APPENDIX 17

MINE DOCUMENTS

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MINERALS & MINING PROGRAM

Spill Contingency Plan

List of Proposed Technical Revisions

Resumes

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WHARF RESOURCES (U.S.A.), INC.
THE WHARF MINE
LEAD, SOUTH DAKOTA

SPILL CONTINGENCY PLAN

(SPILL PREVENTION CONTROL AND COUNTER MEASURE PLAN)

FEBRUARY 16, 1996
(Updated December 11, 1996)
(Updated December 17, 1997)
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(Updated July 13, 2009)
(Updated April 13, 2010)

1.0 SITE DESCRIPTION

The Wharf Mine is an open pit, heap leach, gold and silver mine with a carbon in column recovery system processing facility. The mine is located approximately 3.5 miles west of Lead, South Dakota. The mine is accessed by the Nevada Gulch Road and then the Wharf Road, an access road constructed on privately held property. The legal description of the land is: Sections 25, 26, 33, 34, 35 and 36 of T.5N., R.2E., and Sections 1, 2, 3 and 4 of T.4N., R.2E., Black Hills Meridian, Lawrence County, South Dakota.

The mine was permitted by the South Dakota Department of Environment and Natural Resources, Board of Minerals and Environment, under 4 permits: numbers 356, 434, 435 and 464.

2.0 SPILL CONTINGENCY PLAN

Wharf Resources (U.S.A.), Inc., The Wharf Mine (Wharf), has developed a contingency plan to deal with any emergency situation arising from an accidental spill of substances with significant contaminant potential. This Spill Contingency Plan (SCP) has been prepared in accordance with 40 CFR 116, pursuant to chapter 311 of the Clean Water Act and South Dakota Administrative Rules Chapter 74:34:01. The plan is designed to guide responders through the processes for first aid, containment and clean-up, and notification requirements for accidental spills at the site. The SCP describes procedures for handling on-site spills of:

Liquid Cyanide, Fuel, Chemicals and Reagents, and Met Process Solution

ALL SPILLS SHALL BE TREATED EQUALLY!

As part of the SCP, Wharf shall routinely conduct in-house inspections of the mine facility for situations and/or conditions that may represent potential spill hazards. Appropriate actions will be taken to minimize the potential for the occurrence of a spill or release of toxic materials.

2.1 Cyanide

2.1.1 Emergency Response

EMERGENCY ACTION
(PERSON DISCOVERING THE SPILL)
LIQUID CYANIDE SPILL

Includes spills from:

ponds	leach pads	pipelines
plants	storage tanks	all others

1) **CALL MAYDAY!**

2) Protect Yourself from Spills - Don't Become a Casualty.

3) Render Emergency First Aid.

   Administer cyanide antidote using amyl nitrite and oxygen.

4) Identify Source.

   Stop the spill at the source and contain run-off. Have plant personnel sample spill material for WAD Cyanide. Dilute the spill with water, then neutralize the liquid spill with a 1:1 solution of bleach and water - *only use chemicals if you have been specifically trained on their application.* Clean the spill area. Reneutralize.

5) Notify Supervisor and Environmental Personnel and Give Information On:

   A. Spill location

   B. What, when, where, and how much was spilled

   C. Injuries and problems caused by the spill

   D. Emergency actions you have taken

6) Maintain Watch on the Spill Until Otherwise Advised by Supervisor.

7) Fill Out Spill Report and Incident Report Forms.

   A spill report form is located in Appendix A. Copy the form and fill out accordingly.

EMERGENCY ACTION
(SUPERVISOR)
LIQUID CYANIDE SPILL AND MET PROCESS SOLUTION

The immediate supervisor responding to the scene of a cyanide spill will take the following actions:

1) Protect Yourself from Spills - Don't Become a Casualty.

2) Eliminate or reduce health or life hazards and perform first aid. Arrange for removal and transport of injured and notify hospitals, doctors, etc.

3) Begin spill containment and neutralization immediately.

   A. Eliminate the Spill Source
   B. Contain the Spill
   C. Take a Sample of the Spill Solution and Analyze for WAD Cyanide.
   D. Dilute with Water, then Neutralize the Spill with a 1:1 solution of bleach (NaOCl) and water.
   E. Clean Up Spill (take all solution to a containment pond and contaminated soil to a heap leach pad)
   F. Reneutralize Area after Clean-up

4) Assess the Problem and Damage. Determine:

   A. Spill source, quantity, estimated concentration of cyanide, and extent of contamination.

   B. Health and environmental hazards - toxic vapor, groundwater and surface water contamination.

5) **EVACUATE ALL UNNEEDED PERSONNEL AND RESTRICT ENTRY TO THE AREA.**

6) NOTIFY: While emergency actions are being taken, contact one of the following mine personnel:

Name	Work Phone	Home / Cell Phone	Radio
Lynne Blackman	584-4128	(605) 717-1711	207
Bill Shand	584-4113	(605) 580-0222	101
Bruce Davis	584-4152 or 4148	(605) 580-0291	211
Ken Nelson	584-4177	(605) 580-0441	103
Ron Waterland	584-4155	(605) 490-2065	108

On weekends call Management on Duty.

Information to be given will include:

A. Injury Information.
B. Immediate health or environmental hazards such as cyanide (CN) vapors in the air, water pollution, etc.
C. What, where, when, and how the spill happened.
D. Volume and concentration of spilled material.
E. Containment and neutralization actions taken.

7) Make sure Spill Report and Incident Report Forms have been filled out completely and correctly.

EMERGENCY ACTION
LIQUID CYANIDE AND MET PROCESS SOLUTION

Managers will take the following actions:

1) Ensure supervisor emergency actions 1 to 7 (above) have been taken.

2) Issue necessary warning of potential hazards.

3) Determine on-site damage and extent of spill.

4) Determine containment and/or neutralization measures to be continued or initiated.

5) Contact Environmental Personnel and they will notify the following immediately upon becoming aware of the spill or as soon as is practical - no later than 24 hours:

A. State Agencies

1. South Dakota Department of Environment and Natural Resources

	Minerals and Mining Program	(605) 773-4201
or	Point Source Control Program	(605) 773-3351
or	Groundwater Quality Program	(605) 773-3296
or	State Radio	(605) 773-3536

After business hours or on weekends contact:

Emergency Management	(605) 773-3231

2. * South Dakota Department of Game, Fish, and Parks (605) 394-2391

* Depends on the location and affected area of the spill.

B. County Agencies Ψ

Lawrence County Emergency Management Officer:
Paul L. Thomson (Office) (605) 578-2122
(Home) (605) 642-4019

If unable to contact Emergency Management Officer:
Hazardous Materials Officer:
Ken Hawki (Office) (605) 578-2122
(Home) (605) 578-3425

If unable to contact either of the above:
Lawrence County Central Dispatch Office
(605) 578-2230

Ψ Please see Appendix C.

C. Federal Agencies

1. # Environmental Protection Agency (EPA)
1-800-424-8802
Dependant on substance spilled and size of the spill.

2. * U.S. Forest Service (Spearfish Ranger District)
(605) 642-4662

* Depends on the location and affected area of the spill.

D. Emergency Response Consultants

Emergency response consultants will be contacted by Environmental or Metallurgical Personnel if deemed necessary.

See Section 4.0 for additional persons and agencies to contact in case of an emergency.

2.1.2 **Containment, Neutralization, Clean-Up, and Monitoring**

After initial emergency actions have been taken, additional actions may be necessary to contain, neutralize, clean-up, and monitor the spill.

A. CONTAINMENT

Spills can occur resulting in uncontained contaminated soil or water that requires additional corrective measures. Spills that escape mine containment facilities may result in some form of surface and/or groundwater cyanide contamination.

Uncontained spills include:

1. Spills from ponds including: pond leakage, overtopping, and dam failure.

2. Spills at leach pads including: ruptured pipes, drip lines too close to the edge, inadvertent openings of valves, and seepage or flow from the leach pad base.

3. Spills from the plant, including: sump overflows, broken pipes, etc.

Contaminated surface flow down a drainage:

Flow should be dammed near the site of the contamination using earth or impermeable materials (plastic liners, etc.). Collected water should be pumped back to a leach pad or a liquid containment facility.

Groundwater Contamination

1. Cyanide detected in one or more monitoring wells:

Pump well(s) if possible to remove contaminated groundwater and control spread of cyanide contamination. Well discharge should be pumped back to a suitable disposal area. Additional wells may need to be drilled in contaminated areas for monitoring movement and removal of contaminated groundwater. Personnel in Groundwater Quality (DENR) must be notified before injecting any neutralization solutions in groundwater [(605) 773-3296].

2. Cyanide detection in water supplies:

Immediately prohibit usage of water supply and provide alternate supply. Locate source of contamination and contain and treat accordingly to reduce or eliminate contamination.

B. NEUTRALIZATION

Neutralization procedures for cyanide spills are dependent on:

1. Cyanide concentration
2. pH
3. Location and extent of contamination.

Highly concentrated cyanide solution should never be treated with concentrated sodium hypochlorite to avoid release of toxic cyanogen chloride gas.

To reduce formation and release of dangerous amounts of hydrogen cyanide or cyanogen chloride gas, a concentrated cyanide solution spill should be diluted with lime or caustic solution. The alkali solution raises the pH and lowers the hydrogen cyanide concentration. When cyanide has been diluted to concentrations of 100 - 200 milligrams per liter and pH has been raised to 10 or above, sodium hypochlorite can be added to neutralize the spill as described for mine process waters.

Note: Current cyanide solutions at Wharf Resources contain 50 milligrams per liter or less and do not require dilution prior to treatment. More concentrated cyanide solutions can be safely treated with NaOCl in the open air with the pH above 10. If necessary, treatment of up to 5000 mg/liter is possible.

Neutralizing chemicals will be stored on site or readily available in quantities sufficient to neutralize the maximum amount of cyanide that may occur in the normal working solution inventory in the processing ponds at any one time. Neutralizing chemicals include both bleach (sodium hypochlorite) and H_2O_2 (hydrogen peroxide).

C. CLEAN-UPS

After containment and neutralization of the solution, the contaminated materials should be eliminated and/or neutralization should be continued until contamination concentrations comply with state or federal law or to SD DENR approval, as applicable.

Clean-up will involve removal and disposal of contaminated material, soil, etc. in a lined containment area (heap leach pad). Clean-up may involve flushing of soils or pumping shallow aquifers to remove contaminated material. All clean-up activities should be carefully planned and recorded to establish a clear record of what actions were taken and where and when the actions occurred.

D. MONITORING

The South Dakota Department of Environment and Natural Resources will be consulted as to the frequency and duration of surface and groundwater monitoring in the event of a spill.

2.1.3 Documentation and Reporting

A written report is to be made immediately after termination of spill response operations. The report should include:

A. **SUMMARY OF EVENTS**

1. Injury Information
2. Immediate health or environmental hazards (CN vapor, water pollution, etc.)
3. What, where, when, and how the spill happened
4. Volume and concentration of the spill material
5. Containment and neutralization actions taken
6. Organization of the response
7. Resources used

B. **EFFECTIVENESS OF RESPONSE AND CLEAN-UP ACTIVITIES**

Note any changes of water quality as clean-up and neutralization progress.

C. **COPIES OF WATER QUALITY ANALYSES**

D. **RECOMMENDATIONS OR PREVENTATIVE MEASURES**

1. Precautions to prevent recurrence of the spill or incident
2. Suggestions for improved response

E. **FIGURE SHOWING LOCATION OF SPILL**

1. Containment facilities used
2. Locations of neutralization sites
3. Monitoring sites

F. **SPILL DOCUMENTATION AND REPORTING**

* The Environmental Department shall submit a completed spill report form to the Department within 72 hours of the spill event. The form shall include, but is not limited to:

1. The title of the person reporting the incident
2. Containment measures taken
3. Treatment measures taken
4. Recovery measures taken
5. Proposed further mitigation if required
6. Monitoring and sampling results
7. Location of disposal of removed contaminants
8. Photographic documentation when practical

* Written progress reports shall be submitted every fifteen days after the initial report, until corrective action is complete.

2.1.4 Cyanide Antidote Location and Administration Procedures

First Aid Supplies

First aid supplies should be immediately accessible at all times and should be inspected monthly by the individuals who would be using them in an emergency. The following items are required:

1. Two boxes (two dozen) amyl nitrite pearls.

   CAUTION: UNSTABLE - REPLACE EVERY YEAR.
   Store in cool, dark location.

2. Oxygen inhalators.

3. Two 1-pint bottles of 1% sodium thiosulfate solution.

4. A set of instructions on First Aid Treatment.

FIRST AID

RESCUE PROCEDURE

1. Call for nearby help.
2. Protect yourself from cyanide exposure.
3. Move victim to fresh air.
4. Flush contaminated skin areas with large quantities of water.
5. Quickly determine the victim's condition.
6. Give first aid immediately as outlined below, even while clothing is being removed or flushing is taking place.
7. **Send for trained medical help** (to administer sodium nitrite and sodium thiosulfate, if necessary).

INHALATION

1. Fully Conscious

   - Give Oxygen

2. Unconscious / Not Fully Conscious

   - Give Oxygen and amyl nitrite immediately (see procedure).

3. Not Breathing

   - Give Oxygen and amyl nitrite immediately (see procedure); force breathing with oxygen resuscitator or protected artificial respiration.

ABSORBED THROUGH EYE/SKIN

- Give oxygen and amyl nitrite as for inhalation (see procedure).

- Immediately rinse with plenty of plain water for at least 15 minutes and remove contaminated clothing.

- Lay victim down and keep warm.

- Watch victim for at least 1-2 hours.

- Cyanide can also cause caustic burns.

SWALLOWING

1. Conscious

   - Give oxygen and amyl nitrite as for inhalation (see procedure).

   - Immediately rinse mouth with plain water and expectorate.

   - DO NOT induce vomiting.

2. Unconscious / Not Breathing

   - DO NOT give unconscious person anything by mouth.

   - Give oxygen and amyl nitrite immediately as for inhalation (see procedure).

   - DO NOT induce vomiting.

AMYL NITRITE PROCEDURE

Rescuer:

Amyl nitrite is flammable. Remove all sources of ignition; do not smoke! To avoid dizziness, do not inhale amyl nitrite.

Caution:

The uninterrupted administration of amyl nitrite can cause low blood pressure or dizziness.

IF BREATHING_____

1. Crush ampule in gauze or cloth.

2. Hold ampule in gauze or cloth under nose 15 seconds then away for 15 seconds.

3. Repeat step two (above) 5-6 times per ampule, using a new ampule every 3 minutes if needed (1-4 ampules).

4. Continue treatment until victim is conscious or medical help arrives.

IF NOT BREATHING_____

1. Crush ampule in gauze or cloth.

2. Hold ampule and gauze under oxygen resuscitator face mask to avoid choking from ampule in throat.

3. Force deep breathing with resuscitator, 1 breath every 4-5 seconds. Hold ampule for 3 breaths, take out for 3 breaths.

4. Repeat 5-6 times per ampule, using new ampule every 3 minutes (1-4 ampules).

5. Continue treatment until victim is conscious or until relieved by medical personnel. Avoid overusing amyl nitrite.

2.2 **Fuel**

A separate SPCC plan for petroleum products has been prepared in compliance with the provisions of 40 CFR, Part 112 and signed by a registered professional engineer. This plan is available for use in the environmental office.

Fuels, including diesel, gasoline, lubricating oils (considered as fuel in this discussion), propane, and methanol must be handled carefully to avoid spills. Adherence to the transportation plan (see Section 3.0.4 and Attachment 1) will significantly reduce the potential for fuel spills. On-site fuels will be stored in facilities designed to contain spills, and fueling sites will be located and constructed to minimize fuel losses.

Three types of spills must be considered. These are:

1. Spills during transport to the site.
2. Fuel losses in storage and fueling area.
3. Fuel spills in areas not designed for containment, such as fuel trucks servicing construction equipment.

2.2.1 HEALTH AND SAFETY

All fuels should be considered highly flammable and sparks or open flames must be avoided around spills. In case of fire, immediately call a MAYDAY. Attempt to put out the fire without exposing yourself to risk or injury. If there is any question as to safety, evacuate the area of all personnel immediately. Immediately call your supervisor. The supervisor will then immediately contact the safety coordinator and department head or management on duty.

Propane is a colorless, odorless gas that may be stenched. Exposure will cause eye and skin freeze burns, dizziness, headache, fatigue, coughing, unconsciousness, and death. First aid should include flushing of eyes and skin with running water and using cool wet bandages. Transport immediately to a medical facility.

Methanol is a clear, colorless liquid that may liberate methane gas and methanol fumes. Methanol may be fatal or cause blindness if swallowed. Breathing the vapor may cause headache, vomiting, dizziness, narcosis, respiratory failure, low blood pressure, and central nervous system depression. Contact with eyes or skin will cause temporary corneal damage and dermatitis. Medical conditions generally aggravated by exposure are eye disorders, skin disorders, and liver and kidney disorders. First aid should include:

1. Drink large amounts of water and induce vomiting if swallowed.
2. Move to fresh air and give oxygen if breathing is difficult.
3. Flush skin and eyes with water for at least 15 minutes.
4. Remove contaminated clothing.
5. Transport to a medical facility.

2.2.2 FUEL SPILL EMERGENCY RESPONSE

1. **CALL MAYDAY!**
2. Protect Yourself - Don't Become a Casualty.
3. Render Emergency First Aid.
4. Evacuate Unnecessary Personnel.
5. Protect from Ignition.
6. Identify Source - Stop the Spill - Contain Run-off.
7. Ventilate Area.
8. Initiate Clean-up, if possible.
9. Notify Supervisor and Environmental Personnel.
10. Maintain Watch on Spill Until Otherwise Advised by Supervisor.
11. Fill Out Spill Report and Incident Report Forms

2.2.3 SPILL CONTAINMENT

If possible, all flammable materials in and adjacent to the spill site should be removed immediately. Fuel spills must then be contained as soon as possible after the loss has occurred to prevent its spreading and to simplify clean-up procedures.

A Spill Response Kit is available for use at the Warehouse. Please report any materials used, removed, or missing to the SMRTeam or the Environmental Department. An inventory list of all spill kit supplies is included in Appendix B.

A. Fueling Pad Spills (in lined area)

Fueling pad spills, in a lined area, do not require further containment. Fueling pad spills, in an unlined area, will be treated as land spills.

B. Land Spills

To prevent the spill from spreading laterally, construct an earthen dike or dam of sufficient size to intercept both the fuel and any impacted water.

C. Water Spills

Contain the floating fuel with a boom, which is any device that will float on water and prevent the spread of the fuel. Commercial booms are available in the spill response kit, or a boom may be constructed of logs or any readily available flotation device. Ideally, the boom will extend a few feet into the water. A filter fence is recommended for small streams and ditches.

Deploy a boom across the channel, downstream from the spill - the higher the current, the more acute the angle needed between the boom and the

shore. Spread sorbent material on the upstream side of the boom to prevent fuel from passing through joints or gaps. Fuel coming from upstream should strike the boom and be diverted to the shore where it can be recovered by sorption.

2.2.4 SPILL NOTIFICATION

The necessary notification of outside agencies will be made by the Environmental Department after notifying the Mine Manager (or Management on Duty during the weekends). Please see page 5, section 2.1.1, Emergency Action Liquid Cyanide - Part 5 for details.

2.2.5 REMOVAL OF FUEL AND CONTAMINATED MATERIAL

A. From fuel tank containment

Fuel may be removed by suction and used or placed in a designated lined containment area in containers. The containers will be moved to an approved disposal site.

B. From land

First remove free product by suction. Contaminated soil beneath the spill must then be removed to a lined containment area. Both the product and soil will be moved to an approved disposal site. If considered a potential groundwater or surface water contamination problem, the SD DENR will be consulted regarding the frequency and duration of surface and groundwater monitoring.

C. From water

A suction pump may be used to remove fuel or a commercial skimmer may remove fuel mechanically. Booms may also be used as recommended above. If any of these methods is unfeasible, incineration may be used with the approval of fire control authorities. Prior to incineration of unrecoverable fuel spills on water, Point Source Control Program, DENR, shall be notified.

If groundwater is contaminated, then fuel must be removed with recovery wells or trenches and the water/fuel mixture taken to a disposal area. The Groundwater Quality Program, DENR, shall be notified immediately upon Wharf's becoming aware of a groundwater contamination problem.

2.3 **Chemicals and Reagents**

Various chemicals and reagents will be used in the mining and mineral processing operation. Substances of most concern will include hydrogen peroxide (H_2O_2) for neutralization of spent ore, Sodium Hypochlorite (NaOCl) for

neutralization of cyanide spills, caustic and lime to maintain high pH in process solution, sulfuric acid (H_2SO_4) for pH control as well as cleaning screens and carbon for the columns, and phosphoric acid (H_3PO_4) that may be used for the metabolic process in the biological denitrification facilities.

An important factor in the handling of these substances will be the method of transportation and storage. Transportation to the site will minimize or eliminate chemical and reagent spills (See Section 3.0.4 and Attachment 1). On-site storage of chemicals and reagents will be in facilities designed to handle these substances, which will significantly reduce the possibility of spills.

2.3.1 **Hydrogen Peroxide**

Hydrogen Peroxide is a clear, colorless liquid that is mixable with water in all proportions. Hydrogen Peroxide is a strong oxidizer, and if it is spilled on combustible materials (including ordinary clothing), it can ignite them. In case of spontaneous combustion, use only water to fight the fire. **Do not** use chemical fire retardants. Since hydrogen peroxide is a corrosive liquid, fire fighters should wear full body protection and self-contained breathing apparatus.

First Aid

In case of contact, immediately flush the skin and/or eyes with large amounts of water for at least 15 minutes while quickly removing contaminated clothing and shoes. Wash contaminated clothing and shoes thoroughly and promplty. Clothing left to dry before washing may ignite. Contact a physician.

Spill Containment and Clean-up

Stop the spill at the source and contain run-off. Hydrogen peroxide is not flammable. However, it will accelerate fires because it is an excellent oxygen source; therefore, do not use any combustible material in containing the spill. Most spills will occur in contained areas where dilution of the spill with water and washing it into the appropriate pond is satisfactory.

Small spills occurring off contained areas should be diluted with large quantities of water. Large spills require containment and pump-back to the neutralization pond. Note: Only qualified personnel should initiate hydrogen peroxide neutralization.

2.3.2 **Sodium Hypochlorite**

Sodium Hypochlorite is light yellow green in color with a slight chlorine odor. It is completely soluble in water.

First Aid

In case of contact, immediately flush the skin and/or eyes with large amounts of water for at least 15 minutes. Contact a physician.

Spill Containment and Clean-up

Stop the spill at the source and contain run-off. Most spills will occur in contained areas where dilution of the spill with water and washing it into the appropriate pond is satisfactory.

Spills occurring off contained areas should be diluted with large quantities of water and/or neutralized with sodium bisulfite. Large spills require containment and pump-back to the neutralization pond. Note: Only qualified personnel should initiate sodium hypochlorite neutralization.

2.3.3 **Caustic and Lime**

Caustic (Sodium Hydroxide - NaOH) is colorless with no odor and is non-combustible.

Lime (Calcium Hydroxide - $Ca(OH)_2$, Hydrated Lime, Slaked Lime) is a white powder with no odor and is non-flammable and non-combustible.

First Aid

Health hazards include severe burning of the skin and eyes with possible blindness, irritation of the respiratory tract, and severe tissue damage if ingested. First aid should include immediate and continuous irrigation with water, remove the victim to fresh air, do not induce vomiting, and contact a physician.

Spill Containment and Clean-up

Stop the spill at the source and contain run-off. Spills should be flushed with water and taken to containment (neutralization pond preferably).

2.3.4 **Sulfuric Acid**

Sulfuric Acid is an oily, colorless to slightly yellow, clear to turbid liquid with no odor. It is non-flammable.

First Aid

Sulfuric acid may cause severe irritation, blisters or burns to the skin, digestive tract, nose, throat, and eyes. In case of contact, immediately flush the skin and/or eyes with large amounts of water for at least 15 minutes while quickly removing contaminated clothing and shoes. Move the victim to fresh air. Do not induce vomiting; instead, immediately give victim plenty of milk or water to drink. Contact a physician.

Spill Containment and Clean-up

Stop the spill at the source and contain run-off. Sulfuric acid is stored in a bulk tank on containment. In case of a small spill, dilute with plenty of water. Neutralize residue with alkali such as soda ash or lime. Adequate ventilation is required for soda ash due to release of carbon dioxide gas. For major spills, keep unprotected persons away. Protected persons should contain the acid by diking the spill with soil or clay. Recover the acid if possible and dispose of on the leach pad. Vapor may contain explosive hydrogen. Note: Only qualified personnel should initiate sulfuric acid neutralization.

2.3.5 **Nitric Acid**

Nitric Acid is a colorless liquid with a pungent odor. It is non-flammable, but will increase the flammability of wood and organics. It can cause explosions with sulfuric acid, metal powders, carbides, and turpentine.

First Aid

In case of contact, immediately flush the skin with large amounts of water. If the eyes are affected, flush with water for at least 15 minutes and get immediate medical attention. In case of inhalation, remove to fresh air and get immediate medical attention. In case of ingestion, do not induce vomiting. Immediately give large quantities of water.

Spill Containment and Clean-up

Stop the spill at the source and contain run-off. Flush the area with plenty of water and neutralize with alkaline material, such as soda ash, lime, etc. Wear suitable protective clothing and eye protection. Adequate ventilation is required.

2.3.6 **Hydrochloric Acid**

Hydrochloric Acid is a clear, colorless fuming liquid with a pungent odor.

First Aid

Hydrochloric acid may cause severe irritation, blisters or burns to the skin, digestive tract, nose, throat, and eyes. In case of contact, immediately flush the skin and/or eyes with large amounts of water for at least 15 minutes while quickly removing contaminated clothing and shoes. Move the victim to fresh air. Do not induce vomiting; instead immediately give victim plenty of milk and water to drink. Contact a physician.

Spill Containment and Clean-up

Stop the spill at the source and contain run-off. Hydrochloric acid is stored in bulk tanks on containment. In case of a spill to soils, treat with excess caustic to neutralize the acid and dispose of on the heap leach pad. Note: Only qualified personnel should initiate hydrochloric acid neutralization.

Spill Response, Monitoring, and Reporting

Spill response, monitoring, and reporting of chemical or reagent spills will be follow the same procedures outlined in Section 2.1.

3.0 MISCELLANEOUS INFORMATION

3.1 Reportable Quantities

ALL SPILLS MUST BE TREATED EQUALLY!

Any quantity of liquid cyanide, met process solution, or chemicals and reagents must be properly reported.

All petroleum spills over 25 gallons (whether overland or discharged to surface waters) shall be properly reported.

Any oil spill to surface water less than 25 gallons that causes sheen on the water shall be reported. Any overland oil spills less than 25 gallons that cannot be corrected within 24 hours must be properly reported.

3.2 Spill Response Equipment

A spill response kit is available for use at the Warehouse. Please report any materials used, removed, or missing to the SMRTeam or the Environmental Department. An inventory list of all spill kit supplies is included in Appendix B.

3.3 Spill Report Forms

Spill report forms are included in the spill response kit and in Appendix A.

3.4 Transportation Routes

Access routes within Lawrence County used to transport any hazardous material, special waste, or oil to the mine site are illustrated in Attachment 1. These routes include Interstate 90, Highway 85, Highway 14A, Nevada Gulch Road, and the Wharf Road. A copy of these transportation routes is on file with the Lawrence County Civil Defense Office.

3.5 Potential Overland Spills

Attachment 2 consists of an inventory map of potential points of containment for potential overland spills. Attachment 3 consists of an inventory map identifying the locations of all previous spills that have occurred since the Wharf Mine has been in operation and an inventory list of those spills.

4.0 EMERGENCY CONTACT LIST

EMERGENCY MEDICAL

Wharf Emergency Response Team	(605) 584-4163
Lead Deadwood Regional Medical Clinic	(605) 717-6431
Lead Deadwood Regional Hospital	(605) 722-6101
Lawrence County Sheriff's Department	(605) 578-2230
Lawrence County Emergency Response Office (Search and Rescue, Emergency Response)	(605) 578-2122

STATE AGENCIES

Department of Environment and Natural Resources (DENR)

Minerals and Mining Program	(605) 773-4201
Point Source Control Program	(605) 773-3351
Groundwater Quality Program	(605) 773-3296
State Radio	(605) 773-3536

After business hours or on weekends, contact:

Emergency Management	(605) 773-3231

FEDERAL AGENCIES

Environmental Protection Agency (EPA)	1-800-424-8802
U.S. Forest Service (Nemo Ranger District)	(605) 642-4662

EMERGENCY RESPONSE CONSULTANTS

NAME	PHONE	ALTERNATE PHONE #
Brenntag West, Inc. (Lime)	1-800-531-0799	(701) 225-8760
Degussa (Cyanide and H2O2)	1-800-424-9300	
Great Western Chemical (Sulfuric Acid, Sodium Hypochlorite) (Sodium Bisulfite)	1-800-544-2436	(406) 442-8900
NALCO Chemical Company (Anti-scalants)	(801) 273-1462	
Mid-Continent (Rapid City, South Dakota)	(605) 348-0111	

WHARF PERSONNEL

(Weekdays and Weeknights)

NAME	HOME / CELL PHONE
Lynne Blackman	(605) 717-1711
Dave Cartner	(605) 641-5504
Ken Nelson	(605) 580-0441
Bruce Davis	(605) 580-0291
Dave Emery	(605) 431-8646
Ron Waterland	(605) 490-2065
Bill Shand	(605) 580-0222

(Weekends)

1)	Management on Duty	See Weekend Roster
2)	Pit Foreman	(605) 584-4163
	(Mobile)	(605) 580-1327
3)	Process Plant	(605) 584-4152
		(605) 584-4153

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WHARF RESOURCES
CLINTON EXPANSION PROJECT
MINE PERMIT NO. 464 CONDITIONS

1. The Board of Minerals and Environment (board), pursuant to ARSD 74:29:03:16, hereby authorizes the Department of Environment and Natural Resources (DENR) to approve proposed technical revisions to Wharf Resources (Wharf) mining permit for:

    1. Modifying monitoring plans, locations, parameters and time frames;
    2. Modifying compliance limits for chemical parameters as allowed within the mining laws and mine permit, including spent ore off-load criteria;
    3. Submitting and modifying plans and specifications for permitted facilities;
    4. Submitting and modifying quality control and quality assurance plans;
    5. Adding contiguous, affected land within the permit boundary with the total of such additions not to exceed twenty (20) percent of the permitted affected land area of 279 acres for this permit. The maximum amount of expansion allowed (20% of 279 acres) is 55.8 acres;
    6. Modifying or relocating erosion, sedimentation, or drainage control structures;
    7. Implementing new and improved reclamation techniques as they are developed;
    8. Modifying seeding mixtures or rates;
    9. Using irrigation in reclamation;
    10. Modifying water usage and sources as allowed by water rights permits;
    11. Modifying dust control measures;
    12. Modifying blasting methods and control measures by use of new procedures or products developed in the future provided they are operationally and economically feasible;
    13. Modifying the size of area to be worked at any one time;
    14. Modifying operating time tables for proposed operations;
    15. Locating or modifying ancillary facilities within the permit boundary, including equipment storage areas, parking lots, office buildings, septic systems, perimeter fencing, utilities (phone lines, natural gas lines, power lines, water lines), crushing areas, sludge ponds, stockpiles and rubble sites;
    16. Modifying pit and rock facility configurations within permitted disturbance limits consistent with geotechnical considerations;
    17. Modifying and relocating state, county and private roads and haulage routes within the permit boundary;
    18. Modifying topsoil stripping plans and relocating stockpiles;
    19. Modifying and relocating slash piles and slash disposal areas;
    20. Relocating chemical or petroleum storage areas;
    21. Modifying the reclamation plan within the constraints of ARSD 74:29:03;
    22. Modifying the operating plan within the constraints of ARSD 74:29:03;
    23. Implementing new surface mining techniques or equipment;

24. Modifying the gold recovery process within the process facility to improve performance, recovery, or environmental aspects;
25. Modifying off-load requirements for leach pads;
26. Submitting and modifying the design of capping systems;
27. Modifying action leakage response schedules and leakage response action plans;
28. Providing for or modifying long-term active water treatment;
29. Modifying postclosure plans and monitoring time frames;
30. Modifying handling procedures for potential acid rock drainage (ARD) rock;
31. Modifying reclamation or vegetation success standards;
32. Modifying spent ore backfilling plans to include the Portland and Trojan pit areas subject to obtaining the necessary Groundwater Discharge Permits;
33. Modifying mine designs and disturbance areas to include contiguous areas of potential ore;
34. Expand the leach pads for better drainage, washing, and production;
35. Build a permanent heap leach pad to improve leaching, recovery, or environmental aspects;
36. Build additional water storage capacity;
37. Build additional counter current ion exchange (CCIX) product storage;
38. Relocate plant to improve operations aspects and recovery;
39. Change, modify, develop, enhance, or increase water treatment technology and water treatment regimes;
40. Modify pad parameters to enhance leaching or draindown characteristics;
41. Develop and implement other mineral processing technologies that would improve both economic and environmental aspects;
42. Modify reporting procedures and parameters as allowed within the mining laws and mine permit;
43. Allow use of Contingency Pond or other ponds as batch ponds, temporary process or neutralization ponds;
44. Change the slope angle for final reclamation of specific sites where visually and functionally compatible;
45. Modify the time frame for defining stocking guidelines and reclamation success standards;
46. Modify stocking guidelines and reclamation success standards to reflect climatic conditions;
47. Modify reclamation monitoring techniques; and
48. Modify livestock carrying capacities of surrounding areas.

Technical revisions must comply with ARSD 74:29:03:03 and must be submitted to DENR in writing. DENR shall approve, disapprove, conditionally approve, or request additional information deemed necessary to approve technical revisions within thirty days of receipt.

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Ken Nelson
Operations Manager
Wharf Resources/Goldcorp
Lead, SD 57754

Experience:

Wharf Resources U.S.A., Inc. Lead, SD 57754
Operations Manager 2006 to Present

Manage the Operations Department, Engineering Department, Maintenance Department, Crusher Plant , and Process Plant along with responsibility for all budgeting within these departments. Responsible for the pit operations, rental fleet, mine support fleet, maintenance of the mine fleet and all personnel associated within these areas. Responsible for the operation and maintenance of the crusher plant and personnel. Manage the engineering department along with reserves of the mine site, and construction projects for the entire mine site.

Coordinate and administer permitting and technical revisions to the mine permit for all areas of the mine site. Direct communication with local, county, and state regulatory agencies and personnel.

Directly involved with the negotiation of contracts of all kinds specifically with Butler Caterpillar (rental fleet), Cate Equipment (rental blast hole drills), and Nelson Bros. (Contract Blasters).

Oversee all major projects across the mine site including Heap Leach Pad construction, building construction, process plant renovation, and surface water discharge plant.

Involved and coordinate work, safety and communication between all departments on the mine site to provide support, strong team environment and safe effective/efficient mine (Safety, Mine, Plant, Environment, Administration, Land).

Wharf Resources U.S.A., Inc. Lead, SD 57754
Engineering Manager & Assay Lab Manager 2003 to 2006

Manage the Engineering Department and Assay Lab, oversee the mine geology, ore control, drill & blasting, short-term & long-term mine planning, ore reserves and generation of reserves, special projects, surveying, reclamation plans and designs, and heap leach pad monitoring. Directly involved in mine permitting and technical revisions to mine permit and the coordination with governmental offices (local & state).

Manage and responsible for all necessary budgeting for the Assay

Lab. Coordinate between departments concerning all Assay Lab concerns that are needed and required.

Duties include budgeting for the engineering and assay departments, delegation of manpower between the two departments, analysis and monitoring of the heap leach pads, analysis of various mine plan scenarios and cost analysis that promote a more effective and efficient mine.

Directly responsible for ore reserves, long-term mine planning, design and review of reclamation plans, budgeting of two departments, and long-term budgeting concerning equipment needs and mine operations. Responsible for coordinating all engineering duties with the operation crews, crusher facility, Environmental Department, and Metallurgy Department. Hiring consultants, contractors, working with government regulators. Design and construction of liner containment areas.

Responsible for hiring and mentoring the engineers in their respective positions. Train all engineers on new and current software that is used in their respective positions.

Wharf Resources
Engineering Manager/Chief Engineer 2002 to 2003
Manage the Engineering Department as explained above. Overseeing the mine geology, ore control, frill & blasting, short-term & long-term mine planning, Reclamation Designs and Plans, ore reserves and generation of reserves, special projects, surveying and heap leach pad monitoring, reclamation, and all necessary budgeting concerning the department. Database manager of the mine data concerning drill holes, sampling, mineplanning, ect.

Wharf Resources
Senior Engineer 1999 to 2002
Responsible for the ore reserves, supervise the Ore Control Engineers, Mine Geologists, and surveyors. Responsible for the design and modification of pits and ramps, drill & blasting, along with the sequencing of the mine events, and Reclamation Plans and Designs. Management, monitoring, and delineating historic underground mine workings within the mine permitted area. Plan, design, and implement the acid rock drainage management plan for the mine site. Plan and implement geochemical studies and testing. Manage the master drill hole database. Budgeting of special projects.

Coordinated engineering duties with operation crews, supervisors, and other departments.

Train and mentor new and current engineers.

Budgeting and coordination of all in-pit drilling and all contract drilling.

Coordinated and worked directly with contractors, consultants, and government regulators.

Wharf Resources
Mine Engineering Geologist 1998 to 1999
Responsible for all in-pit drilling and contract drilling concerning the development of active and future pits. Design and modification of pit designs. Management of the drillhole database, and oversee grade control. Responsible for geochemical testing and rock-type analysis in-house and out-of house testing.

Calculating ore reserves to be used for short and long-term mine planning and budget forecasting.

Coordinate with government regulators, contractors, and other mine department personnel concerning specific work being completed under this position.

Wharf Resources
Exploration Geologist 1996 to 1998
Main duties include but not limited to designing of exploration drill targets, logging of exploration holes, hiring of contract drillers, determination of exploration ore reserves, working with contractors, consultants, government regulators, and other mine departments (engineering, environmental, and metallurgy).

Education:

University of South Dakota Vermillion, South Dakota
Masters in Business Administration - 2004

South Dakota School of Mines & Technology Rapid City, South Dakota
Masters in Geological Engineering - 1998

University of South Dakota Vermillion, South Dakota
Bachelor of Science - Biological Sciences - 1988

Memberships: **Society of Mining Engineers (SME)**
Mining and Metallurgical Society of America (MMSA)

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RONALD A. WATERLAND
801 Glover Street
Sturgis, South Dakota 57785
Email: ron.waterland@goldcorp.com
Tel: (605) 584-4155
Fax: (605) 584-4188

RELEVANT WORK EXPERIENCE

2008 – Present: **Environmental Manager**

WHARF RESOURCES (USA) Inc. (100% owned subsidiary of Goldcorp, Inc.) Lead , South Dakota; Responsible for managing the environmental functions of Wharf Resources (USA), Inc. and The Golden Reward Mining Company, Limited Partnership.

2003 – 2008 **Owner**
Water Management Services Incorporated Sturgis, South Dakota
Provide consulting, management and preparation of environmental permits for construction and reclamation activities. Operate, manage and keep records for a number of small public potable water systems.

2002–2003 **Consultant for the Lead Deadwood Sanitary District**
Barrick Mining Company Lead, South Dakota
Barrick Mining Company transferred the Homestake Surface Water Collection System to the Lead Deadwood Sanitary District. I was assigned to the District and paid by Barrick to provide training on the operation and maintenance of this system. The system has the capability to deliver 9 million gallons per day to Lead and Deadwood and includes 8 spring intakes, 35 miles of clay, wood and steel pipe, and a 7000 gallon per minute pumping station.

2001- 2002 **Manager, Regulatory and Community Relations**
Homestake Mining Company Reclamation Lead , South Dakota
I helped plan and implement the reclamation of the Homestake Mine upon closure. This included coordination with regulatory agencies, consultants, contractors and the local community. I prepared budgets, wrote requests for proposals, and prepared bid documents for reclamation projects.

1997- 2001 **Environmental Project Supervisor**
Homestake Mining Company Grants, New Mexico
I provided supervision and management at a Uranium Mining and Milling reclamation and groundwater cleanup project. I supervised seven Homestake employees and coordinated the activities of consultants and contractors to effect cleanup of a 2000 acre groundwater contamination plume. The $1.8 million per year project was partially funded by the US Department of Energy and was under the authority of the US Nuclear Regulatory Commission and the New Mexico Environmental Department. The groundwater cleanup project included construction and operation of over 600 wells, two evaporation ponds and a 600 gallon per minute Reverse Osmosis Treatment Facility. In addition to supervising the project in New Mexico, I was responsible for the regulatory reporting for five reclaimed mine sites in Colorado and Nevada.

1991 - 1997 **Environmental Resource Engineer**
Homestake Mining Company Lead, South Dakota
I was responsible for the environmental and regulatory compliance monitoring and reporting for the Homestake Mine in Lead South Dakota. I helped obtain Surface Mine Expansion Permits, Air Quality Permits, Solid Waste Permits, and Surface Water Discharge Permits. I coordinated the activities of consultants and contractors to provide concurrent reclamation at the mining project. I provided all of the regulatory monitoring for the Homestake water system which supplied and treated the potable water for Lead, Deadwood, and Central City in addition to the industrial water used by the Homestake Mine.

1985 - 1991 **Environmental Technician**
Homestake Mining Company Lead, South Dakota

I collected all of the environmental sampling data for the Homestake Mine and Water System. This included air quality monitoring, surface and ground water quality monitoring and monitoring on the potable water supply. I maintained the historical data records and provided the required regulatory reports.

1984 - 1985 **Wastewater Treatment Operator**
Homestake Mining Company Lead, South Dakota

1982 - 1984 **Miner 2nd**
Homestake Mining Company Lead, South Dakota

QUALIFICATIONS

B.S. Wildlife Biology, Kansas State University, Manhattan, Kansas
National Well Water Course on Hydrology and Ground Water
Advanced Radiation Safety Officer Training Course
EPA Course on Whole Effluent Toxicity Testing
EPA Course on Method 9 Evaluation for Visible Emissions
National Well Water Association Course on Ground Water Monitoring
South Dakota Class I Wastewater Treatment
South Dakota Class III Water Treatment
South Dakota Class II Water Distribution

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Education: **B.S. Mining Engineering**
University of Idaho, May 1997

Relevant Experience

Oct. '08 – Present ***Chief Mine Engineer***, Wharf Resources, Lead, S.D.

- Project and Contractor Management, including all heap and denitrification pad construction.
- Supervise the Engineering, Survey and Geology staff.
- Evaluate alternatives for the economic extraction of the reserve.
- Coordinate reclamation activities between the Engineering, Operations, and Environmental departments.
- Monitor the mining sequence to ensure budgets are met.
- Provide technical expertise to all departments.

Mar. '06 – Oct. '08 ***Senior Mine Engineer***, Wharf Resources, Lead, S.D.

- Design economic pits and mining sequence.
- Supervise planning and survey staff.
- Prepare annual production and life-of-mine schedule.
- Design and supervise construction and installation of new heap leach pad and process ponds.
- Design and schedule concurrent and life-of-mine reclamation / calculate the annual bonding requirements.
- Calculate annual manpower and equipment requirements.

Oct. '01 – Mar. '06 ***Planning Engineer***, Wharf Resources, Lead, S.D.

- Design and schedule all concurrent reclamation activities.
- Supervise the construction of waste facilities to coincide with the reclamation plans.
- Produce yearly production budget and schedule.
- Compile all daily, weekly, and monthly production figures.
- Provide short / mid range mine planning.
- Update weekly mine progress maps.
- Design blast hole layout by bench and assist with grade control.
- Design pit sequence and waste facility placement to coincide with the long-range plans.

Jun. '97 – Oct. '01 ***Mine Engineer***, Coeur Rochester, Inc., Lovelock, NV.

- Prepared Life-of-Mine Resource / Reserve reports.
- Provided short and long range planning.
- Designed economic pits and phased laybacks.
- Performed daily grade control activities.
- Reported monthly volumetric reports and reconciliation.
- Responsible for the majority of the mine site's drafting needs.
- Supervised Surveyors and fill-in when necessary, using GPS.
- Worked closely with operations to meet short-term goals.

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Relevant Experience

Oct. '08 – Present ***Mine Planner***, Wharf Resources, Lead, S.D.

- Design and schedule all concurrent reclamation activities.
- Supervise the construction of waste facilities to coincide with the reclamation plans.
- Produce yearly production budget and schedule.
- Compile all daily, weekly, and monthly production figures.
- Provide short / mid range mine planning.
- Design pit sequence and waste facility placement to coincide with the long-range plans.
- Work closely with operations department to ensure correct follow-thru of plans.

Mar. '06 – Oct. '08 ***Grade Control Tech.***, Wharf Resources, Lead, S.D.

- Performed daily grade control activities.
- Reported monthly volumetric reports and reconciliation.
- Assisted in layout of mine plans.
- Update weekly mine progress maps.
- Design blast hole layout by bench.

Jun. '03 – Mar. '06 ***Mine Surveyor***, Wharf Resources, Lead, S.D.

- Performed layout operations of all mine designs and plans using GPS and conventional survey equipment.
- Measured all material movement throughout the mine.
- Updated daily progress maps.

Mar. '01 – Jun. '03 ***Equipment Operator***, Wharf Resources, Lead, S.D.

- Ran equipment including loader, dozer, blade, haul truck, backhoe and forklift.
- Carried out reclamation plans in the field.