/1/2012	11/30/2013	UT
Chloroform	7/1/2012	11/30/2013	UT
Chloroprene (2-Chloro-1,3-butadiene)	7/1/2012	11/30/2013	UT
cis-1,2-Dichloroethylene	7/1/2012	11/30/2013	UT
cis-1,3-Dichloropropene	7/1/2012	11/30/2013	UT
Dibromomethane (Methylene bromide)	7/1/2012	11/30/2013	UT
Dichlorodifluoromethane (Freon-12)	7/1/2012	11/30/2013	UT
Diethyl ether	7/1/2012	11/30/2013	UT
Ethanol	7/1/2012	11/30/2013	UT
Ethyl methacrylate	7/1/2012	11/30/2013	UT
Ethylbenzene	7/1/2012	11/30/2013	UT
Hexachlorobutadiene	7/1/2012	11/30/2013	UT
Hexachloroethane	7/1/2012	11/30/2013	UT
Iodomethane (Methyl iodide)	7/1/2012	11/30/2013	UT
Isobutyl alcohol (2-Methyl-1-propanol)	7/1/2012	11/30/2013	UT
Isopropylbenzene	7/1/2012	11/30/2013	UT
Methacrylonitrile	7/1/2012	11/30/2013	UT
Methyl acrylate	1/23/2013	11/30/2013	UT
Methyl bromide (Bromomethane)	7/1/2012	11/30/2013	UT
Methyl chloride (Chloromethane)	7/1/2012	11/30/2013	UT
Methyl methacrylate	7/1/2012	11/30/2013	UT
Methyl tert-butyl ether (MTBE)	7/1/2012	11/30/2013	UT
Methylene chloride (Dichloromethane)	7/1/2012	11/30/2013	UT
m-Xylene	7/1/2012	11/30/2013	UT
Naphthalene	7/1/2012	11/30/2013	UT
n-Butyl alcohol (1-Butanol, n-Butanol)	7/1/2012	11/30/2013	UT
n-Butylbenzene	7/1/2012	11/30/2013	UT
n-Propylbenzene	7/1/2012	11/30/2013	UT
o-Xylene	7/1/2012	11/30/2013	UT

ALS Laboratory Group, Environmental Division (Fort Collins, CO)

	Start Date	Expires	AB
Program/Matrix: ***RCRA (Solid & Hazardous Material)***			
Pentafluorobenzene	1/23/2013	11/30/2013	UT
Propionitrile (Ethyl cyanide)	7/1/2012	11/30/2013	UT
p-Xylene	7/1/2012	11/30/2013	UT
sec-Butylbenzene	7/1/2012	11/30/2013	UT
Styrene	7/1/2012	11/30/2013	UT
Tetrachloroethylene (Perchloroethylene)	7/1/2012	11/30/2013	UT
Toluene	7/1/2012	11/30/2013	UT
trans-1,2-Dichloroethylene	7/1/2012	11/30/2013	UT
trans-1,3-Dichloropropylene	7/1/2012	11/30/2013	UT
trans-1,4-Dichloro-2-butene	7/1/2012	11/30/2013	UT
Trichloroethene (Trichloroethylene)	7/1/2012	11/30/2013	UT
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	7/1/2012	11/30/2013	UT
Vinyl acetate	7/1/2012	11/30/2013	UT
Vinyl chloride	7/1/2012	11/30/2013	UT
Xylene (total)	7/1/2012	11/30/2013	UT
Method EPA 8270D			
1,2,4,5-Tetrachlorobenzene	7/1/2012	11/30/2013	UT
1,2,4-Trichlorobenzene	7/1/2012	11/30/2013	UT
1,2-Dichlorobenzene (o-Dichlorobenzene)	7/1/2012	11/30/2013	UT
1,2-Dinitrobenzene	7/1/2012	11/30/2013	UT
1,3,5-Trinitrobenzene (1,3,5-TNB)	7/1/2012	11/30/2013	UT
1,3-Dichlorobenzene	7/1/2012	11/30/2013	UT
1,3-Dinitrobenzene (1,3-DNB)	7/1/2012	11/30/2013	UT
1,4-Dichlorobenzene	7/1/2012	11/30/2013	UT
1,4-Dinitrobenzene	7/1/2012	11/30/2013	UT
1-Methylnaphthalene	7/1/2012	11/30/2013	UT
1-Naphthylamine	7/1/2012	11/30/2013	UT
2,3,4,6-Tetrachlorophenol	7/1/2012	11/30/2013	UT
2,4,5-Trichlorophenol	7/1/2012	11/30/2013	UT
2,4,6-Trichlorophenol	7/1/2012	11/30/2013	UT
2,4-Dichlorophenol	7/1/2012	11/30/2013	UT
2,4-Dimethylphenol	7/1/2012	11/30/2013	UT
2,4-Dinitrophenol	7/1/2012	11/30/2013	UT
2,4-Dinitrotoluene (2,4-DNT)	7/1/2012	11/30/2013	UT
2,6-Dichlorophenol	7/1/2012	11/30/2013	UT
2,6-Dinitrotoluene (2,6-DNT)	7/1/2012	11/30/2013	UT
2-Acetylaminofluorene	7/1/2012	11/30/2013	UT
2-Chloronaphthalene	7/1/2012	11/30/2013	UT
2-Chlorophenol	7/1/2012	11/30/2013	UT
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	7/1/2012	11/30/2013	UT
2-Methylnaphthalene	7/1/2012	11/30/2013	UT
2-Methylphenol (o-Cresol)	7/1/2012	11/30/2013	UT
2-Naphthylamine	7/1/2012	11/30/2013	UT
2-Nitroaniline	7/1/2012	11/30/2013	UT
2-Nitrophenol	7/1/2012	11/30/2013	UT
3,3'-Dichlorobenzidine	7/1/2012	11/30/2013	UT
3-Methylcholanthrene	7/1/2012	11/30/2013	UT
3-Methylphenol (m-Cresol)	7/1/2012	11/30/2013	UT

ALS Laboratory Group, Environmental Division (Fort Collins, CO)

	Start Date	Expires	AB
Program/Matrix: ***RCRA (Solid & Hazardous Material)***			
3-Nitroaniline	7/1/2012	11/30/2013	UT
4-Bromophenyl phenyl ether	7/1/2012	11/30/2013	UT
4-Chloro-3-methylphenol	7/1/2012	11/30/2013	UT
4-Chloroaniline	7/1/2012	11/30/2013	UT
4-Chlorophenyl phenylether	7/1/2012	11/30/2013	UT
4-Methylphenol (p-Cresol)	7/1/2012	11/30/2013	UT
4-Nitroaniline	7/1/2012	11/30/2013	UT
4-Nitrophenol	7/1/2012	11/30/2013	UT
5-Nitro-o-toluidine	7/1/2012	11/30/2013	UT
7,12-Dimethylbenz(a) anthracene	7/1/2012	11/30/2013	UT
Acenaphthene	7/1/2012	11/30/2013	UT
Acenaphthylene	7/1/2012	11/30/2013	UT
Acetophenone	7/1/2012	11/30/2013	UT
Aniline	7/1/2012	11/30/2013	UT
Anthracene	7/1/2012	11/30/2013	UT
Azobenzene (1,2-Diphenylhydrazine)	7/1/2012	11/30/2013	UT
Benzidine	7/1/2012	11/30/2013	UT
Benzo(a)anthracene	7/1/2012	11/30/2013	UT
Benzo(a)pyrene	7/1/2012	11/30/2013	UT
Benzo(b)fluoranthene	7/1/2012	11/30/2013	UT
Benzo(g,h,i)perylene	7/1/2012	11/30/2013	UT
Benzo(k)fluoranthene	7/1/2012	11/30/2013	UT
Benzoic acid	7/1/2012	11/30/2013	UT
Benzyl alcohol	7/1/2012	11/30/2013	UT
bis(2-Chloroethoxy)methane	7/1/2012	11/30/2013	UT
bis(2-Chloroethyl) ether	7/1/2012	11/30/2013	UT
bis(2-Chloroisopropyl) ether	7/1/2012	11/30/2013	UT
bis(2-Ethylhexyl) phthalate (DEHP)	7/1/2012	11/30/2013	UT
Butyl benzyl phthalate	7/1/2012	11/30/2013	UT
Carbazole	7/1/2012	11/30/2013	UT
Chrysene	7/1/2012	11/30/2013	UT
Dibenz(a,h) anthracene	7/1/2012	11/30/2013	UT
Dibenzofuran	7/1/2012	11/30/2013	UT
Diethyl phthalate	7/1/2012	11/30/2013	UT
Dimethyl phthalate	7/1/2012	11/30/2013	UT
Di-n-butyl phthalate	7/1/2012	11/30/2013	UT
Di-n-octyl phthalate	7/1/2012	11/30/2013	UT
Ethyl methanesulfonate	7/1/2012	11/30/2013	UT
Fluoranthene	7/1/2012	11/30/2013	UT
Fluorene	7/1/2012	11/30/2013	UT
Hexachlorobenzene	7/1/2012	11/30/2013	UT
Hexachlorobutadiene	7/1/2012	11/30/2013	UT
Hexachlorocyclopentadiene	7/1/2012	11/30/2013	UT
Hexachloroethane	7/1/2012	11/30/2013	UT
Hexachloropropene	7/1/2012	11/30/2013	UT
Indeno(1,2,3-cd) pyrene	7/1/2012	11/30/2013	UT
Isophorone	7/1/2012	11/30/2013	UT
Isosafrole	7/1/2012	11/30/2013	UT
Methyl methanesulfonate	7/1/2012	11/30/2013	UT

ALS Laboratory Group, Environmental Division (Fort Collins, CO)

	Start Date	Expires	AB
Program/Matrix: *RCRA (Solid & Hazardous Material)*			
Naphthalene	7/1/2012	11/30/2013	UT
Nitrobenzene	7/1/2012	11/30/2013	UT
n-Nitrosodiethylamine	7/1/2012	11/30/2013	UT
n-Nitrosodimethylamine	7/1/2012	11/30/2013	UT
n-Nitroso-di-n-butylamine	7/1/2012	11/30/2013	UT
n-Nitrosodi-n-propylamine	7/1/2012	11/30/2013	UT
n-Nitrosodiphenylamine	7/1/2012	11/30/2013	UT
n-Nitrosomethylethalamine	7/1/2012	11/30/2013	UT
n-Nitrosomorpholine	7/1/2012	11/30/2013	UT
n-Nitrosopiperidine	7/1/2012	11/30/2013	UT
n-Nitrosopyrrolidine	7/1/2012	11/30/2013	UT
Pentachlorobenzene	7/1/2012	11/30/2013	UT
Pentachloronitrobenzene	7/1/2012	11/30/2013	UT
Pentachlorophenol	7/1/2012	11/30/2013	UT
Phenacetin	7/1/2012	11/30/2013	UT
Phenanthrene	7/1/2012	11/30/2013	UT
Phenol	7/1/2012	11/30/2013	UT
Pyrene	7/1/2012	11/30/2013	UT
Pyridine	7/1/2012	11/30/2013	UT
Safrole	7/1/2012	11/30/2013	UT
Method EPA 901.1			
Cesium-134	7/1/2012	11/30/2013	UT
Cesium-137	7/1/2012	11/30/2013	UT
Cobalt-60	7/1/2012	11/30/2013	UT
Method EPA 9010C			
Cyanide	7/1/2012	11/30/2013	UT
Method EPA 9014			
Cyanide	7/1/2012	11/30/2013	UT
Method EPA 903.1			
Radium-226	1/23/2013	11/30/2013	UT
Method EPA 9034			
Total sulfides	7/1/2012	11/30/2013	UT
Method EPA 9045C			
pH	7/1/2012	11/30/2013	UT
Method EPA 9056A			
Bromide	7/1/2012	11/30/2013	UT
Chloride	7/1/2012	11/30/2013	UT
Fluoride	7/1/2012	11/30/2013	UT
Nitrate as N	7/1/2012	11/30/2013	UT
Nitrite as N	7/1/2012	11/30/2013	UT
Orthophosphate as P	7/1/2012	11/30/2013	UT
Sulfate	7/1/2012	11/30/2013	UT
Method EPA 9071B			
Oil & Grease	7/1/2012	11/30/2013	UT
Method EPA 9095B			
Free liquid	7/1/2012	11/30/2013	UT

ALS Laboratory Group, Environmental Division (Fort Collins, CO)

	Start Date	Expires	AB
Program/Matrix: ***RCRA (Solid & Hazardous Material)***			
Method EPA 9310			
Gross alpha-beta	7/1/2012	11/30/2013	UT
Method EPA 9315			
Total alpha radium	7/1/2012	11/30/2013	UT
Method EPA 9320			
Radium-228	7/1/2012	11/30/2013	UT
Method EPA H2S Test Method			
Reactive sulfide	7/1/2012	11/30/2013	UT
Method EPA HCN Test Method			
Reactive Cyanide	7/1/2012	11/30/2013	UT
Method HASL 300 Ga-01-R sec 4.5.2.3			
Cesium-134	7/1/2012	11/30/2013	UT
Cesium-137	7/1/2012	11/30/2013	UT
Cobalt-60	7/1/2012	11/30/2013	UT
Method HASL 300 Sr-01-RC (GPC)			
Strontium-89, 90	7/1/2012	11/30/2013	UT
Method HASL 300 U-02-RC			
Americium-241	7/1/2012	11/30/2013	UT
Plutonium	7/1/2012	11/30/2013	UT
Thorium-228	7/1/2012	11/30/2013	UT
Thorium-230	7/1/2012	11/30/2013	UT
Thorium-232	7/1/2012	11/30/2013	UT
Method SM 7500-Ra C (SC)			
Radium-226	7/1/2012	11/30/2013	UT

ALS Laboratory Group, Environmental Division (Fort Collins, CO)

	Start Date	Expires	AB
Program/Matrix: ***SDWA (Potable Water)***			
Method ASTM D3972-90			
Uranium	7/1/2012	11/30/2013	UT
Method ASTM D5811-00			
Strontium-90	7/1/2012	11/30/2013	UT
Method EPA 120.1			
Conductivity	7/1/2012	11/30/2013	UT
Method EPA 150.1			
pH	7/1/2012	11/30/2013	UT
Method EPA 160.1			
Residue-filterable (TDS)	7/1/2012	11/30/2013	UT
Method EPA 200.7			
Aluminum	7/1/2012	11/30/2013	UT
Antimony	7/1/2012	11/30/2013	UT
Arsenic	7/1/2012	11/30/2013	UT
Barium	7/1/2012	11/30/2013	UT
Beryllium	7/1/2012	11/30/2013	UT
Boron	7/1/2012	11/30/2013	UT
Cadmium	7/1/2012	11/30/2013	UT
Calcium	7/1/2012	11/30/2013	UT
Chromium	7/1/2012	11/30/2013	UT
Cobalt	7/1/2012	11/30/2013	UT
Copper	7/1/2012	11/30/2013	UT
Iron	7/1/2012	11/30/2013	UT
Lead	7/1/2012	11/30/2013	UT
Lithium	7/1/2012	11/30/2013	UT
Magnesium	7/1/2012	11/30/2013	UT
Manganese	7/1/2012	11/30/2013	UT
Molybdenum	7/1/2012	11/30/2013	UT
Nickel	7/1/2012	11/30/2013	UT
Potassium	7/1/2012	11/30/2013	UT
Selenium	7/1/2012	11/30/2013	UT
Silica as SiO2	7/1/2012	11/30/2013	UT
Silver	7/1/2012	11/30/2013	UT
Sodium	7/1/2012	11/30/2013	UT
Strontium	7/1/2012	11/30/2013	UT
Thallium	7/1/2012	11/30/2013	UT
Tin	7/1/2012	11/30/2013	UT
Titanium	7/1/2012	11/30/2013	UT
Vanadium	7/1/2012	11/30/2013	UT
Zinc	7/1/2012	11/30/2013	UT
Method EPA 200.8			
Aluminum	7/1/2012	11/30/2013	UT
Antimony	7/1/2012	11/30/2013	UT
Arsenic	7/1/2012	11/30/2013	UT
Barium	7/1/2012	11/30/2013	UT
Beryllium	7/1/2012	11/30/2013	UT
Cadmium	7/1/2012	11/30/2013	UT

ALS Laboratory Group, Environmental Division (Fort Collins, CO)

	Start Date	Expires	AB
Program/Matrix: *SDWA (Potable Water)*			
Calcium	7/1/2012	11/30/2013	UT
Chromium	7/1/2012	11/30/2013	UT
Copper	7/1/2012	11/30/2013	UT
Iron	7/1/2012	11/30/2013	UT
Lead	7/1/2012	11/30/2013	UT
Magnesium	7/1/2012	11/30/2013	UT
Manganese	7/1/2012	11/30/2013	UT
Molybdenum	7/1/2012	11/30/2013	UT
Nickel	7/1/2012	11/30/2013	UT
Potassium	7/1/2012	11/30/2013	UT
Selenium	7/1/2012	11/30/2013	UT
Silver	7/1/2012	11/30/2013	UT
Sodium	7/1/2012	11/30/2013	UT
Strontium	7/1/2012	11/30/2013	UT
Thallium	7/1/2012	11/30/2013	UT
Thorium	7/1/2012	11/30/2013	UT
Tin	7/1/2012	11/30/2013	UT
Uranium	7/1/2012	11/30/2013	UT
Vanadium	7/1/2012	11/30/2013	UT
Zinc	7/1/2012	11/30/2013	UT
Method EPA 245.1			
Mercury	7/1/2012	11/30/2013	UT
Method EPA 300.0			
Bromide	7/1/2012	11/30/2013	UT
Chloride	7/1/2012	11/30/2013	UT
Fluoride	7/1/2012	11/30/2013	UT
Nitrate as N	7/1/2012	11/30/2013	UT
Nitrite as N	7/1/2012	11/30/2013	UT
Orthophosphate as P	7/1/2012	11/30/2013	UT
Sulfate	7/1/2012	11/30/2013	UT
Method EPA 310.1			
Alkalinity as CaCO3	7/1/2012	11/30/2013	UT
Method EPA 314			
Perchlorate	7/1/2012	11/30/2013	UT
Method EPA 335.2			
Cyanide	7/1/2012	11/30/2013	UT
Method EPA 524.2			
1,1,1-Trichloroethane	7/1/2012	11/30/2013	UT
1,1,2-Trichloroethane	7/1/2012	11/30/2013	UT
1,1-Dichloroethylene	7/1/2012	11/30/2013	UT
1,2,4-Trichlorobenzene	7/1/2012	11/30/2013	UT
1,2-Dichlorobenzene (o-Dichlorobenzene)	7/1/2012	11/30/2013	UT
1,2-Dichloroethane (Ethylene dichloride)	7/1/2012	11/30/2013	UT
1,2-Dichloropropane	7/1/2012	11/30/2013	UT
1,4-Dichlorobenzene	7/1/2012	11/30/2013	UT
Benzene	7/1/2012	11/30/2013	UT
Carbon tetrachloride	7/1/2012	11/30/2013	UT

ALS Laboratory Group, Environmental Division (Fort Collins, CO)

	Start Date	Expires	AB
Program/Matrix: *SDWA (Potable Water)*			
Chlorobenzene	7/1/2012	11/30/2013	UT
cis-1,2-Dichloroethylene	7/1/2012	11/30/2013	UT
Ethylbenzene	7/1/2012	11/30/2013	UT
Methylene chloride (Dichloromethane)	7/1/2012	11/30/2013	UT
m-Xylene	7/1/2012	11/30/2013	UT
o-Xylene	7/1/2012	11/30/2013	UT
p-Xylene	7/1/2012	11/30/2013	UT
Styrene	7/1/2012	11/30/2013	UT
Tetrachloroethylene (Perchloroethylene)	7/1/2012	11/30/2013	UT
Toluene	7/1/2012	11/30/2013	UT
trans-1,2-Dichloroethylene	7/1/2012	11/30/2013	UT
Trichloroethene (Trichloroethylene)	7/1/2012	11/30/2013	UT
Vinyl chloride	7/1/2012	11/30/2013	UT
Xylene (total)	7/1/2012	11/30/2013	UT
Method EPA 900.0			
Gross-alpha	7/1/2012	11/30/2013	UT
Gross-beta	7/1/2012	11/30/2013	UT
Method EPA 901.1			
Cesium-134	7/1/2012	11/30/2013	UT
Cesium-137	7/1/2012	11/30/2013	UT
Cobalt-60	7/1/2012	11/30/2013	UT
Gamma Emitters	7/1/2012	11/30/2013	UT
Method EPA 903			
Radium-226	7/1/2012	11/30/2013	UT
Total radium	7/1/2012	11/30/2013	UT
Method EPA 903.1			
Radium-226	7/1/2012	11/30/2013	UT
Method EPA 904			
Radium-228	7/1/2012	11/30/2013	UT
Method EPA 906			
Tritium	7/1/2012	11/30/2013	UT
Method HASL 300 Ga-01-R sec 4.5.2.3			
Cesium-134	7/1/2012	11/30/2013	UT
Cesium-137	7/1/2012	11/30/2013	UT
Cobalt-60	7/1/2012	11/30/2013	UT
Gamma Emitters	7/1/2012	11/30/2013	UT
Method HASL 300 Sr-01-RC (GPC)			
Strontium-89, 90	7/1/2012	11/30/2013	UT
Method HASL 300 Sr-02-RC (GPC)			
Strontium-89, 90	7/1/2012	11/30/2013	UT
Method HASL 300 U-02-RC			
Americium-241	7/1/2012	11/30/2013	UT
Isotopic uranium	7/1/2012	11/30/2013	UT
Plutonium	7/1/2012	11/30/2013	UT
Uranium	7/1/2012	11/30/2013	UT
Method SM 2320 B			

ALS Laboratory Group, Environmental Division (Fort Collins, CO)

	Start Date	Expires	AB
Program/Matrix: ***SDWA (Potable Water)***			
Alkalinity as CaCO3	7/1/2012	11/30/2013	UT
Method SM 2340 B			
Total hardness as CaCO3	7/1/2012	11/30/2013	UT
Method SM 2510 B			
Conductivity	7/1/2012	11/30/2013	UT
Method SM 2540 B			
Residue-total	7/1/2012	11/30/2013	UT
Method SM 2540 C			
Residue-filterable (TDS)	7/1/2012	11/30/2013	UT
Method SM 2540 D			
Residue-nonfilterable (TSS)	7/1/2012	11/30/2013	UT
Method SM 4500-H+ B			
pH	7/1/2012	11/30/2013	UT
Method SM 5310 C			
Total organic carbon	7/1/2012	11/30/2013	UT
Method SM 7500-3H B			
Tritium	7/1/2012	11/30/2013	UT
Method SM 7500-Ra C (SC)			
Radium-226	7/1/2012	11/30/2013	UT
Method SM 7500-Rn B			
Radon-222	7/1/2012	11/30/2013	UT

The Utah Environmental Laboratory Certification Program (ELCP) encourages clients and data users to verify the most current certification letter for the authorized method.

The analytes by method which a laboratory is authorized to perform at any given time will be those indicated in the most recent certificate letter. The most recent certification letter supersedes all previous certification or authorization letters. It is the certified laboratory's responsibility to review this letter for discrepancies. The certified laboratory must document any discrepancies in this letter and send notice to this bureau within 15 days of receipt. This certificate letter will be recalled in the event your laboratory's certification is revoked.

Appendix 3: Lupin Mine Wildlife Management Plan

Lupin Mines Incorporated

A wholly owned indirect subsidary of Elgin Mining Inc.

Lupin Mine Site

Nunavut, Canada

Wildlife Management Plan

(Care and Maintenance)

March 2013

Lupin Mines Incorporated
Elgin Mining Inc.
#201 - 750 West Pender Street
Vancouver, BC V6C 2T7

Document Control

Revision No	Date	Details	Author	Approver
1.0	20/03/12	Reformatted to Lupin Mines standard. Revised and updated to reflect new ownership and contact information. Updated kitchen grease handling procedures Recognized species at risk that may occur in the Lupin area Addressed comments from EC (2010)	S. Hamm	P. Downey
2.0	24/02/13	Updated contact and general information Updated environmental policy. Revised to be more concise and functional.	D. Vokey	W. Osborne

Table of Contents

Figures

Appendices

1 Introduction

Lupin Mines Incorporated (LMI), a wholly owned indirect subsidiary of Elgin Mining Inc. (Elgin), has prepared this Wildlife Management Plan (the Plan).

An annual review of the Plan takes place and revisions are submitted as necessary with the annual report. The current Type A Water Licence 2AM-LUP0914 (Water Licence) for the Lupin Gold Mine (Lupin or the Lupin Mine or the Site) is valid until March 31, 2014 and has been kept in good standing.

1.1 Project and Company Information

Elgin is a Canadian based company focused on the production at the Björkdal Gold Mine located in Sweden, and the exploration and development of the Lupin Gold Mine and Ulu Gold Project, both located in Nunavut, Canada.

Elgin purchased LMI, which owns the Lupin Mine, from MMG Resources Ltd. in July 2011. Lupin was in operation from 1982 to 2005 with temporary suspensions of activities between January 1998 and April 2000, and again between August 2003 and March 2004. The mine resumed production in March 2004 until February 2005. Since 2005, the Site has remained in Care and Maintenance.

General site maintenance and facilities upgrades are underway at the Lupin Mine in preparation for an underground exploration program. The activities underway were screened by the Nunavut Impact Review Board under file 99WR053 and approved by the Nunavut Water Board under Water Licence 2AM-LUP0914. Surface exploration is conducted under Water Licence 2BE-LEP1217. All camp infrastructure required for the surface exploration program currently exists at the Lupin Mine.

Company:	LMI
Project:	Lupin Mine, Nunavut
Company Address:	201 – 750 W Pender St, Vancouver, BC, V6C 2T7
Telephone:	604-682-3366
Email:	wosborne@elginmining.com
Attention:	Wayne Osborne, Project Manager
Effective date:	30 March 2013

Distribution List:

Patrick Downey	Chief Executive Officer
Jim Currie	Chief Operations Officer
Peter Tam	Chief Financial Officer
Wayne Osborne	Project Manager
Michele Jones	Manager, Corporate Affairs
David Vokey	Sr. Environmental Coordinator
Karyn Lewis	General Administration

Additional copies of this Plan are available from General Administration. The Plan is available at the LMI Environment Department office and a notice is posted in key locations at the site indicating where they can be found. All employees and contractors will be made aware of its contents.

1.2 Site Location

The Lupin Mine is located in Kitikmeot Region, Nunavut, 400 km north of Yellowknife, Northwest Territories and 285 km southeast of Kugluktuk. The airport serving this Site is at 65° 46'00" N and 111° 14'41" W. The Site is on the western shore of Contwoyto Lake, approximately 60 km south of the Arctic Circle (Figure 1).

1.3 Environmental and Sustainable Development Policy

Elgin Mining Inc. and its subsidiaries (collectively, "Elgin Mining") are committed to maintaining a safe, clean, compliant and respectful work environment. Elgin Mining looks to our employees, contractors and managers to adopt and grow a culture of social responsibility and environmental excellence. Together we achieve this by:

- Promoting environmental stewardship in all tasks. Nothing is too important that it cannot be done in a clean and responsible manner. We strive towards maintaining a zero-incident work place.
- Recognizing that we have a shared responsibility as stewards of the environment in which we operate. We will not walk away from a non-compliant act.
- Identifying, managing and mitigating environmental, business and social risks in an open, honest and transparent manner.
- Planning our work so it is done in the cleanest possible manner and executing work according to plan.
- Continually improving environmental and operational performance by setting and reviewing achievable targets.
- Providing appropriate and necessary resources in the form of training, personnel and capital, including that required for closure planning and reclamation.
- Managing our materials and waste streams, maintaining a high degree of emergency response preparedness and minimizing our operational footprint to maintain environmental protection at all stages of project development.
- Procuring goods and services locally, where available, and favouring suppliers with environmentally and socially responsible business practices.
- Seeking to understand, learn from and mitigate the root causes of environmental incidents and near misses when they do occur.

- Employing systems and technology to achieve compliance, increase efficiency and promote industry best practices in development, operations and environmental stewardship.
- Working with stakeholders to identify and pursue opportunities for sustainable social and economic development and capacity building.
- Conducting early and ongoing stakeholder engagement relevant to the stage of project and mine development and operation.
- Recognizing diversity in the workplace and building meaningful relationships with all stakeholders in a timely, collaborative and transparent manner.

Through implementation of this policy, Elgin Mining seeks to earn the public's trust and be recognized as a respectful and conscientious employer, neighbor and environmental steward.

Approved by the Board of Directors on August 10th, 2012

1.4 Purpose and Scope

This Plan is an appendix to the Care and Maintenance Plan. The purpose of this Plan is to be compliant with the Land Use Permit N2011C0026, and to minimize and monitor the potential effects of the Lupin operation on wildlife while the facility is under Care and Maintenance. Wildlife encounters may occur at any time and it is everyone's responsibility to ensure the safety of people and animals on Site. A General Site Map is attached for reference (Figure 2).

The objectives of the Plan are to:

- Eliminate, minimize or control the adverse effects on wildlife during Care and Maintenance.
- Provide Site personnel with general procedures for wildlife impact mitigation.
- Address human safety concerns as they relate to wildlife.

2 Mitigation Measures

Animals may interact with the mine during normal movements within their home range. The mitigation measures will be managed on the project disturbance footprint and on all potentially affected areas during Care and Maintenance.

2.1 Mitigation Measures: Wildlife Incidents and Mortality

Measures to prevent and mitigate wildlife incidents and mortality include the following:

- Awareness
  - Provide wildlife awareness (especially bear awareness) as part of Site orientation.

- Check when exiting a building or going around a corner for the presence of animals nearby.
- Provide food handling and waste disposal practices as part of Site orientation. Stress that any substance not common to their natural environment will attract animals to investigate; such as spilled coffee, orange or banana peels, bread crust, or cigarette butts.
- Report all wildlife incidents and mortalities immediately to Environmental Coordinator.
- No feeding or harassing wildlife.
- No hunting by any employee.
- Wildlife has the right-of-way.

- Access
  - The airstrip is inspected daily for human and wildlife safety, and prior to take-off and landing of fixed wing aircraft.
  - Wildlife has the right-of-way on all access routes.
- Buildings
  - Maintain skirting on buildings to prevent animals from entering.
  - Keep building doors and vehicle windows closed to prevent animals from entering.
- Roads
  - All personnel at Site have a radio. Radios are used to warn Site of wildlife present in the area, especially bears or caribou.
  - Speed limits on Site roads are 30-40 km/hr; however, the tailing pond is 50 km/hr under most circumstances.
  - Wildlife has the right-of-way. Vehicle operators will yield to wildlife crossing on roads, be vigilant in watching for wildlife near roads, and take all reasonable measures to avoid vehicle-wildlife incidences.
- Waste
  - Follow the Waste Management Plan to remove the presence of attractants and waste food. Incinerate food and kitchen wastes daily and with minimum storage time
  - Kitchen wastes are kept in enclosed metal containers

2.2 Wildlife Monitoring Reporting

Wildlife monitoring at the Lupin Site includes:

- Maintaining a Wildlife Sighting and Tracks Log
  - Record wildlife sightings and tracks in the general vicinity of the Site in the posted Log with the date, species, general location, and activity. (Appendix 1).

- Advise camp personnel, as part of their Site orientation, of wildlife sighting reporting requirements.
- A Wildlife and Tracks Sighting information log is available to Regulators.

- Report sightings to Site Manager or Environmental Coordinator
  - Report sightings of bears, musk ox, caribou, wolves, or wolverines in the vicinity of work crews immediately.
- Monitor a grizzly bear sighting as required, and use appropriate alerts and access restrictions to all personnel.

2.3 Mitigation Measures: Wildlife Movements and Distribution

Impacts to natural wildlife movements in and around the Lupin Site can be mitigated by:

- Animals always have the right-of-way.
- Restricting vehicles access where animals are present.
- Advise charter aircraft and helicopters to avoid flying over caribou, migratory birds nesting, and other large animals. For animals, a minimum of 1000 ft vertically, or deflect 1000 ft horizontally around the animals. For all flights during migratory bird breeding season 2,000 ft vertically; and 3,600 ft vertically and 5,000 ft horizontal distance near areas where migratory birds are known to concentrate (e.g.; The Lower Sewage Lake).
- Do not fly closer for a picture or good look.

3 Specific Mitigation Measures

3.1 Specific Mitigation Measures: Caribou and Musk-ox

Specific mitigation measures for caribou and musk ox in and around the Lupin Site include:

- Report sightings in the vicinity of the Site or work crews immediately to the Environment Coordinator.
- When caribou are observed in the vicinity of operations, implement controls; such as restricting access, or adjusting the work areas or activities within the work areas.
- These animals always have the right-of-way.

3.2 Specific Mitigation Measures: Carnivores (Grizzly Bear[1], Wolverine[2], Foxes and Wolves)

Specific mitigation measures for bear, wolverine, fox and wolf in and around the Lupin Site include:

[1] Grizzly bear is listed as a Species of Special Concern under COSEWIC.
[2] Wolverine (western population) is listed as a Species of Special Concern under COSEWIC.

- Ensure personnel are made "bear aware" and they immediately report a bear sighting to Environment Coordinator.
- Ensure there is a person on Site that is trained in wildlife behavior and deterrent techniques, including firearms and bear bangers. This person will be the lead person for any mitigation actions required with carnivores; especially bears.
- Follow the *Waste Management Plan* that includes the food and attractants storage and disposal of food by incineration.
- Maintain skirting on all buildings and close all doors to prevent entry.
- Remove all mortalities near the mine footprint, if safe to do so, that could attract predators.
- Block access to any kill Site where the carnivores are present, and let them finish their meal. Once the animals have left, remove any remnants from site to keep the scavengers away.

3.3 Specific Mitigation Measures: Raptors (hawks and falcons) and Migratory Birds

Specific mitigation measures for raptors and migratory birds in and around the Lupin Site include:

- Keep aircraft away from nesting sites, a minimum of altitude of 2000 ft and horizontally 2000 ft.
- Avoiding all activity within 100 m of an occupied nest prior to the fledging period (when chicks fly from the nest) to reduce the risk of premature nest departure[3] or injury to the birds (10 to 20 August for peregrine falcons[4] in the Lupin area). There are known nests at the Explosives building and the Head Frame.
- It may be necessary to remove the nest to protect the birds from Site activities. A nest may be removed before the eggs are laid. This action requires consultation with Nunavut Environment and Environment Canada.

4. Handling and Disposal of Domestic Waste

Per the Waste Management Plan, domestic waste management is required to prevent wildlife attraction and incidents from occurring. It includes:

- Food waste and kitchen grease is stored inside a secure metal container until it is picked up by Site services.
- There is prompt collection of waste from the kitchen area to the incinerator, where the waste is promptly incinerated.
- The incinerator is housed within a secure concrete block building.
- Grease is burned in the incinerator. This avoids extended storage while waiting for back hauls.

[3] Severe disturbance at the nest can cause young raptors to jump out of the nest before they are ready, greatly reducing their survival rate.
[4] Peregrine falcon is listed as a Species of Special Concern under COSEWIC and Schedule 3 of SARA.

Legend

Project Location

Coordinate System: NAD_1983_UTM_Zone_12N

Map Sources/Notes:
Various Canadian Government Websites - Feb 2012

0 60 120 240 360 480 600 Km

1:15,000,000

Approved By: SH
Prepared By: PW
Project No.: LUP
Date Revised: 21 Mar 2012
File Name: Lup-12-10-01-LocationMap-A.mxd

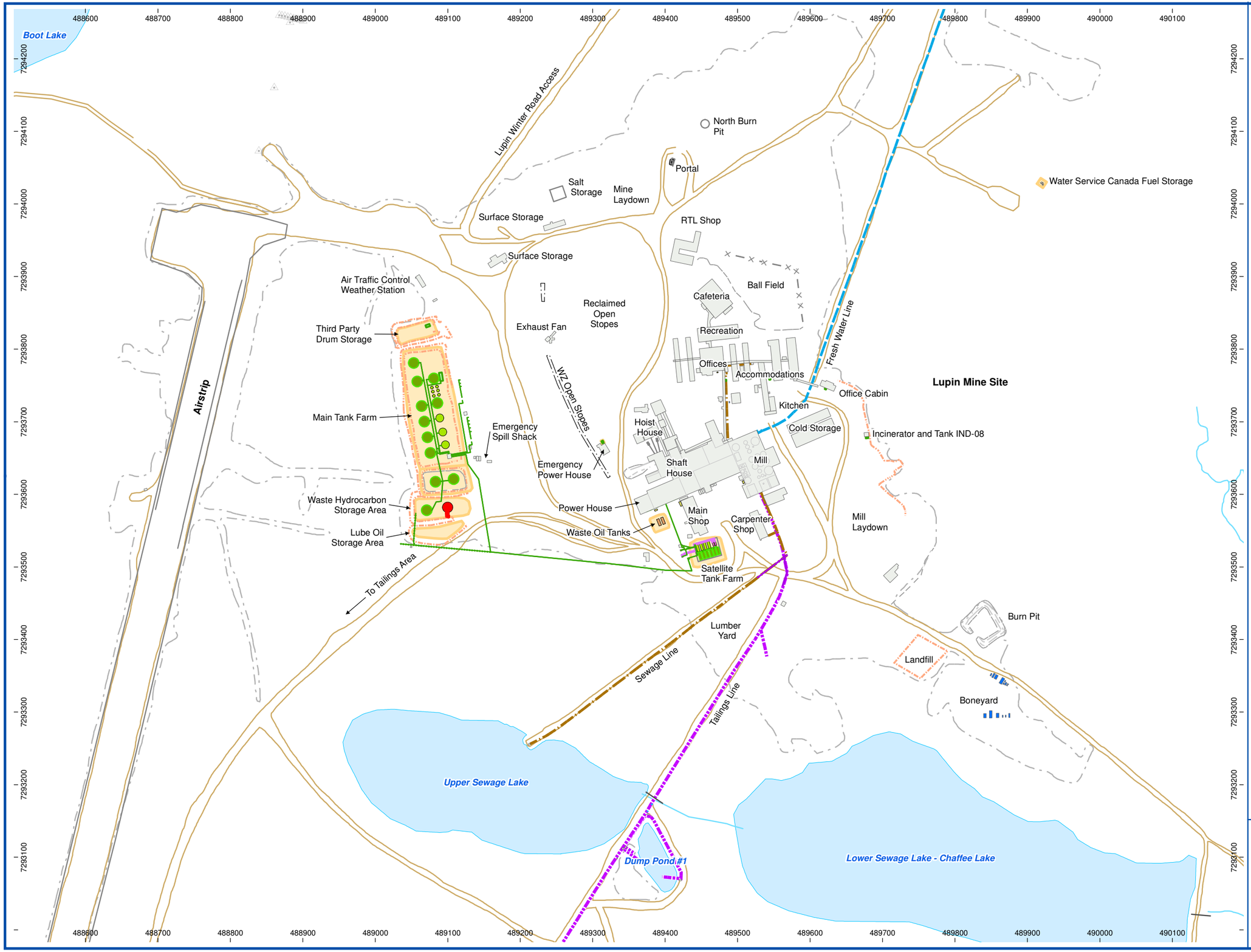
Project: **Lupin Project**
Location: Kitikmeot Region, Nunavut, Canada
Lupin Mine Annual Report - Water Licence 2AM-LUP0914

Location Map - Lupin Mine

Lupin Mines Incorporated

ELGIN MINING INC.

Figure: **1**
Rev: 120321



Legend

- Building
- Tank Farm Berm Outline
- Lake
- Edge of Disturbed Area
- Stream
- Road
- Sewage Pipeline (6 in Diam)
- Tailings Line Route
- Water Pipeline (8 in Diam)

Pipe - Fuel Type, Status

- Diesel, Active
- Diesel, Abandoned
- Diesel, Uncertain
- Gasoline, Active
- Jet A, Active

Location of Tank - FuelType

- Diesel P-40
- Diesel P-50
- Diesel
- Water
- Jet-A
- Gas
- Glycol
- Waste Oil
- Empty
- UnknownC

N W E S

Map Sources/Notes:
Topographic features and site layout from Satellite image dated Aug 21, 2012
Fuel tank and Fuel Containment layouts adapted from drawings by Emerson Engineering dated Oct 17, 2011 and from data updated to March 01 2013

Coordinate System: NAD_1983_UTM_Zone_12N

0 25 50 100 150 200 Meters

1:5,000

Approved By: JCB
Prepared By: PW
Project No.: LUP
Date Revised: 01 Apr 2013
File Name: Lup-13-04-01-SiteFacilities-B.mxd

Project: **Lupin Gold Mine**
Location: Kitikmeot Region, Nunavut, Canada

Care and Maintenance Plan

General Site Map - Lupin Mine

Lupin Mines Incorporated

ELGIN MINING INC.

Figure: 2
Rev: 130401

Appendices

Appendix A Wildlife and Tracks Sighting Log

LUPIN MINES INC.

WILDLIFE & TRACKS SIGHTING LOG (Reported to the Gov't of Nunavut)

(All mortalities found must be reported to HSE immediately for disposal actions)

DATE	SPECIES	LOCATION	ACTIVITY	Observer (name)
day/month/year	**Grizzly Bear, Fox, Wolf, Wolverine, Musk Ox, Caribou, Falcon, Geese, Ducks, Cranes, Arctic Hare**	**Airport, Camp & Mill area, Main Tank Farm, Tailings Pond area, Sewage Ponds, Contwoyto Lake Rd**	**walking, running, feeding, resting, flying**	**person reporting the sighting**

Appendix 4: Lupin Mine Fuel Containment Management Strategy

Lupin Mines Incorporated

A wholly owned indirect subsidary of Elgin Mining Inc.

Lupin Mine Site

Nunavut, Canada

Fuel Containment Management Strategy

(Care and Maintenance)

March 2013

Lupin Mines Incorporated
Elgin Mining Inc.
#201 - 750 West Pender Street
Vancouver, BC V6C 2T7

Document Control

Revision No	Date	Details	Author	Approver
1.0	28/02/12	Initial Strategy	S. Hamm	P. Downey
2.0	30/03/13	Update contact and general information. Summary added. Updated to reflect current site conditions. Updated to reflect current management strategy. The Spill Contingency Plan is filed as an appendix to the Annual Report. It has been removed from the appendices of this strategy to reduce risk of version control.	D. Vokey	W. Osborne

Executive Summary

Significant fuel handling infrastructure exists at the Lupin Mine. They include a Main Tank Farm, a Satellite Tank Farm, and various other storage and day tanks containing diesel, gasoline, Jet A fuel, waste oil and glycol. Efforts have been on-going to bring the fuel containment into compliance with current Environment Canada Regulations.

In 2011 and 2012, maintenance was performed on the fuel handling infrastructure to ensure the safety of the systems and two engineering studies were conducted to develop an approach to upgrade the fuel systems. In 2012 and Q1 2013, numerous single wall day tanks were replaced with double wall tanks, several tanks were decommissioned and the underground fuel transfer lines taken out of service.

More work is planned for 2013 to 2015 on the Main Tank Farm to allow for a planned fuel re-supply on the 2014 winter road, including installing a fuel dispensing module. Once upgrades are completed on the Main Tank Farm the decommissioning of the Satellite Tank Farm can commence. In addition, several tanks are to be decommissioned, and the Tank Registry is to be updated.

Table of Contents

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1 Introduction

1.1 Company Overview

Elgin Mining Inc. (Elgin) is a Canadian based company focused on the production at the Björkdal Gold Mine located in Sweden, and the exploration and development of the Lupin Gold Mine and Ulu Gold Project, both located in Nunavut, Canada.

Elgin purchased Lupin Mines Incorporated (LMI), which owns the Lupin Mine, from MMG Resources Ltd. in July 2011. Lupin was in operation from 1982 to 2005 with temporary suspensions of activities between January 1998 and April 2000, and again between August 2003 and March 2004. The mine resumed production in March 2004 until February 2005. Since 2005, the Site has remained in Care and Maintenance.

General site maintenance and facilities upgrades are underway at the Lupin Mine in preparation for an underground exploration program. The activities underway were screened by the Nunavut Impact Review Board under file 99WR053 and approved by the Nunavut Water Board under Water Licence 2AM-LUP0914. Surface exploration is conducted under Water Licence 2BE-LEP1217.

1.2 Purpose

The Fuel Containment Management Strategy for the Lupin Mine site is intended to:

- Document the conditions of the tank systems currently on site;
- Provide guidance for the monitoring of fuel and the fuel handling facilities on site;
- Describe the responsibility and tasks involved with fuel management; and
- Outline tasks required to return the systems to compliance and maintain them in compliance.

Inspections, maintenance and compliance activities have occurred in October 2011 and April 2012, and throughout the remainder of 2012 to end of Q1, 2013. These activities are discussed in this report, and are tabulated in the Appendix 1.

2 Fuel Handling Facilities

The Lupin Project is located in Kitikmeot Region, Nunavut, 360 kilometers north-northeast of Yellowknife, Northwest Territories and 285 kilometers southeast of Kugluktuk. During mine operations the fuel was trucked to the site using the winter haul road and stored in the MTF located to the northwest of the mill. An underground pipeline was used to convey diesel from the MTF to the STF and then fuel was transferred by underground pipelines to pump dispensers and powerhouse day tanks. The pipelines operated by pressure. Diesel fuel was used at the site to power the generators and to fuel

equipment at the site. Jet-A fuel was stored in Tank M15 in the MTF for aviation use. Gasoline was stored in two tanks within the STF for automobile and small engine use.

During mine operations, a number of diesel tanks were located throughout the mine site to fuel various generators in the event of a powerhouse failure. Drums of diesel and Jet-A fuel were stored by third parties in a contained area at the north end of the main tank farm.

When operations ceased in 2005 and the site went on Care and Maintenance, some buildings were dismantled and their associated tanks removed from service or relocated to provide fuel for a new array of generators and backup generators prior to the coming into force of the *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations* (the Regulations) in June 2008.

The fuel systems currently at the Lupin Mine site are located as shown on Figure 1. The following sections include a description of each fuel system at the Lupin site, as they currently exist in Q1 2013.

2.1 Main Tank Farm

There are various components related to the MTF including a diesel tank system, a Jet A system, and individual tanks as shown on Figure 2. The MTF is located within lined secondary containment areas, with internal berms separating the MTF into 3 cells. Each MTF component is described separately below.

2.1.1 Diesel Tank System

The diesel tank system consists of fourteen (14) vertical tanks that were originally connected via one above ground pipe system. The pipe system converges on a pump house (main pump shack). There are three lines that flow out of the main pump shack: underground pipeline to the satellite tank farm; above ground pipeline to pump station #1 with 5 pumps; above ground pipeline to pump station #2 with 3 pumps.

2.1.2 Tanks

The 14 diesel tanks (M-01 through M-14) in the MTF diesel system were registered as EC-00004535 by MMG. They are steel, single wall, vertical above ground storage tanks, ranging in volume from 790,000 L to 1,550,000 L and contain diesel (individual tank details listed in Appendix 1). In October 2011 fuel was consolidated into four (4) of the tanks and the remaining ten (10) tanks were disconnected from the pipe system and blinded. New registration numbers need to be obtained for the tanks disconnected from the system. Photos of the MTF can be found Appendix 2.

2.1.3 Piping

The pipe system connecting tanks in the diesel system to the pump house are single wall, above ground pipes. This system was pressure tested in 2011 and was found to be leak-free.

The pipe connecting the MTF to the Satellite Tank Farm (STF) is a single wall pipe and is partially underground. This system was pressure tested in 2011 and was found to be leak-free. It has been blinded at both ends and removed from service.

Pump House

The main pump shack is occasionally used for fuel transfers using a fuel truck to the STF.

Truck Load-out System

Pump Station 1

Pump station 1 is not currently in service.

Pump Station 2

Pump station 2 is not currently in service.

2.1.4 Jet A System

The Jet A System consists of one vertical tank connected to a dedicated pump house. The pipe system is aboveground. The fuel dispensing system is outside of the secondary containment area.

Tank

There is one Jet A fuel tank (M-15) in the MTF (the tank is currently registered as part of the EC-00004535 system). Tank M-15 is a steel, single wall, vertical above ground storage tank, 1,530,000 L capacity (individual specs listed in Appendix 1). The fuel in the tanks is not suitable for aviation use but is suitable for use in the incinerator and other equipment.

Pump House

The Jet A pump house is currently not in use.

2.1.5 Individual Diesel Tanks

There are seven (7) individual tanks remaining in the main tank farm.

Six of the tanks, M-16 to M-21, are registered as EC-00018370, EC-00018371, EC-00018372, EC-00018374, EC-00018375, and EC-00018376. They are vertical, single wall, steel tanks, 64,000 L capacity (Photo 4). Five (5) of the tanks are currently empty. The sixth tank (M16) contains residual fuel and water. These are planned to be drained and removed in 2013.

One tank, M-22 is located north of tank M-05 and is registered as EC-00018377. Tank M-22 is a horizontal AST, with a capacity of 137,000 L and is planned for removal in 2013. Tank M-23 (Registered as EC-00018378) was removed in 2012 to the boneyard (Photo 5). Day tank MTF-1 (not registered), located adjacent to M-15 was removed from the system in 2012 to the boneyard.

A fuel tanker trailer, IND-11, was removed from the MTF secondary containment. The empty trailer is currently being stored in the third party berm.

2.1.6 Secondary Containment

The MTF is located in a lined, bermed area providing secondary containment for all of the tanks and piping. Patches of historically contaminated soil are present within the containment (Photo 4).

Expansions to the tank farm have resulted in three containment areas being present. The Main Pump House, Tanks M-01 thru M-11, and M-16 thru M-22 are located within the original secondary

containment. Tanks M-12 and M-13 are located in a second containment area (Photo 6) and the Jet A pump station, Jet-A tanks M-15, and M-14 are located in a third area.

2.2 Satellite Tank Farm

The various components related to the STF including a diesel tank system and a gasoline tank system. The STF is located within a lined secondary containment area as shown on Figure 3. The pump houses are outside of the secondary containment area. Individual tank details are listed in Appendix 1. The gasoline tank system was decommissioned in 2011.

2.2.1 Diesel Tank System

The diesel tank system consists of ten (10) horizontal 87,000 L aboveground storage tanks and is registered as EC-00004544. The tanks were all connected via two pipelines within a single above ground pipe system. Through a series of valves, the pipe system connects to the power house pump station, a fuel truck station and diesel pump station. The STF was connected to the MTF via an underground pipe but it has since been drained and blinded.

Tanks

There are 10 diesel tanks (S-1 through S-10) in the STF diesel system, registered as EC-00004544 (Photo 7). They are steel, single wall, horizontal above ground storage tanks, all with an individual capacity of 87,000 L (individual specs listed in Appendix 1). Tanks S1 to S4 are not in service; likewise S11 and S12 gasoline tanks. Tanks S-5 to S-10 are in service, and supply fuel to the Diesel Pump Station.

Pipe System

The pipe system connecting tanks in the diesel system includes single wall, above ground pipes. The pipe system from the power house pump station to the power house is a single wall, underground pipe system and is disconnected. There is a pipe system that provides fuel to the Mechanical Shop heaters.

Power House Pump Station

The power house pump station was used to feed the power house from tanks S-5 to S-10 (closest to road). It is not in service.

Fuel Truck Station

The fuel truck station was used to fill larger mobile equipment. The system is currently not in use.

Diesel Pump Station

The diesel pump station is located outside of the secondary containment area in the same building as the gasoline pump (see Photo 8). It was not in service when Elgin purchased LMI. Repairs and maintenance has since been conducted and it is currently used to provide diesel to the mobile site delivery tank for refueling of the active day tanks and mobile equipment.

2.2.2 Gasoline System

The gasoline tank system consists of two (2) horizontal aboveground storage tanks, both connected via one above ground pipe system to a pump station. This system is empty and is not in service. Gasoline for small engines on site is obtained from barrels kept in the Third Party Berm.

Tanks

The two gas tanks (S-11 and S-12) in the STF gasoline system are registered as EC-00018392. They are steel, single wall, horizontal above ground storage tanks, all with an individual capacity of 22,000 L (individual specs listed in Appendix 1). The tanks are currently empty and are not in service (October 2011).

Pipe System

The pipe system connecting tanks and the pump in the gasoline system are single wall, above ground pipes.

Pump Station

The pump station is located in the pump house along with the diesel pump, as shown on Figure 3. It is not in service.

2.2.3 Secondary Containment

The STF is located in a lined, bermed area providing secondary containment for all of the tanks and a portion of the piping. Contaminated soil lining the containment area has been observed; it is suspected that a historical spill occurred causing the contamination, as all tanks have been deemed leak-free (Photo 9).

During a site inspection on August 8, 2011, an eroded area on the outside of the southeast corner of the containment area was observed. This area has since been repaired.

Drainage associated with the secondary containment includes a drain line and a gate valve. The drain valve in the secondary containment berm was capped and plugged. The gate valve was locked.

2.3 Waste Oil Tank Farm

The waste oil tank farm (WOTF) is located south of the power house (Photo 10). Used oil from the surface and underground shops was placed in the two used oil above ground storage tanks. The tanks are located within secondary containment and contain two (2) tanks and partially buried piping connecting it to the power house (Photo 11).

2.3.1 Tanks

The two waste oil tanks (WO-1 and WO-2) in the WOTF are registered as EC-00018398. They are steel, single wall, horizontal above ground storage tanks, all with an individual capacity of 90,000 L (specifications are listed in Appendix 1). The tanks are not receiving waste oil during Care and Maintenance. They currently contain 10,159 L and 15,355 L, respectively. The oil will be sampled and a

determination will be made as to its disposal. LMI has installed waste oil furnaces on site and the oil may be used in them.

Pipe System

The waste oil was transferred from the powerhouse to the tanks via an underground wrapped pipeline as shown in Photo 11. The pipeline is not in use.

2.3.2 Secondary Containment

The power plant waste oil tanks are located in a lined, bermed area designed to provide secondary containment.

2.4 Glycols Tanks and Radiators

There are five (5) glycol tanks identified on the site, one has been removed to the boneyard (GLY-2). The remaining tanks are in their original locations. Details are provided in Appendix 1. The tanks are not registered.

The power house glycol tank, GLY-1 and several radiators are located outside of the power plant (Photo 12). The glycol tank has a capacity of approximately 9,000 L. There is no secondary containment in this area. Historical spill reports show that the north radiator released an undetermined amount of glycols in the past.

There is an approximately 8,000 L glycol tank, GLY-3, outside the Mill Building. This tank is connected to a boiler system inside the plant.

Tank GLY-4 is located adjacent to the Mechanical Shop (Photo 13) and has a capacity of approximately 2,000 L. This tank is rectangular.

Tank GLY-5 is rectangular and is located adjacent to the Office Complex (Photo 14) and has a capacity of approximately 2,000 L. It is connected to a boiler system inside the plant and is adjacent to the boiler fuel tank, IND-12.

2.5 Individual tanks

There are individual tanks at a number of locations throughout the site. Each tank is described below and illustrated on Figures 3, 4 and 5. Most of the tanks were removed from service prior to 2008 or had an aggregate capacity of 2,500 L or less. None of the tanks are currently registered. Many have been replaced with double wall tanks, or are planned to be replaced with double wall tanks. The relocation of the remaining tanks to the Boneyard is ongoing.

2.5.1 RTL Shop Tank

Tank IND-1 was removed from service prior to June 2008. It was relocated in 2012 to the boneyard. It was an approximately 2,000 L tank originally located outside the RTL shop, (Photo 15).

2.5.2 Portable Tank

Tank IND-2 is an approximately 1,200 L portable tank is being used to fill day tanks around the site. It has secondary containment and is in regular use refueling the day tanks.

2.5.3 Tank Near Old Accommodations

Tank IND-3 is for the camp backup generator and has secondary containment. It is between the kitchen and the old accommodations building. It has approximately 2,000 L capacity and has secondary containment.

2.5.4 Dirty Water Storage Tank

Tank IND-4 is a 60,000L horizontal AST (Photo 16). This tank was removed from service prior to 2008 and is empty and was relocated to the Boneyard in Q1 2013.

2.5.5 Spare Tanks

Tank IND-5 was removed from service prior to 2008 and it was relocated from adjacent to the STF to the Boneyard in 2012. Tank IND-5 had a capacity of approximately 22,000 L (Photo 16).

Tank IND-6 is a double wall tank that was a spare tank. It is now at the Camp generator, along with a second double wall tank. Both tanks were connected in late 2012 and have a capacity of 2,290 L each (Photo 27).

2.5.6 Machine Shop Day Tank

Tank IND-7 was decommissioned and relocated to the Boneyard in Q1 2013. It was approximately 2,000 L.

2.5.7 Incinerator Day Tank

IND-8 (Photo 17) was a 7,000 L tank that was decommissioned and relocated to the Boneyard in 2012 and replaced with a 2,290 L double wall tank.

2.5.8 Log Cabin Day Tank

IND-9 is a day tank supplying the log cabin office. It is a double wall tank; with a capacity of 455 L. Registration with Environment Canada is not required for this tank.

2.5.9 Mill Tank

IND-10 was attached to the mill. It was decommissioned and relocated to the Boneyard in Q1 2013. This tank was about 2,000 L (Photo 18).

2.5.10 Emergency Powerhouse Tanks

This powerhouse is in active use. Two tanks supply the emergency power house, EG-1 and EG-2 (Photo 19). Each tank is approximately 2,000 L in capacity and they are located in secondary containment. They are scheduled for replacement with a double wall tanks in 2013.

2.5.11 Boiler Tank

IND-12 is a 5,000 L tank that supplies the boiler in the office complex. It is located beside GLY-5, and is within secondary containment. It is scheduled for replacement with a double wall tank in 2013.

2.6 Other

2.6.1 Sewage Day Tank

There are two sewage and water systems supporting the camp facilities. These each use 2-45 gallon drums to feed the electric heater and the hot water tank in the sewage shed.

2.6.2 Additional Storage Areas

Third Party Drum Storage

Third party fuel is stored on site in a bermed storage area north of the MTF (Photo 20). It is assumed that this area is lined. The fuel trailer IND-11 (empty) and various containers of fuel and lube oil are stored here.

Lube Oil Storage Area

Miscellaneous lube oils are stored in a bermed, lined area north of the MTF (Photo 21).

WCS Drum Storage Area

Water Survey Canada had some fuel drums stored on site near the freshwater intake on Contwoyto Lake. These barrels have been relocated.

2.7 Tanks Removed from Service 2005 to 2008

Six (6) horizontal ASTs are located in the site bone yard, ranging in volume from 14,000 L to 105,000 L (Photos 23, 24); two (2) tanks are listed in FIRSTS as EC-00018404 and EC-00018409, and were permanently withdrawn from service and discarded prior of the regulations coming into force in June 2008. It is unclear which of the six tanks are EC-00018404 and EC-00018409.

3 Remedial Action

3.1 Remedial Work Conducted in 2011

Fuel systems on site were inspected by a third party consultant in 2011 and repairs were carried out in October 2011 at the MTF, STF and on a few individual tanks, to ensure fuel system safety over the winter. Execution of entire work plan was limited by the onset of winter conditions. Works completed are described below.

3.1.1 Main Tank Farm

- Fuel was consolidated: all diesel was transferred into M-01, M-02, M-04 and M-13. Grounding to active vessels was verified.
- All inactive tanks were disconnected from the common header and blinded (Photos 25 and 26).
- The pipeline header was drained and capped.

- The disconnected vessels are empty with the exception of M-16. The product in M-16 is contaminated with water at the height of the valve.

- Main pump house was inspected and observed to be leak-free. It is currently out of service. The infill lines of the truck load-out system were drained.

- The pipe running between the STF and MTF was pressure tested at 80 psi for 24 hours. Pressure test results indicate the pipe is leak-free. It has been drained and closed.

- Standing water in the Jet Fuel containment area was drawn down upon receipt of laboratory results that indicated it would meet the Water Licence discharge criteria. The onset of winter conditions prevented the removal of all of the accumulated water from secondary containment in 2011 and it was completed in 2012.

3.1.2 Satellite Tank Farm

- Erosion visible on the external side of the southeast corner of the secondary containment berm was repaired in August 2011.

- All tanks have been segregated and are operated on an individual basis. Pressure test results indicate the tanks S9 and S10 are leak-free. Tanks S-3, S-4, S-11 and S-12 are empty and inactive.

- Above ground fuel lines were pressure tested. One leaky valve was found and replaced. The lines were retested and no further leaks were found.

- Drain valve in secondary containment berm was capped and plugged. The gate valve is locked.

- A 2 inch normally closed solenoid valve was installed on diesel fueling pump in STF main pump house. The pump house is now able to provide diesel.

- All tank bottom drains were checked for tightness and tank S-03 was repaired accordingly.

3.1.3 Individual Tanks

Various tank assemblies throughout the site were visually inspected and were observed to be operating safely, with appropriate venting.

3.1.4 Other

Weekly and monthly system inspections have been implemented. Inventory is being measured on a weekly basis.

3.2 Remedial Work Conducted in 2012 and Q1 2013

Works completed during 2012 to Q1 2013 are described below.

3.2.1 Main Tank Farm

- Maintained all secondary containment areas dry and removed debris.

- Disposed of water that accumulated within the secondary containment areas. Recorded volume removed.
- Drained and blanked the underground pipeline between MTF and STF from service.
- Removed two tanks to Boneyard: M23 and MTF-1.
- Removed the fuel tanker trailer, IND-11, to the third party berm.
- Weekly inspections conducted.

3.2.2 Satellite Tank Farm

- Maintained all secondary containment areas dry and free of debris.
- Disposed of water that accumulated within the secondary containment areas. Recorded volume removed.
- Upgraded diesel hose and nozzle.
- Serviced solenoid valve at fuel module.
- Locked out gasoline pump.
- Continued to use tanks S-05 thru S-10.
- Inspected piping monthly.
- Drained and blanked the underground pipeline between the power house pump station and the power house.

3.2.3 Waste Oil Tank Farm

- Maintained all secondary containment areas dry and free of debris.
- Disposed of water that accumulated within the secondary containment areas. Recorded volume removed.
- Inspected piping monthly.

3.2.4 Glycol Tanks and Radiators

- Inspected glycol tanks and radiators and confirmed empty.
- Removed GLY-2 to Boneyard.

3.2.5 Individual Day Tanks

- Maintained all secondary containment areas dry and free of debris.
- Disposed of water that accumulated within the secondary containment areas.

- IND 6 double wall tank and a second double wall tank were installed at the Camp generator.
- Replaced incinerator tank (IND-8 old) with a double wall tank.
- Removed the following tanks from service: IND-1, 4, 5, 7, 8 (old tank), 10.

3.2.6 Other

- An audit of the FIRSTS database in January 2012 identified the information in FIRSTS is not current or correct. An inventory of all tanks on site commenced February 2012. Subsequently FIRSTS was updated but more work to this end is required to reflect the numerous changes during 2012 and Q1 2013 and future changes planned.
- The storage tank systems identification numbers were posted at each system.
- Construction drawings were gathered for all active systems in accordance with Section 46.(2)(b) of the Regulations, but updates are required to reflect changes and planned changes.
- Roosdahl Engineering Enterprises has accessed the compliance status of the systems at the Mine site and recommended modifications.

3.3 *Remedial Work Planned for 2013 to 2015*

Elgin is committed to upgrade the fuel systems at the Lupin Mine in accordance with the *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulation* (the Regulations). Modification to the MTF are planned to meet the requirements of the current Regulations as described below.

3.3.1 Main Tank Farm

- Maintain all secondary containment areas dry and free of debris.
- Dispose of water that accumulates within the secondary containment areas. Record volume removed.
- Remove the underground pipeline between MTF and STF from service. It was drained and blinded in 2012.
- Prepare six additional tanks for use in 2013, and the remainder in 2014 and 2015.
- Install fuel dispensing module, complete with secondary confinement.
- Decommission tanks M-16 thru M-21, and M22.
- Other specific compliance and upgrade items recommended by Roosdahl.

3.3.2 Satellite Tank Farm

- Maintain all secondary containment areas dry and free of debris.
- Dispose of water that accumulates within the secondary containment areas. Record volume removed.
- Remove fuel line from STF and fuel hose connection to Mechanical Shop.
- Continue to use tanks S-05 thru S-10 until the fuel dispensing module is completed in the MTF. Once done, the STS can be decommissioned.
- Remove the underground pipeline between the power house pump station and the power house from service (currently drained and blinded). Inspect piping monthly until it is removed.

3.3.3 Waste Oil Tank Farm

- Maintain all secondary containment areas dry and free of debris.
- Dispose of water that accumulates within the secondary containment areas. Record volume removed.
- Remove the underground pipeline between waste oil tank farm and power house from service. Inspect piping monthly until it is removed from service.
- Level the tanks.

3.3.4 Glycol Tanks and Radiators

- Inspect and document condition of glycol tanks and radiators.
- Maintain tanks and radiators in empty state pending the decision to reopen the Lupin Mine.

3.3.5 Individual Day Tanks

- Maintain all secondary containment areas dry and free of debris.
- Dispose of water that accumulates within the secondary containment areas. Record volume removed.
- Install a double wall day tank to provide fuel to the Mechanical Shop.
- Ensure all tanks are connected according to the Regulations.
- Continue to replace single wall tanks with double wall tanks where required.
- Replace 205 L drums being used to heat the water and sewage building.

3.3.6 Other

- The FIRSTS database information to be updated to reflect changes made.
- The storage tank systems identification numbers will be maintained at each system.
- Construction drawings have been gathered for all active systems, but will require amendments reflecting recent changes.

Legend

Project Location

Coordinate System: NAD_1983_UTM_Zone_12N

Map Sources/Notes:
Various Canadian Government Websites - Feb 2012

0 60 120 240 360 480 600 Km

1:15,000,000

Approved By: AL
Project No.: LUP
File Name: Lup-13-08-01-LocationMap-A.mxd

Prepared By: PW
Date Revised: 15 Apr 2013

Project: **Lupin Project**
Location: Kitikmeot Region, Nunavut, Canada

Location Map

Lupin Mines Incorporated

ELGIN MINING INC.

Figure: 1
Rev: 130415

489000
489100
489200
489300
7293800
7293700
7293600

IND-11
Third Party Drum Storage

M-11
M-22
M-05
M-06
M-19
M-16
M-20
M-17
M-21
M-18
M-04
M-07
M-03
M-08
M-02
M-09
M-01
M-10
M-13
M-12
M-14
M-15

Berm

Main Tank Farm
Pump Station No 2
Pump Station No 1
Main Pump Shack
Emergency Spill Shack
Heli Shack
Emergency Spill Shack 2
Power Shack
Jet A
Jet A Pump Station
Lube Oil Storage Area
Road to Tailings Containment Area
Main Pipeline to Satellite Tank Farm

Exhaust Fan
WZ Open Stopes
EG-2
EG-1
Emergency Power House

Legend

- Building
- Tank Farm Berm Outline
- Lake
- Edge of Disturbed Area
- Stream
- Road
- Sewage Pipeline (6 in Diam)
- Tailings Line Route
- Water Pipeline (8 in Diam)

Fuel Valve Status

- Open
- Closed
- Disconnected
- Emergency Shutoff

Pipe - Fuel Type, Status

- Diesel, Active
- Diesel, Abandoned
- Diesel, Uncertain
- Gasoline, Active
- Jet A, Active

Location of Tank - FuelType

- Diesel P-40
- Diesel P-50
- Diesel
- Water
- Jet-A
- Gas
- Glycol
- Waste Oil
- Empty
- Unknown

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Map Sources/Notes:
Topographic features and site layout from Satellite image dated Aug 21, 2012
Fuel tank and Fuel Containment layouts adapted from drawings by Emerson Engineering dated Oct 17, 2011 and from data updated to March 01 2013

Coordinate System: NAD_1983_UTM_Zone_12N

0 5 10 20 30 40 50 Meters

1:1,250

Approved By: JCB
Prepared By: PW
Project No.: LUP
Date Revised: 15 Apr 2013
File Name: Lup-13-04-01-v1-SiteFacilities-B.mxd

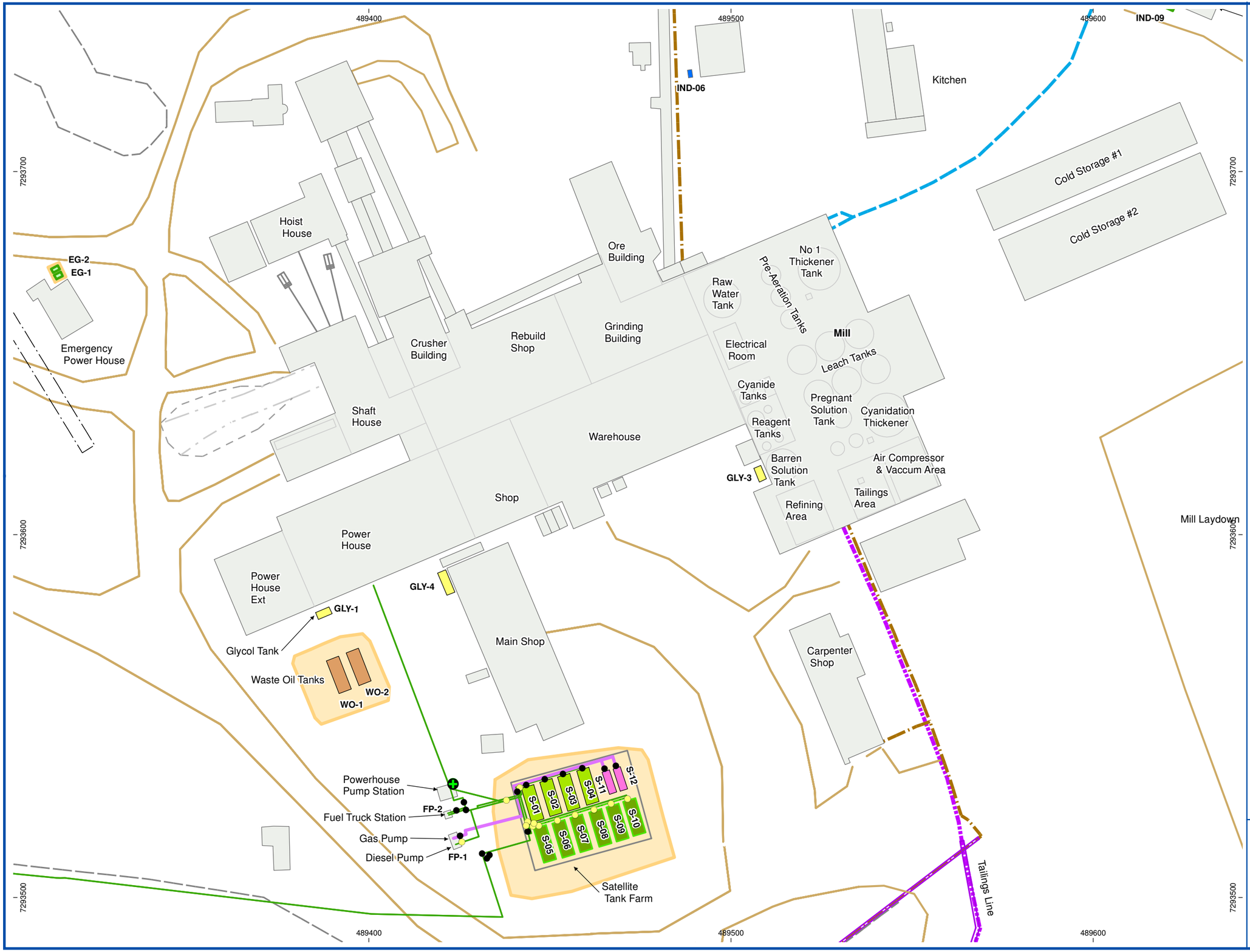
Project: **Lupin Gold Mine**
Location: Kitikmeot Region, Nunavut, Canada

Main Tank Farm

Lupin Mines Incorporated

ELGIN MINING INC.

Figure: 2
Rev: 130415



Legend

- Building
- Lake, Pond
- Tank Farm Berm Outline
- Roads
- Lake Shore, Drainage
- Sewage Pipeline (6 in Diam)
- Tailings Line Route
- Water Pipeline (8 in Diam)

Fuel Valve Status

- Open
- Closed
- Disconnected
- Emergency Shutoff

Pipe - Fuel Type, Status

- Diesel, Active
- Diesel, Abandoned
- Diesel, Uncertain
- Gasoline, Active
- Jet A, Active

Location of Tank - FuelType

- Diesel P-40
- Diesel P-50
- Diesel
- Water
- Jet-A
- Gas
- Glycol
- Waste Oil
- Empty
- Unknown

N
W E
S

Map Sources/Notes:
Topographic features and site layout from Satellite image dated Aug 21, 2012
Fuel tank and Fuel Containment layouts adapted from drawings by Emerson Engineering dated Oct 17, 2011 and from data updated to March 01 2013

Coordinate System: NAD_1983_UTM_Zone_12N

0 5 10 20 30 40 50 Meters

1:1,000

Approved By: JCB
Prepared By: PW
Project No.: LUP
Date Revised: 25 Mar 2013
File Name: Lup-13-04-01-SiteFacilities-B.mxd

Project: **Lupin Gold Mine**
Location: Kitikmeot Region, Nunavut, Canada

Fuel Containment Management Strategy

Satellite Tank Farm Area

Lupin Mines Incorporated

ELGIN MINING INC.

Figure: **3**
Rev: 130325

Legend

- Building
- Lake, Pond
- Tank Farm Berm Outline
- Roads
- Lake Shore, Drainage
- Sewage Pipeline (6 in Diam)
- Tailings Line Route
- Water Pipeline (8 in Diam)

Fuel Valve Status

- Open
- Closed
- Disconnected
- Emergency Shutoff

Pipe - Fuel Type, Status

- Diesel, Active
- Diesel, Abandoned
- Diesel, Uncertain
- Gasoline, Active
- Jet A, Active

Location of Tank - FuelType

- Diesel P-40
- Diesel P-50
- Diesel
- Water
- Jet-A
- Gas
- Glycol
- Waste Oil
- Empty
- Unknown

N W E S

Map Sources/Notes:
Topographic features and site layout from Satellite image dated Aug 21, 2012
Fuel tank and Fuel Containment layouts adapted from drawings by Emerson Engineering dated Oct 17, 2011 and from data updated to March 01 2013

Coordinate System: NAD_1983_UTM_Zone_12N

0 5 10 20 30 40 50 Meters

1:1,000

Approved By: JCB
Prepared By: PW
Project No.: LUP
Date Revised: 25 Mar 2013
File Name: Lup-13-04-01-SiteFacilities-B.mxd

Project: **Lupin Gold Mine**
Location: Kitikmeot Region, Nunavut, Canada

Fuel Containment Management Strategy

Offices and Accomodation Area

Lupin Mines Incorporated

ELGIN MINING INC.

Figure: **4**
Rev: 130325

489700
489800
489900
7293400
7293300

Burn Pit

Landfill

Boneyard

IND-08-Old
IND-05
IND-04
M-23
MTF-1
IND-01
GLY-2
IND-07
IND-10

Decommissioned Tanks
(Q4 2012, Q1 2013)

BY-1
BY-2
BY-3
BY-4
BY-5
BY-6

Lower Sewage Lake - Chaffee Lake

Legend

- Building
- Lake, Pond
- Tank Farm Berm Outline
- Roads
- Lake Shore, Drainage
- Sewage Pipeline (6 in Diam)
- Tailings Line Route
- Water Pipeline (8 in Diam)

Fuel Valve Status

- Open
- Closed
- Disconnected
- Emergency Shutoff

Pipe - Fuel Type, Status

- Diesel, Active
- Diesel, Abandoned
- Diesel, Uncertain
- Gasoline, Active
- Jet A, Active

Location of Tank - FuelType

- Diesel P-40
- Diesel P-50
- Diesel
- Water
- Jet-A
- Gas
- Glycol
- Waste Oil
- Empty
- Unknown

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Map Sources/Notes:
Topographic features and site layout from Satellite image dated Aug 21, 2012
Fuel tank and Fuel Containment layouts adapted from drawings by Emerson Engineering dated Oct 17, 2011 and from data updated to March 01 2013

Coordinate System: NAD_1983_UTM_Zone_12N

0 5 10 20 30 40 50 Meters

1:1,000

Approved By: JCB
Prepared By: PW
Project No.: LUP
Date Revised: 25 Mar 2013
File Name: Lup-13-04-01-SiteFacilities-B.mxd

Project: **Lupin Gold Mine**
Location: Kitikmeot Region, Nunavut, Canada

Fuel Containment Management Strategy

Bone Yard Area

Lupin Mines Incorporated

ELGIN MINING INC.

Figure: **5**
Rev: 130325

Appendices

Appendix 1: Tank Information

Appendix 1
Tank Information

Location	Map Reference	ID//Serial #	Registration #	In Secondary Containment?	Capacity (L) 95%	Fuel type	Status On Site	Status on FIRSTS	Type	Notes
Main Tank Farm System (MTS)	M-01	M-01	EC-00004535	Yes	790,000	Diesel	Active	Incomplete	Vertical AST	
	M-02	M-02	EC-00004535	Yes	790,000	Diesel	Active	Incomplete	Vertical AST	
	M-03	M-03	EC-00004535	Yes	790,000	Diesel	Inactive	Incomplete	Vertical AST	
	M-04	82-133	EC-00004535	Yes	1,530,000	Diesel	Active	Incomplete	Vertical AST Gem Steel 1982	
	M-05	82-133-	EC-00004535	Yes	1,510,000	Diesel	Inactive	Incomplete	Vertical AST Gem Steel 1982	
	M-06	82-133-1	EC-00004535	Yes	1,520,000	Diesel	Inactive	Incomplete	Vertical AST Gem Steel 1982	
	M-07	82-133-2	EC-00004535	Yes	1,530,000	Diesel	Inactive	Incomplete	Vertical AST Gem Steel 1982	
	M-08	82-133-5	EC-00004535	Yes	1,530,000	Diesel	Inactive	Incomplete	Vertical AST Gem Steel 1982	
	M-09	82-133-3	EC-00004535	Yes	1,530,000	Diesel	Inactive	Incomplete	Vertical AST Gem Steel 1982	
	M-10	82-133-4	EC-00004535	Yes	1,530,000	Diesel	Inactive	Incomplete	Vertical AST Gem Steel 1982	
	M-11	89-33-001	EC-00004535	Yes	1,520,000	Diesel	Inactive	Incomplete	Vertical AST Gem Steel 1989	
	M-12	86023-001	EC-00004535	Yes	1,510,000	Diesel	Inactive	Incomplete	Vertical AST Gem Steel 1986	
	M-13	J-8716	EC-00004535	Yes	1,550,000	Diesel	Active	Incomplete	Vertical AST GLM 1986	
	M-14	93-86	EC-00004535	Yes	1,597,314	Diesel	Inactive	Incomplete	Vertical AST Wilkinson steel	
Jet A System in Main Tank Farm	M-15	92-050	EC-00004535	Yes	1,530,000	Jet A	Active	Incomplete	Vertical AST Gem Steel 1992	
Individual Tanks in Main Tank Farm	M-16	954	EC-00018370	Yes	64,000	Diesel	Inactive	Incomplete	Vertical AST Marclan Industries 1985	Contaiminated fuel/water
	M-17	960	EC-00018371	Yes	64,000	Diesel	Inactive	Incomplete	Vertical AST Marclan Industries 1986	
	M-18	958	EC-00018372	Yes	64,000	Diesel	Inactive	Incomplete	Vertical AST Marclan Industries 1986	
	M-19	957	EC-00018374	Yes	64,000	Diesel	Inactive	Incomplete	Vertical AST Marclan Industries 1986	

Appendix 1
Tank Information

Location	Map Reference	ID//Serial #	Registration #	In Secondary Containment?	Capacity (L) 95%	Fuel type	Status On Site	Status on FIRSTS	Type	Notes
Individual Tanks in Main Tank Farm	M-20	1184	EC-00018375	Yes	64,000	Diesel	Inactive	Incomplete	Vertical AST Marclan Industries 1986	
	M-21	952	EC-00018376	Yes	64,000	Diesel	Inactive	Incomplete	Vertical AST Marclan Industries 1985	
	M-22	M-22	EC-00018377	Yes	137,000	Diesel	Inactive	Incomplete	Horizontal AST	
Satellite Tank System (STS)	S-1	S-1	EC-00004544	Yes	87,000	Diesel	Inactive	Identified	Horizontal AST	
	S-2	S-2	EC-00004544	Yes	87,000	Diesel	Inactive	Identified	Horizontal AST	
	S-3	S-3	EC-00004544	Yes	87,000	Diesel	Inactive	Identified	Horizontal AST	
	S-4	S-4	EC-00004544	Yes	87,000	Diesel	Inactive	Identified	Horizontal AST	
	S-5	S-5	EC-00004544	Yes	87,000	Diesel	Active	Identified	Horizontal AST	
	S-6	S-6	EC-00004544	Yes	87,000	Diesel	Active	Identified	Horizontal AST	
	S-7	S-7	EC-00004544	Yes	87,000	Diesel	Active	Identified	Horizontal AST	
	S-8	S-8	EC-00004544	Yes	87,000	Diesel	Active	Identified	Horizontal AST	
	S-9	S-9	EC-00004544	Yes	87,000	Diesel	Active	Identified	Horizontal AST	
	S-10	S-10	EC-00004544	Yes	87,000	Diesel	Active	Identified	Horizontal AST	
	S-11	S-11	EC-00018392	Yes	22,000	Gas	Empty	Identified	Horizontal AST	
	S-12	S-12	EC-00018392	Yes	22,000	Gas	Empty	Identified	Horizontal AST	
Waste Oil Tank Farm (WOTF)	WO-1	WO-1	EC-00018398	Yes	90,000	Waste Oil	Active	Identified	Horizontal AST	
	WO-2	WO-2	EC-00018398	Yes	90,000	Waste Oil	Active	Identified	Horizontal AST	
Tanks in Bone Yard	BY-1	4187L AG4027	EC00018404??	N/A	64019	-	Removed from service	Incomplete	Horizontal AST	Removed 2011
	BY-2		EC00018409??	N/A	102431	-	Removed from service	Incomplete	Horizontal AST	Removed 2011
	BY-3	Unidentified Tank	-	N/A	64019	-	Removed from service	Incomplete	Horizontal AST	Removed 2011
	BY-4	4209		N/A	105155	-	Removed from service	Incomplete	Horizontal AST	Removed 2011
	BY-5	Unidentified Tank	-	N/A	105155		Removed from service	Incomplete	Horizontal AST	Removed 2011
	BY-6	Unidentified Tank	-	N/A	14404		Removed from service	Incomplete	Horizontal AST	Removed 2011
	M-23	from MTF	EC-00018378	N/A	6,000		Removed from service	Identified	Horizontal AST	Removing in 2013
	MTF-1	from MTF	-	N/A	2,000		Removed from service	Unidentified	Horizontal AST	Removed 2012
	GLY-2	Glycol Tank outside WOTF	-	N/A	9,603		Removed from service	Unidentified	Horizontal AST	Removed 2012
	IND-1	RTL Shop tank	-	N/A	2,290		Removed from service	Unidentified	Horizontal AST	Removed 2012

Appendix 1
Tank Information

Location	Map Reference	ID//Serial #	Registration #	In Secondary Containment?	Capacity (L) 95%	Fuel type	Status On Site	Status on FIRSTS	Type	Notes
Tanks in Bone Yard	IND-4	D-87781	-	N/A	50,000		Removed from service	Unidentified	Horizontal AST Serial # D87-781	Removed 2012
	IND-5	Spare Tank	-	N/A	20,000		Removed from service	Unidentified	Horizontal AST	Removed 2012
	Old IND-6	Spare Tank	-	N/A	2290		Removed from service			Removed 2012
	IND-7	Generator Station	-	N/A	2,000		Removed from service	Unidentified	Horizontal AST	Removed 2013
	Old IND-8	Incinerator Day Tank	-	N/A	6,669		Removed from service	Unidentified	Horizontal AST	Removed 2012
	IND-10	Mill Tank	-	N/A	2,000		Removed from service	Unidentified	Horizontal AST	Removed 2012
Emergency Powerhouse	EG-1	Unidentified Tank	NA	Yes	2,000	Diesel	Active	Registratn not req'd	Horizontal AST	Replacing with Dbl wall 2013
	EG-2	Unidentified Tank	NA	Yes	2,000	Diesel	Active	Registratn not req'd	Horizontal AST	Replacing with Dbl wall 2013
Glycol Tanks	GLY-1	Glycol Tank outside WOTF	-	No	9,603	Glycol	Inactive	Unidentified	Horizontal AST	
	GLY-3	Glycol Tank outside Mill	-	Yes	8,803	Glycol	Inactive	Unidentified	Horizontal AST	
	GLY-4	Glycol Tank beside Mechanical Shop	-	No	2,134	Glycol	Inactive	Unidentified	Rectangular tank	
	GLY-5	At Boiler beside Offices & IND-12	-	No	2,134	Glycol	Active	Unidentified	Rectangular tank	Supports boiler
Active Indivual Tanks	IND-2	Portable Tank	-	Yes	1,200	Diesel	Active	Registratn not req'd	Horizontal AST Gem Steel	Used to fuel day tanks
	IND-3	Tank Near Old Accommodations	-	Yes	2,134	Diesel	Active	Unidentified	Horizontal AST	Camp backup genny
	IND-6 (new)	Camp gen//671204309&312	-	Double walled	2 tanks X 2290	-	Active	Unidentified	Horizontal	2 New tanks
	IND-8 (new)	Incinerator//671207534	-	Double walled	2,290	Diesel	Active	Unidentified	Horizontal	New tank
	IND-9	Log Cabin Tank//711	-	Double walled	455	Diesel	Active	Registratn not req'd	Horizontal AST Model C-643334 2008	
	IND-11	Fuel Tanker Trailer	-	Yes	4,000	Diesel	Inactive	Registratn not req'd	Mobile tanker trailer	
	IND-12	Boiler by offices, beside GLY-05	-	Yes	5000	Diesel	Active	Unidentified	Horizontal	Replacing with Dbl wall 2013

Appendix 2: Photographs

Appendix 2
Photographs

Photo 1: Main Tank Farm, Feb 2012. Tanks M-22, M-05, M-06, M-23, M-11 (left to right).

Photo 2: Main Tank Farm, Feb 2012. Pump Station 2, Tanks M-04, M-21, M-20, M-19, M-5, M-23 (left to right).

Appendix 2
Photographs

Photo 3: Jet A Fuel Dispensing Facility, Aug 2011. Tanks M-15, M-13, MTF-1 (left to right).

Photo 4: Individual Tanks in MTF, Aug 2011. Tanks M-20, M-19, M-5 (left to right).

Appendix 2
Photographs

Photo 5: M-22 Disconnected From Piping, Feb 2012.

Photo 6: Middle Containment Cell in MTF, Aug 2011. Tanks M-14, M-13 and M-10 (left to right).

Appendix 2
Photographs

Photo 7: STF, Feb 2012. Tanks S-05 thru S-10 (left to right).

Photo 8: Diesel Dispensing Station, STF, Feb 2012.

Appendix 2
Photographs

Photo 9: Evidence of Historical Spill in STF, Aug 2011. Tank S-05 in the Foreground

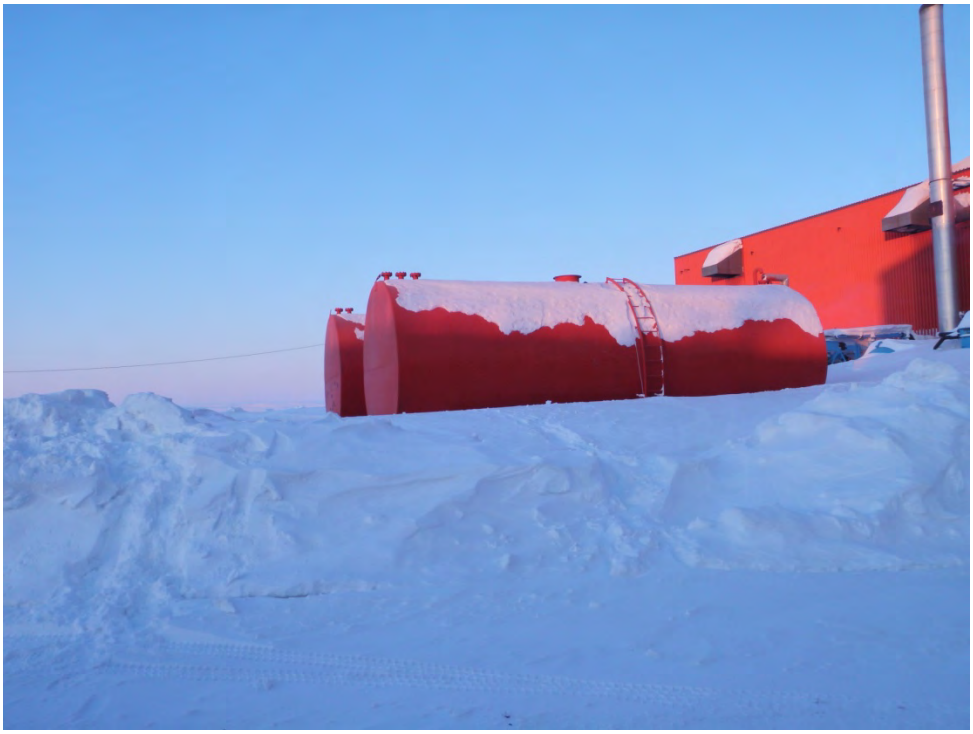

Photo 10: WOTF, Feb 2012. Tank WO-2 in the Foreground.

Appendix 2
Photographs

Photo 11: WOTF, Sept. 2011. Tanks WO-2 and WO-1 (left to right).

Photo 12: Blue Glycol Tank (GLY-2 in foreground, now in Boneyard) and Radiators, Feb 2012.

Appendix 2
Photographs

Photo 13: GLY-4, Feb 2012.

Photo 14: GLY-5, Feb 2012. IND 12 has staircase attached to it.

Appendix 2
Photographs

Photo 15: Tank IND-1 at RTL Shop, Feb 2012. Removed to Boneyard

Photo 16: Tanks IND-4 & IND-5 (both in Boneyard now), S-05 thru S-10 (left to right).

Appendix 2
Photographs

Photo 17: Incinerator Tank, IND-8. Replaced with a double wall tank 2012.

Photo 18: Mill Tank, IND-10. Removed to Boneyard.

Appendix 2
Photographs

Photo 19: Tanks for former emergency powerhouse, Feb 2012. EG-1 and EG-2.

Photo 20: Third Party Storage Area, Feb 2012.

Appendix 2
Photographs

Photo 21: Lube Oil Storage Area, Feb 2012

Photo 22: WSC Drum Storage Area, Feb 2012. Removed.

Appendix 2
Photographs

Photo 23: Tanks Withdrawn From Service in the Bone Yard, Feb 2012. Tanks BY-1 thru BY-5 (left to right).

Photo 24: Tanks Withdrawn From Service in the Bone Yard, Feb 2012. Tanks BY-4 thru BY-6 (left to right).

Appendix 2
Photographs

Photo 25: Remedial Works in MTF, Oct 2011.

Photo 26: Remedial Works in Oct 2011. Disconnected Header in MTF.

Appendix 2
Photographs

Photo 27: IND-6 new double wall tanks at Camp Generator 2012.