

STORMWATER BEST MANGEMENT PRACTICES PLAN

for

White Mesa Uranium Mill
6425 South Highway 191
P.O. Box 809
Blanding, Utah

October 2011

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1.0 INTRODUCTION/PURPOSE

Denison Mines (USA) Corp. ("DUSA") operates the White Mesa Uranium Mill ("the Mill") in Blanding, Utah. The Mill is a net water consumer, and is a zero-discharge facility with respect to water effluents. That is, no water leaves the Mill site because the Mill has:

- no outfalls to public stormwater systems,
- no surface runoff to public stormwater systems,
- no discharges to publicly owned treatment works ("POTWs"), and
- no discharges to surface water bodies.

The State of Utah issued Groundwater Discharge Permit No. UGW370004 to DUSA on March 8, 2005. As a part of compliance with the Permit, DUSA is required to submit a Stormwater Best Management Practices Plan ("BMPP") to the Executive Secretary of the Division of Radiation Control, Utah Department of Environmental Quality. This BMPP presents operational and management practices to minimize or prevent spills of chemicals or hazardous materials, which could result in contaminated surface water effluents potentially impacting surface waters or ground waters through runoff or discharge connections to stormwater or surface water drainage routes. Although the Mill, by design, cannot directly impact stormwater, surface water, or groundwater, the Mill implements these practices in a good faith effort to minimize all sources of pollution at the site.

2.0 SCOPE

This BMPP identifies practices to prevent spills of chemicals and hazardous materials used in process operations, laboratory operations, and maintenance activities, and minimize spread of particulates from stockpiles and tailings management areas at the Mill. Storage of ores and alternate feeds on the ore pad, and containment of tailings in the Mill tailings impoundment system are not considered "spills" for the purposes of this BMPP.

The Mill site was constructed with an overall grade and diversion ditch system designed to channel all surface runoff, including precipitation equivalent to a Probable Maximum Precipitation/Probable Maximum Flood ("PMP/PMF") storm event, to the tailings management system. In addition, Mill tailings, all other process effluents, all solid waste and debris (except used oil and recyclable materials), and spilled materials that cannot be recovered for reuse are transferred to one or more of the tailings cells in accordance with the Mill's NRC license conditions. All of the process and laboratory building sinks, sumps, and floor drains are tied to the transfer lines to the tailings impoundments. A site map of the Mill is provided in Figure 1. A sketch of the site drainage basins is provided in Figure 2.

As a result, unlike other industrial facilities, whose spill management programs focus on minimizing the introduction of chemical and solid waste and wastewater into the process sewers and storm drains, the Mill is permitted by NRC license to manage some spills via draining or wash down to the process sewers, and ultimately the tailings system. However, as good environmental management practice, the Mill attempts to minimize:

1. the number and size of material spills, and
2. the amount of unrecovered spilled material and wash water that enters the process sewers after a spill cleanup.

Section 4.0 itemizes the practices in place at the Mill to meet these objectives.

Requirements and methods for management, recordkeeping, and documentation of hazardous material spills are addressed in the DUSA White Mesa Mill Spill Prevention, Control and Countermeasures ("SPCC") Plan, the Emergency Response Plan ("ERP"), , and the housekeeping procedures incorporated in the White Mesa Mill Standard Operating Procedures ("SOPs"). The latest revisions of the SPCC plan and the ERP are provided in their entirety in Appendices 1 and 2, respectively.

3.0 RESPONSIBILITY

All Mill personnel are responsible for implementation of the practices in this BMPP. DUSA White Mesa Mill management is responsible for providing the facilities or equipment necessary to implement the practices in this BMPP.

The Mill Management Organization is presented in Figure 3. The DUSA Corporate Management Organization is presented in Figure 4.

An updated spill prevention and control notification list is provided in Table 1.

4.0 BEST MANAGEMENT PRACTICES

A summary list and inventory of all liquid and solid materials managed at the Mill is provided in Tables 2 through 5.

4.1 General Management Practices Applicable to All Areas

4.1.1 Keep Potential Pollutants from Contact with Soil, and Surface Water:

- Store hazardous materials and other potential pollutants in appropriate containers.
- Label the containers.
- Keep the containers covered when not in use.

4.1.2 Keep Potential Pollutants from Contact with Precipitation

- Store bulk materials in covered tanks or drums.
- Store jars, bottle, or similar small containers in buildings or under covered areas.
- Replace or repair broken dumpsters and bins.
- Keep dumpster lids and large container covers closed when not in use (to keep precipitation out).

4.1.3 Keep Paved Areas from Becoming Pollutant Sources

- Sweep paved areas regularly, and dispose of debris in the solid waste dumpsters or tailings area as appropriate.

4.1.4 Inspection and Maintenance of Diversion Ditches and Drainage Channels within the Process and Reagent Storage Area

- Diversion ditches, drainage channels and surface water control structures in and around the Mill area will be inspected at least monthly in accordance with the regularly scheduled inspections required by Groundwater Discharge Permit No. UGW370004, and by product Materials License #UT1900479. Areas requiring maintenance or repair, such as excessive vegetative growth, channel erosion or pooling of surface water runoff, will be reported to site management and maintenance departments for necessary action to repair damage or perform reconstruction in order for the control feature to perform as intended. Status of maintenance or repairs will be documented during follow up inspections and additional action taken if necessary.

4.1.5 Recycle Fluids Whenever Possible:

- When possible, select automotive fluids, solvents, and cleaners that can be recycled or reclaimed
- When possible, select consumable materials from suppliers who will reclaim empty containers.
- Keep spent fluids in properly labeled, covered containers until they are picked up for recycle or transferred to the tailings area for disposal.

4.2 Management Practices for Process and Laboratory Areas

4.2.1 Clean Up Spills Properly

- Clean up spills with dry cleanup methods (absorbents, sweeping, collection drums) instead of water whenever possible.
- Clean spills of stored reagents or other chemicals immediately after discovery.
- (Groundwater Discharge Permit No. UGW370004, Section I.D.10.c.)
- Recover and re-use spilled material whenever possible.
- Keep supplies of rags, sorbent materials (such as cat litter), spill collection drums, and personnel protective equipment ("PPE") near the areas where they may be needed for spill response.
- If spills must be washed down, use the minimum amount of water needed for effective cleanup.

4.2.2 Protect Materials Stored Outdoors

- If drummed feeds or products must be stored outdoors, store them in covered or diked areas when possible.
- If drummed chemicals must be stored outdoors, store them in covered or diked areas when possible.
- Make sure drums and containers stored outdoors are in good condition and secured against wind or leakage. Place any damaged containers into an overpack drum or second container.

4.2.3 Management

- When possible, recycle and reuse water from flushing and pressure testing equipment. When possible, wipe down the outsides of containers instead of rinsing them off in the sink.
- When possible, wipe down counters and work surfaces instead of hosing or rinsing them off to sinks and drain

4.2.4 Materials Management

- Purchase and inventory the smallest amount of laboratory reagent necessary.
- Do not stock more of a reagent than will be used up before its expiration date.
- All new construction of reagent storage facilities will include secondary containment which shall control and prevent any contact of spilled reagents, or otherwise released reagent or product, with the ground surface. (Groundwater Discharge Permit No. UGW370004, Section I.D.3.g.)

4.3 Management Practices for Maintenance Activities

4.3.1 Keep a Clean Dry Shop

- Sweep or vacuum shop floors regularly.
- Designate specific areas indoors for parts cleaning, and use cleaners and solvents only in those areas.
- Clean up spills promptly. Don't let minor spills spread.
- Keep supplies of rags, collection containers, and sorbent material near each work area where they are needed.
- Store bulk fluids, waste fluids, and batteries in an area with secondary containment (double drum, drip pan) to capture leakage and contain spills.

4.3.2 Manage Vehicle Fluids

- Drain fluids from leaking or wrecked/damaged vehicles and equipment as soon as possible. Use drip pans or plastic tarps to prevent spillage and spread of fluids.
- Promptly contain and transfer drained fluids to appropriate storage area for reuse, recycle, or disposal.
- Recycle automotive fluids, if possible, when their useful life is finished.

4.3.3 Use Controls During Paint Removal

- Use drop cloths and sheeting to prevent windborne contamination from paint chips and sandblasting dust.
- Collect, contain, and transfer, as soon as possible, accumulated dusts and paint chips to a disposal location in the tailings area authorized to accept waste materials from maintenance or construction activities.

4.3.4 Use Controls During Paint Application and Cleanup

- Mix and use the right amount of paint for the job. Use up one container before opening a second one.
- Recycle or reuse leftover paint whenever possible.
- Never clean brushes or rinse or drain paint containers on the ground (paved or unpaved).
- Clean brushes and containers only at sinks and stations that drain to the process sewer to the tailings system.
- Paint out brushes to the extent possible before water washing (water-based paint) or solvent rinsing (oil-based paint).
- Filter and reuse thinners and solvent whenever possible). Contain solids and unusable excess liquids for transfer to the tailings area

4.4 Management Practices for Ore Pad, Tailings Area, and Heavy Equipment

Detailed instructions for ore unloading, dust suppression, and tailings management are provided in the Mill SOPs.

4.4.1 Wash Down Vehicles and Equipment in Proper Areas

- Wash down trucks, trailers, and other heavy equipment only in areas designated for this purpose (such as wash down pad areas and tile truck wash station).
- At the truck wash station, make sure the water collection and recycling system is working before turning on water sprays.

4.4.2 Manage Stockpiles to Prevent Windborne Contamination

- Water spray the ore pad and unpaved areas at appropriate frequency in accordance with Mill SOPs.
- Water spray stockpiles as required by opacity standards or weather conditions.
- Don't over-water. Keep surfaces moist but minimize runoff water.

4.4.3 Keep Earthmoving Activities from Becoming Pollutant Sources

- Schedule excavation, grading, and other earthmoving activities when extreme dryness and high winds will not be a factor (to prevent the need for excessive dust suppression).
- Remove existing vegetation only when absolutely necessary.
- Seed or plant temporary vegetation for erosion control on slopes.

TABLES

TABLE 1
White Mesa Mill Management Personnel
Responsible for Implementing This BMPP

Mill Staff

<u>Personnel</u>	<u>Title</u>	<u>Work Phone</u>	<u>Home Phone/ Other Contact Number</u>
Dan Hillsten	Mill Manager	435-678-2221 Ext. 105	Cell: 435-979-3041
Wade Hancock	Maintenance Superintendent	435-678-2221 Ext.166	435-678-2753 Cell: 435-979-0410
Scot Christensen	Mill Superintendent	435-678-2221	435-678-2015
David E. Turk	Radiation Safety Officer	435-678-2221 Ext. 113	435- 678-7802 Cell: 435-459-9786

Corporate Management Staff

<u>Personnel</u>	<u>Title</u>	<u>Work Phone</u>	<u>Home Phone / Other Contact Number</u>
Ron F. Hochstein,	President/ Chief Operating Officer	604-689-7842	Cell: 604-377-1167
David C. Frydenlund	Vice President and General Counsel	303-389-4130	303-221-0098 Cell: 303-808-6648

**TABLE 2
REAGENT YARD LIST**

<u>REAGENT</u>	<u>QUANTITY (LBS)</u>	<u>NUMBER OF STORAGE TANKS</u>	<u>CAPACITY (GALLONS)</u>
AMMONIUM SULFATE(BULK)	54,000	2	24,366
AMMONIUM SULFATE(BAGS)	26,000	---	
ANHYDROUS AMMONIA	107,920	2	31,409
TRIDECYLALCOHOL	45,430	---	
DIESEL FUEL		2	250
		1	6,000
GRINDING BALLS	72,000	---	
KEROSENE	1,344	1	10,315
		2	10,095
POLOX	10,360	---	
PROPANE		1	25,589
SALT (BAGS)	39,280	---	
SALT (BULK)	0	1	13,763
		1	18,864
SODA ASH (BAGS)	39,280	---	
SODA ASH (BULK)	84,100	1	16,921
		1	8,530
SODIUM CHLORATE	101,128	1	16,921
		1	22,561
		1	29,940
SODIUM HYDROXIDE	0	1	19,905
SULFURIC ACID	4,801,440	1	1,394,439
UNLEADED GASOLINE		1	3,000
USED OIL		1	5,000

**TABLE 3.0
LABORATORY CHEMICAL INVENTORY LIST ¹**

<u>Chemical In Lab</u>	<u>RQ²</u>	<u>Quantity in Stock</u>
Aluminum nitrate	2270 kg	1.8 kg
Ammonium bifluoride	45.4 kg	2.27 kg
Ammonium chloride	2270 kg	2.27 kg
Ammonium oxalate	2270 kg	6.8 kg
Ammonium thiocyanate	2270 kg	7.8 kg
Antimony potassium tatrte	45.4 kg	0.454
n-Butyl acetate	2270 kg	4L
Cyclohexane 454	kg 24	L
Ferric chloride	454 kg	6.81 kg
Ferrous ammonium sulfate	454 kg	0.57
Potassium chromate	4.54 kg	0.114 kg
Sodium nitrite	45.4 kg	2.5 kg
Sodium phosphate tribasic	2270kg	1.4
Zinc acetate	454 kg	0.91 kg

<u>Chemical. in Volatiles and Flammables Lockers (A,B,C)</u>	<u>RQ²</u>	<u>Quantity in Stock</u>
Chloroform	4.54 kg	8 L
Formaldehyde	45.4 kg	<1L of 37% solution
Nitrobenzene	454 kg	12 L
Toluene	454 kg	12 L

<u>Chemical in Acid Shed</u>	<u>RQ²</u>	<u>Quantity in Stock</u>
Chloroform	4.54 kg	55 gal
Hydrochloric acid	2,270 kg	58 gal
Nitrate acid	454 kg	5 L
Phosphoric Acid	2,270 kg	10 L
Sulfuric acid	454 kg	25 L
Hydrofluoric acid	45.4 kg	1 L
Ammonium hydroxide	454 kg	18 L

1. This list identifies chemicals which are regulated as hazardous substances under the Federal Water Pollution Control Act 40 CFR Part 117. The lab also stores small quantities of other materials that are not hazardous substances per the above regulation.
2. Reportable Quantities are those identified in 40 CFR Part 117 Table 117.3: "Reportable Quantities of Hazardous Substances Designated Pursuant to Section 311 of the Clean Water Act."

**TABLE 4.0
REAGENT YARD/SMALL QUANTITY CHEMICALS LIST ¹**

<u>CHEMICAL</u>	<u>RQ²</u>	<u>QUANTITY IN STORAGE COMPOUND</u>
Acetic Acid, Glacial	1,000 lbs	4 gal
Ammonium Hydroxide	1,000 lbs	5L
Calcium Hypochlorite	10 lbs	2 kg (4.4 lbs)
Chlorine	10 lbs	0 lbs
Ferrous Sulfate Heptahydrate	1,000 lbs	5 kg (11lbs)
Hydrochloric	5,000 lbs	60 gal of 40% solution
Nitric Acid	1,000 lbs	10 L
Potassium Permanganate 0.1 N	32 gal	5 kg (11lbs)
Sodium Hypochlorite 5.5%	100 lbs	2 kg (11 lbs) of 5.5% solution
Silver Nitrate	1 lb	0 lbs
Trichloroethylene	100 lb	2 L

1. This list identifies chemicals which are regulated as hazardous substances under the Federal Water Pollution Control Act 40 CFR Part 117, Materials in this list are stored in a locked storage compound near the bulk storage tank area. The Mill also stores small quantities of other materials that are not hazardous substances per the above regulation.
2. Reportable Quantities are those identified in 40 CFR Part 117 Table 117.3: "Reportable Quantities of Hazardous Substances Designated Pursuant to Section 311 of the Clean Water Act."

**TABLE 5.0
REAGENT YARD/BULK CHEMICALS LIST¹**

<u>REAGENT</u>	<u>RQ¹</u>	<u>QUANTITY IN REAGENT YARD</u>
Sulfuric Acid	1,000 lbs	9,000,000 lbs
Hyperfloc 102	None	1,500 lbs
Ammonia – East Tank	100 lbs	0 lbs
Ammonia – West Tank	100 lbs	105,000 lbs
Kerosene	100 gal	500 gal
Salt (Bags)	None	20,000 lbs
Soda Ash Dense (Bag)	None	50,000 lbs
Polyox	None	490 lbs
Tributyl phosphate	None	9,450 lbs
Diesel	100 gal	Approx. 3300 gal
Gasoline	100 gal	Approx. 6000 gal
Alamine 336 drums	None	8,250 gal
Salt(Bulk Solids)	None	50,000 lbs
Salt(Bulk Solutions)	None	9,000 gal
Caustic Soda	1,000 lbs	16,000 lbs
Ammonium Sulfate	None	150,000 lbs
Sodium Chlorate	None	350,000 lbs
Alamine 310 Bulk	None	0 lbs
Isodecanol	None	2,420 gal
Vanadium Pentoxide ³	1000 lbs	30,000 lbs
Yellowcake ³	None	<100,000 lbs
Ammonia Meta Vanadate	1000 lbs	0 lbs
Floc 655		21,000 lbs
Floc 712		1,250 lbs

1. This list identifies all chemicals in the reagent yard whether or not they are regulated as hazardous substances under the Federal Water Pollution Control Act 40 CFR Part 117.
2. Reportable Quantities are those identified in 40 CFR Part 117 Table 117.3: "Reportable Quantities of Hazardous Substances Designated Pursuant to Section 311 of the Clean Water Act."
3. Vanadium Pentoxide and Yellowcake, the Mill's products, are not stored in the Reagent Yard itself, but are present in closed containers in the Mill Building *and/or* Mill Yard

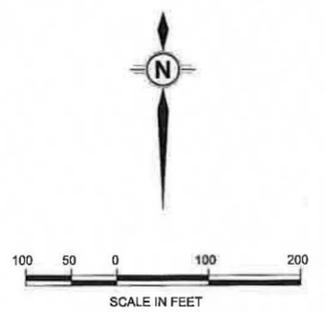
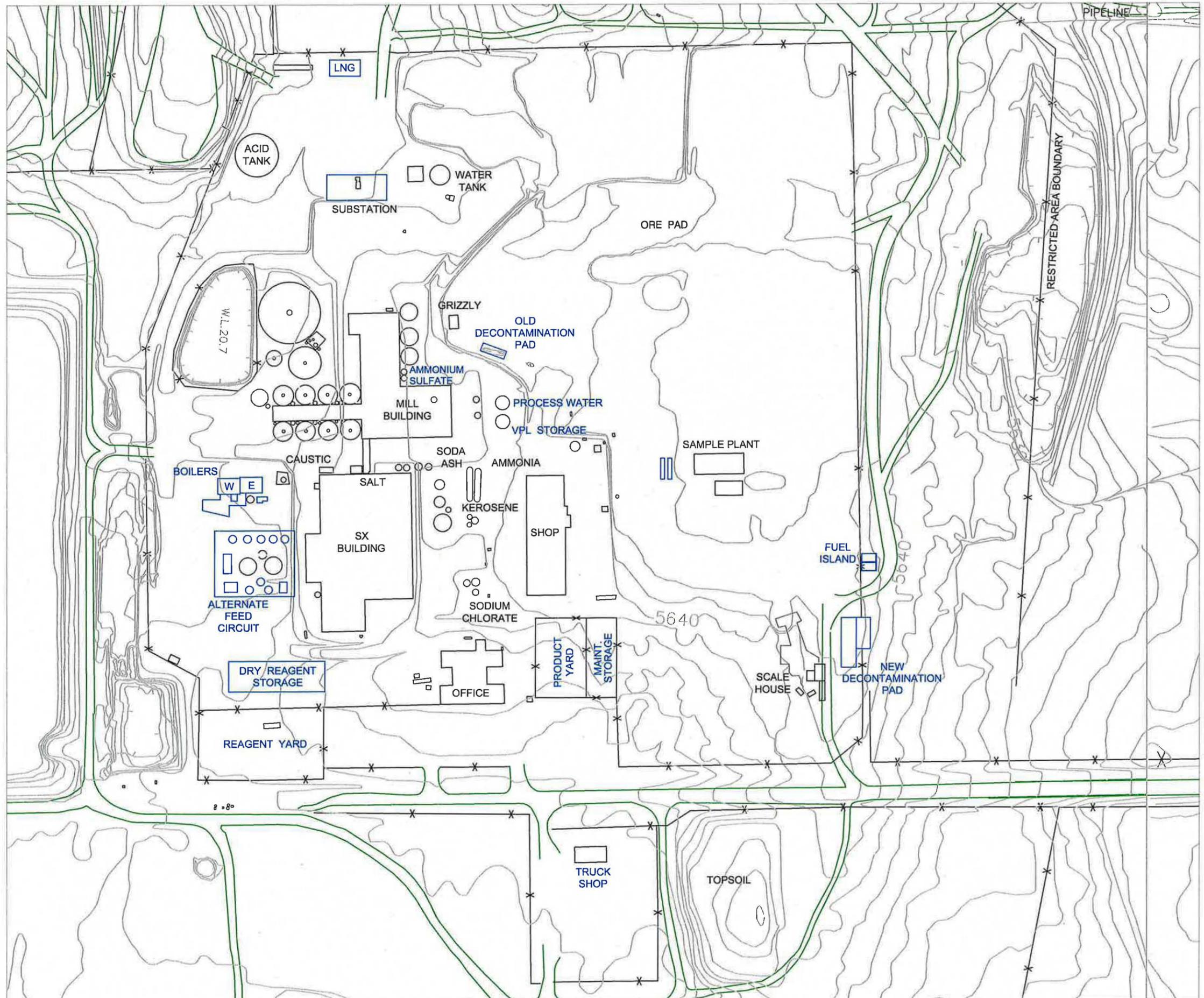
**TABLE 6.0
PETROLEUM PRODUCTS AND SOLVENTS LIST¹**

<u>PRODUCT</u>	<u>RQ</u>	<u>QUANTITY IN WAREHOUSE</u>
Lubricating Oils in 55 gallon drums	100 gal	1,540 gallons
Transmission Oils	100 gal	110 gallons
Water Soluble Oils	100 gal	110 gallons
Xylene (mixed isomers)	100 gal	0 gallons
Toluene	1000 gal	0 gallons
Varsol Solvent (2% trimethyl benzene in petroleum distillates)	100 gal	0 gallons

1. This list includes all solvents and petroleum-based products in the Mill warehouse petroleum and chemical storage aisles.
2. Reportable Quantities are those identified in 40 CFR Part 117 Table 117.3: "Reportable Quantities of Hazardous Substances Designated Pursuant to Section 311 of the Clean Water Act."

FIGURES

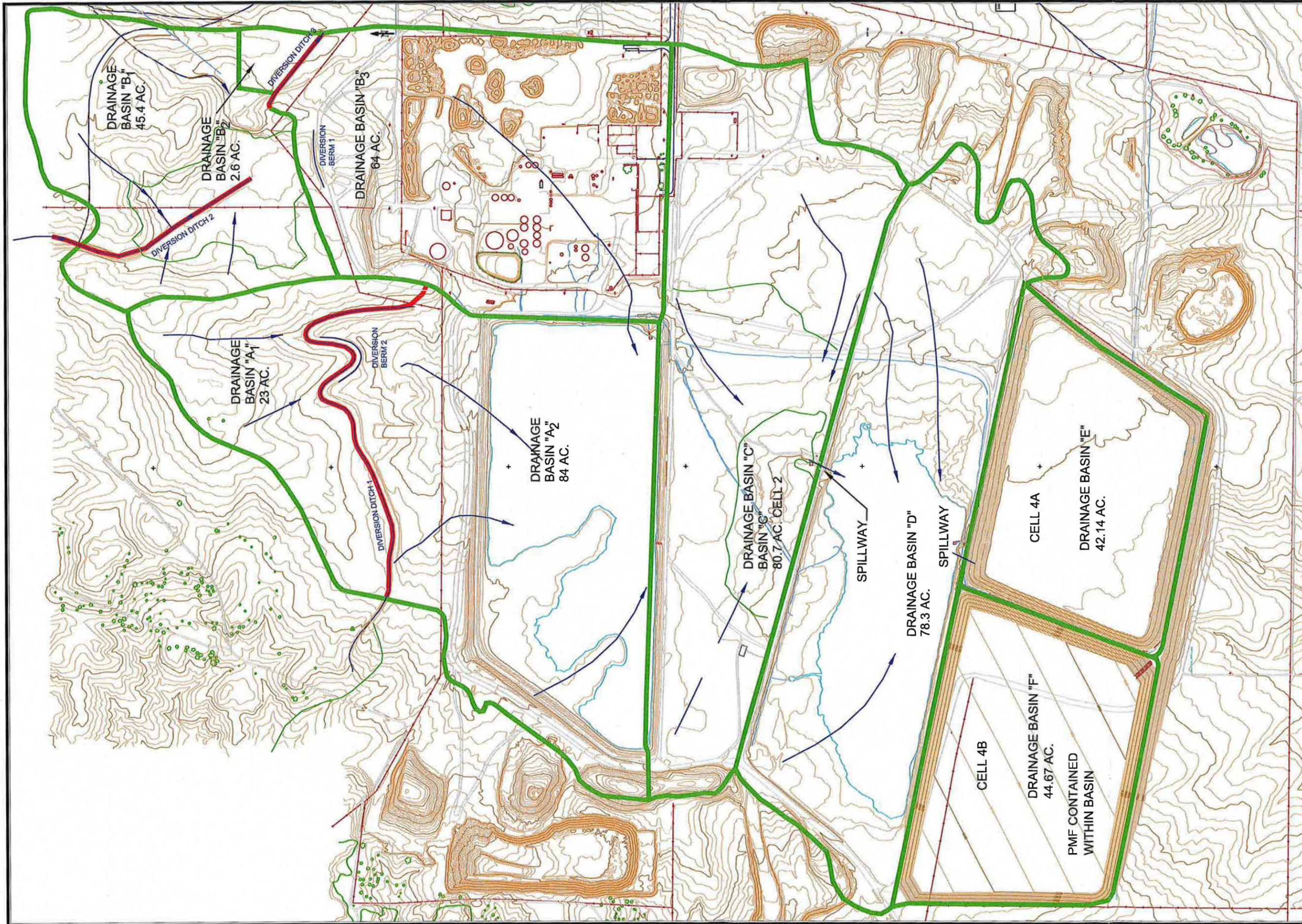
Figure 1
White Mesa Mill
Mill Site Layout



Project		Denison Mines (USA) Corp		
Project		WHITE MESA MILL		
REVISIONS	County:	San Juan	State:	Utah
Date	By	Location:		
10-11	GM	MILL SITE LAYOUT		
Scale:	1"=200'	Date:	May 12, 2000	traffic-pat
Author:	unknown	Drafted By:	SteddCad	

W:\Legacy\USA\TAH\Mill\Stormwater BMP\PT\Traffic-Pad.dwg Updated GMoseley

Figure 2
White Mesa Mill
Mill Site Drainage Basins



-  Surface Water Flow
-  Drainage Basins
-  Diversion Ditches
-  Diversion Berm



Denison Mines (USA) Corp. DENISON MINES

Project WHITE MESA MILL

County: San Juan State: Utah

REVISIONS	Date	By
	2/15/07	BM
	10/24/07	BM
	05/16/08	BM
	06/11/08	BM
	12/08	DLS
	1/7/09	BM

Scale: 1" = 2000ft Date: 2005 Figure 2_1-6-09.dwg
 Author: HRR Drawn By: unknown

Mill Site Drainage Basins

Figure 1

Figure 3
White Mesa Mill
Mill Management Organization Chart

Figure 3
Denison Mines (USA) Corporation
White Mesa Mill Management
Organizational Structure

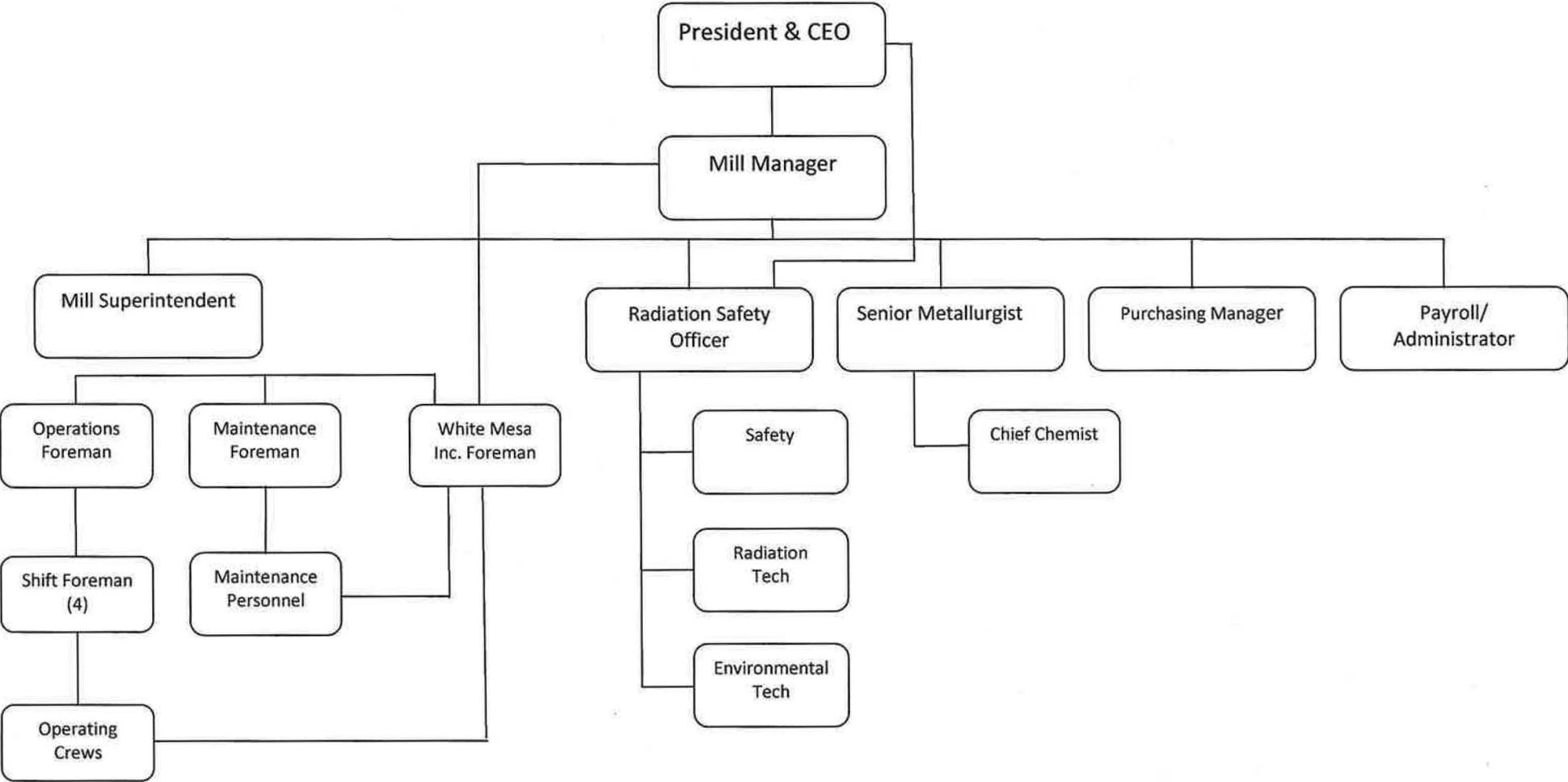
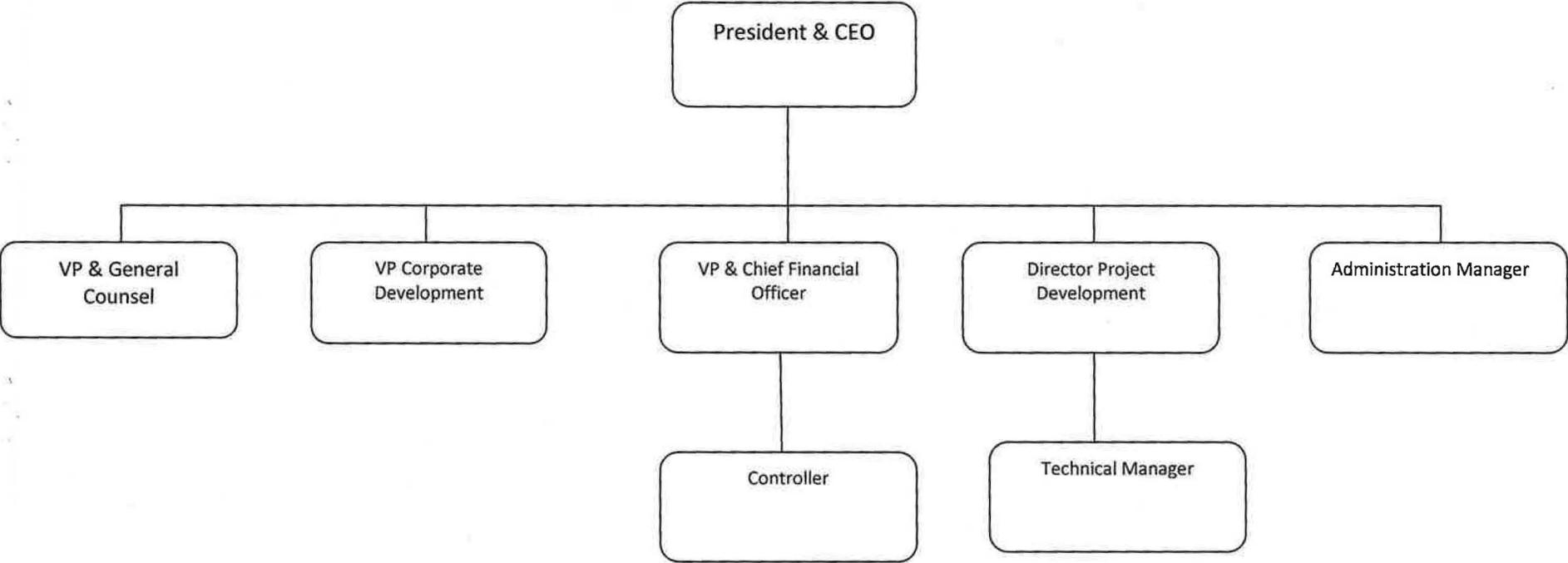


Figure 4
White Mesa Mill
Denison Mines (USA) Corporation
Organizational Structure

Figure 4
Denison Mines (USA) Corporation
Organizational Structure



APPENDICES

Appendix 1
White Mesa Mill Spill Prevention, Control, and Countermeasures Plan

WHITE MESA MILL

SPILL PREVENTION, CONTROL, AND COUNTERMEASURES PLAN FOR CHEMICALS AND PETROLEUM PRODUCTS

1.1 OBJECTIVE:

The objective of the Spill Prevention, Control, and Countermeasures (SPCC) Plan is to serve as a site-specific guideline for the prevention of and response to chemical and petroleum spills. The plan outlines spill potentials, containment areas, and drainage characteristics of the White Mesa Mill site. The plan addresses chemical spill prevention, spill potentials, spill discovery, and spill notification procedures. Spills are reportable if the spill leaves the site. Ammonia is the only chemical (as vapor) that has the potential to leave the site. In addition, chemical and petroleum spills will be reported in accordance with applicable laws and regulations.

Figure 1, Site Layout Map shows a map of the mill site including the locations of the chemical tanks on-site. Figure 2 shows the basins and drainage ditch areas for the mill site. Table 1.0 is an organization chart for Mill operations. Table 2.0 lists the reagent tanks and their respective capacities. Table 3.0 lists the laboratory chemicals, their amounts, and their reportable quantities. Table 4.0 lists the operations chemicals. Table 5.0 lists the chemicals in the reagent yard, their amounts, and their reportable quantities. Table 6.0 lists the petroleum products and solvents on site.

1.2 RESPONSIBILITIES:

Person in charge of facility responsible for spill prevention:

Mr. Dan Hillsten, Mill Manager

6425 South Highway 191

Blanding, UT 84511

(435) 678-2221 (work)

(435) 979-3041 (home)

Person in charge of follow-up spill reporting:

Mr. David Turk, Department Head , Health , Safety, and Environmental

6425 South Highway 191

Blanding, UT 84511

(435) 678-2221 (work)

(435) 678-7802 (home)

Refer to *Section 1.9 Spill Incident Notification* for a list of personnel to be notified in case of a spill. In addition, an organizational chart is provided in Table 1.0.

1.3 DRAINAGE BASINS, PATHWAYS, AND DIVERSIONS:

The main drainage pathways are illustrated in Plate 1.0. The map shows drainage basin boundaries, flow paths, constructed diversion ditches, tailing cells, the spillway between Cell 2 and 3, dikes, berms, and other relevant features. The White Mesa Mill is a "zero" discharge facility for process liquid wastes. The mill area has been designed to ensure that all spills or leaks from tanks will drain toward the lined tailing cells.

The tailings cells, in turn, are operated with sufficient freeboard (minimum of three feet) to withstand 100% of the PMP (Probable Maximum Precipitation). This allows for a maximum of 10 inches of rain at any given time.

1.4 DESCRIPTION OF BASINS:

Precipitation and unexpected spills from the mill site are contained within their prospective drainage basins. Overflow ultimately drains into one of the four lined tailings cells.

1.4.1 Basin A1

Basin A1 is north of Cell 1-I and Diversion Ditch No. 1. The basin contains 23 tributary acres, all of which drain into Westwater Creek.

1.4.2 Basin A2

Basin A2 contains all of Cell 1-I including an area south of the Diversion Ditch No. 1. The basin covers 84 acres. Any overflow from this basin would be contained within Cell 1-I.

1.4.3 Basin B1

Basin B1 is north of the mill area. The basin contains 45.4 tributary acres.

Overflow from this basin drains into a flood retention area by flowing through Diversion Ditch No. 2. Diversion Ditch No. 2 drains into Westwater Creek.

1.4.4 Basin B2

Basin B2 is northeast of the mill area and contains only 2.6 tributary acres. Overflow from this basin would drain into Diversion Ditch No. 3. Diversion Ditch No. 3 ultimately drains into Diversion Ditch No. 2.

1.4.5 Basin B3

Basin B3 contains most of the mill area, buildings, ore stockpiles, process storage tanks, retention ponds, spill containment structures, pipelines, and roadways. The normal direction of flow in this basin is from the northwest to the southwest. Any overflow from this basin would drain into Cell 1-I. The basin contains 64 acres. This basin has sufficient freeboard to withstand 100% of the PMP (Probable Maximum Precipitation). This allows 10 inches of rain for any given storm event.

1.4.6 Basin C

Basin C contains all of Cell 2. The basin consists of 80.7 acres. Areas in this basin include earth stockpiles and the heavy equipment shop. The direction of flow in this basin is to the southwest. All overflows in this basin is channeled along the southern edge of the basin. Overflow then flows into Cell 3 via the spillway from Cell 2 to Cell 3.

1.4.7 Basin D

Basin D contains all of Cell 3. This basin consists of 78.3 acres including a portion of the slopes of the topsoil stockpile and random stockpile. The basin contains all flows, including those caused by the PMF.

1.4.8 Basin E

Basin E contains Cell 4A and consists of 40 acres. All anticipated flows including those caused by the PMF will be contained within the basin and will flow directly into Cell 4A.

1.4.9 Basin F

Basin F will contain Cell 4B, if and when constructed. The area consists of 44 acres at a relatively low elevation. Direction of flow in this basin is towards the southwest.

1.5 POTENTIAL CHEMICAL SPILL SOURCES AND SPILL CONTAINMENT

1.5.1 Reagent Tanks (Tank list included in Table 2.0)

1.5.2 Ammonia

The ammonia storage tanks consist of two tanks with a capacity of 31,409 gallons each. The tanks are located southeast of the Mill building.

Daily monitoring of the tanks for leaks and routine integrity inspections will be conducted to minimize the hazard associated with ammonia. The reportable quantity for an ammonia spill is 7 gallons.

Ammonia spills should be treated as gaseous. Ammonia vapors will be monitored closely to minimize the hazard associated with inhalation. If vapors are detected, efforts will be made to stop or repair the leak expeditiously. Ammonia is the only chemical (as vapor) that has the potential to leave the site.

1.5.3 Ammonia Meta-Vanadate

Ammonia meta-vanadate is present in the SX building as the process solutions move through the circuit to produce the vanadium end product. But, the primary focus will be on the transportation of this chemical. The reportable spill quantity for ammonia meta-vanadate is 1,000 pounds.

1.5.4 Caustic Storage (Sodium Hydroxide)

The caustic storage tank is located on a splash pad on the northwest corner of the SX building. The tank has a capacity of 19,904 gallons. The tank supports are mounted on a concrete curbed catchment pad which directs spills into the sand filter sump in the northwest corner of the SX building. The reportable spill quantity for sodium hydroxide is 85 gallons.

1.5.5 Sodium Carbonate (Soda Ash)

The soda ash solution tank has a capacity of 16,921 gallons and is located in the northeast corner of the SX building. The smaller soda ash shift tank has a capacity of 8,530 gallons and is located in the SX building. Spills will be diverted into the boiler area, and would ultimately drain into Cell 1-I. There is no reportable spill quantity associated with sodium carbonate.

1.5.6 Sodium Chlorate

Sodium chlorate tanks consist of two fiberglass tanks located within a dike east of the SX building. The larger tank is used for dilution purposes and has a maximum capacity of 17,700 gallons. The smaller tank serves as a storage tank and has a capacity of 10,500 gallons. Daily monitoring of the tanks for leaks and integrity inspections will be conducted to minimize the hazard associated with sodium chlorate.

Sodium chlorate that has dried and solidified becomes even more of a safety hazard due to its extremely flammable nature. The reportable spill quantity for sodium chlorate is 400 gallons.

1.5.7 Sulfuric Acid

The sulfuric acid storage tanks consist of one large tank with the capacity of 1,600,000 gallons and two smaller tanks with capacities of 269,160 gallons each.

The large tank is located in the northwest corner of mill area basin B3 and is primarily used for acid storage and unloading. The tank support for the large tank is on a mound above a depression which would contain a significant spill. All flows resulting would be channeled to Cell 1-I. The tank is equipped

with a high level audible alarm which sounds prior to tank overflows. A concrete spill catchment with a sump in the back provides added containment around the base of the tank. However, the catchment basin would not be able to handle a major tank failure such as a tank rupture. The resulting overflow would flow towards Cell 1-I.

The two smaller storage tanks are located within an equal volume spill containment dike east of the mill building. The tanks are not presently in use, but are equipped with high level audible alarms.

The reportable spill quantity for sulfuric acid is 65 gallons.

1.5.8 Vanadium Pentoxide

Vanadium pentoxide is produced when vanadium is processed through the drying and fusing circuits and is not present in the vanadium circuit until after the deammoniator. Efforts will be made to minimize leaks or line breaks that may occur in processes in the circuit that contain vanadium pentoxide. Special care will be taken in the transportation of this chemical. The reportable spill quantity for vanadium pentoxide is 1000 pounds.

1.5.9 Kerosene (Organic)

The kerosene storage area is located in the central mill yard and has a combined capacity of 10,152 gallons in three tanks. Any overflow from these three tanks would flow around the south side of the SX building and then into Cell 1-I. These tanks have drain valves which remain locked unless personnel are supervising draining operations. The reportable spill quantity for kerosene is 100 gallons.

1.6.0 Used/ Waste Oil

Used/ Waste oil for parts washing is located north of the maintenance shop in a tank and has a capacity of 5,000 gallons. The tank is contained within a concrete containment system. Ultimate disposal of the used oil is to an EPA permitted oil recycler. Any oil escaping the concrete containment system will be cleaned up. Soil contaminated with used oil will be excavated and disposed of in Cell 2.

1.6.1 Propane

The propane tank is located in the northwest corner of the mill yard and has a capacity of 30,000 gallons. Daily monitoring of the tank for leaks and integrity inspections will be conducted to minimize potential hazards associated with propane leaks. Propane leaks will be reported immediately. There is no reportable quantity associated with propane.

1.7 POTENTIAL PETROLEUM SPILL SOURCES AND CONTAINMENT

1.7.1 Petroleum Tanks

1.7.1.1 Diesel

There are two diesel storage tanks located north of the mill building. The tanks have capacities of 250 gallons each. One of the diesel tanks is for the emergency generator. The other tank is located in the pumphouse on an elevated stand. Spillage from either tank would ultimately flow into Cell 1-1. The reportable spill quantity for diesel is 100 gallons. The spill is also reportable if the spill has the potential for reaching any nearby surface waters or ground waters.

1.7.2 Aboveground Fuel Pump Tanks

1.7.2.1 Diesel

The diesel tank is located on the east boundary of Basin B3 and has a capacity of 6,000 gallons. The tank is contained within a concrete catchment pad. The reportable spill quantity for diesel is 100 gallons. A diesel spill is also reportable if the spill has the potential for reaching any surface waters or ground waters.

1.7.2.2 Unleaded Gasoline

The unleaded gasoline tank is located next to the diesel tank. The unleaded gasoline tank has a capacity of 3,000 gallons and is contained within the same containment system as the diesel tank. Spills having the potential for reaching any surface waters or ground waters will need to be reported. The reportable spill quantity for unleaded gasoline is 100 gallons.

1.7.2.3 Pump Station

Both the diesel and the unleaded gasoline tanks will be used for refueling company vehicles used around the mill site. The pump station is equipped with an emergency shut-off device in case of overflow during fueling. In addition, the station is also equipped with a piston leak detector and emergency vent. Check valves are present along with a tank monitor console with a leak detection system. The catchment is able to handle a complete failure of one tank. However, if both tanks failed the concrete catchment pad would not be able to contain the spill. In this case, a temporary berm would need to be constructed. Absorbent diapers or floor sweep would be used in an effort to limit and contain the spill. The soil would have to be cleaned up and placed in the authorized dump in Cell 2.

1.7.2.4 Truck Unloading

In the event of a truck accident resulting in an overturned vehicle in the mill area, proper reporting and containment procedures will be followed when warranted, such as when oil or diesel fuel is spilled. Proper clean-up procedures will be followed to minimize or limit the spill. The spill may be temporarily bermed or localized with absorbent compounds. Any soils contaminated with diesel fuel or oil will be cleaned up and placed in Cell 2.

1.8 SPILL DISCOVERY AND REMEDIAL ACTION

Once a chemical or petroleum spill has been detected, it is important to take measures to limit additional spillage and contain the spill that has already occurred. Chemical or petroleum spills will be handled as follows:

The Shift Foreman will direct efforts to shut down systems, if possible, to limit further release.

The Shift Foreman will also secure help if operators are requiring additional assistance to contain the spill.

The Shift Foreman is also obligated to initiate reporting procedures.

Once control measures have begun and personal danger is minimized, the Shift Foreman will notify the Production Superintendent, Maintenance Superintendent, or Mill Manager.

The Production or Maintenance Superintendent will notify the Mill Manager, who in turn will notify the Department Head of EA/HS and/or the Environmental Coordinator.

The Mill Manager will assess the spill and related damage and direct remedial actions. The corrective actions may include repairs, clean-up, disposal, and company notifications. Government notifications may be necessary in some cases.

If a major spill continues uncontrolled, these alternatives will be considered:

1. Construct soil dikes or a pit using heavy equipment.
2. Construct a diversion channel into an existing pond.
3. Start pumping the spill into an existing tank or pond.
4. Plan further clean-up and decontamination measures.

1.9 SPILL INCIDENT NOTIFICATION

1.9.1 External Notification

For chemical and petroleum spills that leave the site, the following agencies should be notified:

- | | |
|-------------------------------------|----------------|
| 1. EPA National Response Center | 1-800-424-8802 |
| 2. US Nuclear Regulatory Commission | 301/816-5100 |
| 3. State of Utah | 801/538-7200 |

In case of a tailings dam failure, contact the following agencies:

- | | |
|-------------------------------------|--------------|
| 1. US Nuclear Regulatory Commission | 301/816-5100 |
| 2. State of Utah, Natural Resources | 801/538-7200 |

1.9.2 Internal Notification

Internal reporting requirements for incidents, spills, and significant spills are as follows:

Report Immediately

Event Criteria:

1. Release of toxic or hazardous substances
2. Fire, explosions, and accidents
3. Government investigations, information requests, or enforcement actions
4. Private actions or claims (corporate or employee)
5. Deviations from corporate policies or government requirements by management

Which have or could result in the following:

1. Death, serious injury, or adverse health effects
2. Property damage exceeding \$1,000,000
3. Government investigation or enforcement action which limits operations or assesses penalties of \$100,000 or more
4. Publicity resulted or anticipated
5. Substantial media coverage

Report at the Beginning of the Next Day

Event Criteria:

1. Was reported to a government agency as required by law
2. Worker (employee or contractor) recordable injury or illness associated with a release
3. Community impact-reported or awareness
4. Publicity resulted or anticipated
5. Release exceeding 5,000 pounds of process material, waste, or by-product

In the event of a spill requiring reporting, the Mill Manager is required to call the Corporate Environmental Manager or the President and Chief Executive Officer. The spill will first be reported to the Shift Foreman. The Shift Foreman will then report the spill to the Production Superintendent, Maintenance Superintendent, or Mill Manager.

The Production or Maintenance Superintendent will report to the Mill Manager. The Department Head of EA/HS and the Environmental Coordinator will be contacted by the Mill Manager.

<u>Name</u>	<u>Title</u>	<u>Home Phone</u>
<u>Mill Personnel:</u>		
Dan Hillsten	Mill Manager	(435) 979-3041
David Turk	RSO	(435) 678-7802
Scot Christensen	Production Superintendent	(435) 678-2015
Wade Hancock	Maintenance Superintendent	(435) 678-2753
Jeremy Gagon	Mill Foreman	(435) 678-7805
Thayne Holt	Mill Foreman	(435) 979-3557

Denver Personnel:

Ronald F. Hochstein	President and Chief Executive Officer	(303) 986-3634
David C. Frydenlund	Vice President and General Counsel	(303) 221-0098
Jo Ann Tischler	Environmental Manager	(303) 389-4132

In the event the next person in the chain-of-command cannot be reached, then proceed up the chain-of-command to the next level. Table 1.0 shows the organizational chart for the mill site.

1.10 RECORDS AND REPORTS

The following reports and records are to be maintained in Central File by the Environmental Coordinator for inspection and review for a minimum of three years:

1. Record of site monitoring inspections
 - a. Daily Tailings Inspection Data
 - b. Weekly Tailings Inspection and Survey
 - c. Monthly Tailings Inspection, Pipeline thickness
 - d. Quarterly Tailings Inspection
2. Tank to soil potential measurements

3. Annual bulk oil and fuel tank visual inspections
4. Tank and pipeline thickness tests
5. Quarterly and annual PCB transformer inspections (if transformer contains PCBs)
6. Tank supports and foundation inspections
7. Spill Incident reports
8. Latest revision of SPCC plan

1.11 SPILL REPORTING REQUIREMENTS

1. Report to applicable government agency as required by laws and regulations
2. Report any recordable injury or illness associated with the release
3. Fulfill any communication requirements for community awareness of spill impacts
4. Report release of 5,000 pounds or more of any process material or waste product

1.12 PERSONNEL TRAINING AND SPILL PREVENTION PROCEDURES

All new employees are instructed on spills at the time they are employed and trained. They are briefed on chemical and petroleum spill prevention and control. They are informed that leaks in piping, valves, and sudden discharges from tanks should be reported immediately. Abnormal flows from ditches or impoundments are of immediate concern. In addition, a safety meeting is presented annually by the Environmental Coordinator to review the SPCC plan.

1.12.1 Training Records

Employee training records on chemical and petroleum spill prevention are maintained in the general safety training files.

1.12.2 Monitoring Reports

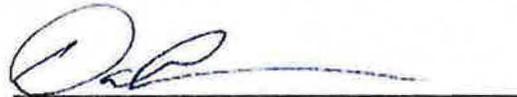
Shift logs shall provide a checklist for inspection items.

1.13 REVISION

This procedure is to be reviewed by the mill staff and a registered professional engineer at least once every three years, and updated when circumstances warrant a revision.

1.14 MILL MANAGER APPROVAL

I hereby certify that I have reviewed the foregoing chemical and petroleum product SPCC plan, that I am familiar with the Denison Mines (USA) Corp. White Mesa Mill facilities, and attest that this SPCC plan has been prepared in accordance with the Standard Operating Procedures currently in effect.



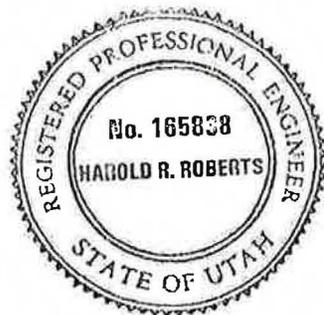
Dan Hillsten
Mill Manager

1.15 CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER

I hereby certify that I have reviewed the foregoing chemical and petroleum product SPCC plan, that I am familiar with the Denison Mines (USA) Corp. White Mesa Mill facilities, and attest that this SPCC plan has been prepared in accordance with good engineering practices.



Harold R. Roberts
Registered Professional Engineer
State of Utah No. 165838



1.16 Summary

Chemical and petroleum spills will be reported in accordance with applicable laws and regulations. Spills that leave the property need to be reported immediately. Below is a table listing the specific reportable quantities associated with the major chemical and petroleum products on-site.

CHEMICAL	REPORTABLE QUANTITY (RQ)
AMMONIA	100 POUNDS
AMV	1,000 POUNDS
SODIUM HYDROXIDE	1,000 POUNDS
SODA ASH	No Reportable Quantity
SODIUM CHLORATE	400 GALLONS
SULFURIC ACID	1,000 POUNDS
VANADIUM PENTOXIDE	1000 POUNDS
KEROSENE OIL	100 GALLONS No Reportable Quantity
PROPANE	No Reportable Quantity
DIESEL & UNLEADED FUEL	100 GALLONS

Appendix 2
White Mesa Mill Emergency Response Plan

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INTRODUCTION

The purpose of this Emergency Response Plan (this "Plan") is to reduce the risk to our employees and to the community from potential health, safety and environmental emergencies that could arise at the Denison Mines (USA) Corp. ("DUSA") White Mesa Uranium Mill (the "Mill").

This plan includes the following:

- evaluation of the potential risks for accidents, including fire, explosions, gas releases, chemical spills and floods (including tailings dam failure), that could occur at the Mill;
- specific emergency programs for each potential event;
- administrative response actions; and,
- emergency response contacts - both internal and external.

The Mill operates under the jurisdiction of the following regulatory agencies:

- Utah State Department of Environmental Quality, Division of Radiation Control;
- Mine Safety and Health Administration;
- Environmental Protection Agency;
- Utah State Department of Environmental Quality, Division of Air Quality; and,
- Utah State Division of Natural Resources Bureau of Dam Safety.

This Plan follows the standard format and content for emergency plans for fuel cycle and materials facilities set out in U.S. Nuclear Regulatory Commission ("NRC") Regulatory Guide 3.67 (January 1992) ("Reg. Guide 3.67"), to the extent applicable to the Mill. Section 3 of Reg. Guide 3.67 states that "in its emergency response plan and in coordination meetings with offsite authorities, the licensee should convey the concept that fuel cycle and materials facilities do not present the same degree of hazard (by orders of magnitude) as are presented by nuclear power plants. Thus the classification scheme for these facilities is different." Reg. Guide 3.67 also refers to NRC's NUREG-1140, "A Regulatory Analysis on Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licensees", S.A. McGuire, January 1988, for a description of past incidents involving radioactive materials.

NUREG-1140 analyzed potential accidents for 15 types of fuel cycle and other radioactive material licensees, including uranium mills, for their potential for offsite releases of radioactive materials. NUREG-1140 concludes that for most of these licensees, for example uranium mills, the degree of hazard is small and that "the low potential offsite doses . . . the small areas where actions would be warranted, the small number of people involved, and the fact that the local police and fire departments would be doing essentially the same things they normally do, are all factors that tend to make a simple plan adequate." NUREG-1140 concludes that "an appropriate plan would (1) identify accidents for which protective actions should be taken by people offsite.

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(2) list the licensee's responsibilities for each type of accident, including notification of local authorities (fire and police generally), and (3) give sample messages for local authorities including protective action recommendations. This approach more closely follows the approach used for research reactors than for power reactors."

As a result, this Plan incorporates the most appropriate responses for the Mill, in accordance with the requirements of Reg. Guide 3.67 and the conclusions set out in NUREG-1140.

MILL OVERVIEW

Master files containing Material Safety Data Sheets ("MSDSs") for all materials in use at the Mill are maintained at the Safety Office, Mill Maintenance Office, Mill Laboratory and Mill Central Control Room. Copies are also on file at the Blanding Clinic, Doctor's Offices, Blanding Fire House and Office of the San Juan County Emergency Medical Coordinator.

PLAN OBJECTIVES

The primary objectives of this plan are:

- To save lives, prevent injuries, prevent panic, and minimize property/environmental damage to the lowest possible level;
- To evacuate and account for all people in the area including visitors, truck drivers, contractors, etc.;
- To provide assembly areas that are as safe as possible and which can be reached without traveling through a hazardous area. Assembly areas will be properly manned to deal with sick or injured persons, and provisions will be made to evacuate those persons to proper shelter; and
- To make adequately trained personnel available to cope with rescue and recovery operations as directed by the Incident Commander.

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1. FACILITY DESCRIPTION

1.1 Description of Licensed Activity

The Mill is located approximately 6 miles south of Blanding, Utah. The Mill processes conventional uranium or uranium/vanadium ores to recover uranium and vanadium. In addition to the processing of conventional ores, the Mill also processes alternate feed materials using similar process steps and chemicals. The conventional ore is stored on the Ore Pad (shown on the Site Layout Map included as Exhibit 3). Alternate feed materials are also stored on the Ore Pad and may be stored in bulk form, lined burrito bags, liners or drums. In certain circumstances, containerized alternate feed materials may be stored in locations off of the ore pad.

All of the ores and feeds processed at the Mill contain natural uranium and its daughter products. Uranium is in equilibrium with its daughters for conventional ores and is generally in various degrees of disequilibrium with its daughters for alternate feed materials, depending on the specific feed material. The descriptions of each alternate feed material are maintained by the Mill's Radiation Safety Officer. However, the Mill does not receive, process or produce enriched uranium of any sort, therefore there is no risk of a criticality accident at the Mill. The products produced at the Mill include ammonium metavanadate (AMV), vanadium pregnant liquor (VPL), vanadium pentoxide (V_2O_5), and yellowcake, or uranium concentrate (U_3O_8). The V_2O_5 and U_3O_8 products are packaged in steel drums for shipment. The AMV is packaged in either steel drums or super-saks while the VPL is sold in liquid form in bulk.

Drums containing U_3O_8 and vanadium product are stored from time to time in a fenced, locked, paved area in the Mill's restricted area, pending shipment offsite.

The Mill utilizes a semi-autogenous grind circuit (SAG mill) followed by a hot sulfuric acid leach and a solvent extraction process to extract uranium and vanadium from ores, using large amounts of sulfuric acid, sodium chlorate, kerosene, amines, ammonia and caustic soda in the process. The reagent storage tank locations are described in further detail in Section 1.2.9 below. At any one time, there may be 1.4 million gallons of sulfuric acid, 63,000 gallons of anhydrous ammonia, 220,000 gallons of kerosene, 20,000 gallons of caustic soda and 30,000 gallons of propane and various quantities of other reagents stored or located on site. See Sections 1.26, 1.27 and 1.29 for a more detailed discussion of the chemicals and reagents used and stored at the site.

Tailings and wastes generated from processing conventional ores and alternate feed materials are disposed of permanently in the Mill's lined tailings impoundments. The Mill's tailings cells are comprised of four below grade engineered cells, Cell 1, 2, 3 and 4A. Liquids are stored in Cell 1, Cell 3 and Cell 4A the active tailings cell. The liquid in the tailings cells is very acidic. In addition to the tailings cells, there is also an emergency lined catchment basin ("Roberts Pond")

west of the Mill building. Solutions in this basin or the tailings cells should not be used to fight fires in the Mill facility.

1.2 Description of Facility and Site

1.2.1 Site Drawing

The Mill facilities are shown on the Site Layout Map included as Exhibit 3 and on the General Area Map included as Exhibit 4. See also Exhibit 7 for a listing and the locations of the main shut-off valves.

1.2.2 Communication and Assessment Centers

The Mill does not have a specific communication or assessment center. Key personnel are equipped with handheld VHF transceivers, which will serve as the primary means of communication while personnel are assembling to the designated relocation areas and as needed thereafter to deal with the emergency. The relocation area will serve as the initial assessment center. Other communications and assessment centers will be set up in the Mill's Office building, Scalehouse, Warehouse or other areas of the Mill that have communication capability, as needed depending on the nature and location of the emergency.

1.2.3 Assembly and Relocation Areas

When the evacuation alarm sounds or when personnel are verbally notified by radio or other means, all personnel will assemble at:

- The parking lot south of the office;
- The Scalehouse;
- North side of Tailings Cell 1; or
- North of the Mill.

The assembly site will depend upon conditions, i.e. nature of the emergency, wind conditions, etc. The Radiation Safety Officer ("RSO")/Fire Chief or Shift Foreman will specify the appropriate assembly site.

1.2.4 Fire Water Supply and Alarm Systems

a) Fire Water Supply

The fire water supply facilities include:

- 400,000 gallon Storage Tank of which 250,000 gallons are reserved for fire emergencies; and

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- Centrifugal diesel driven pump rated at 2,000 gpm at 100 psi. This pump starts automatically when the pressure in the fire main drops below 100 psi (See Figure 1, Fire System Schematic).

When more water is needed for an emergency an additional source is the Recapture Reservoir supply pipeline, which can be utilized in emergencies at a rate of about 1,200 gpm.

b) *Alarm System*

The alarm systems include the following:

- public address system;
- hand held radios; and
- siren.

1.2.5 Office Building and Laboratory

a) *Office Building*

The office building (approximately 10,000 square feet) contains the administration offices, radiation health and safety offices and the Mill laboratory. The central file vault and the main computer system are also in this building. The ambulance is kept on the west side of the office building near the safety office entrance.

b) *Laboratory*

The laboratory facilities contain the following:

- three flammable cabinets (keys required);
- chemical storage room south of main lab;
- seven fume hoods - hoods 1, 2, 3 and 4 are in the chemical laboratory and hoods 5, 6 and 7 are in the metallurgical laboratory. Only hoods 1 and 2 may be used for perchloric acid;
- outside laboratory chemical storage north of office building (key required); and
- perchloric acid storage vault located underground west of office building (key required).

A wide variety of chemicals in small quantities are located in the Mill laboratory. These chemicals range from acids to bases along with flammable metal compounds and peroxide forming compounds. Oxidizers and organic chemicals are stored in a storage room in the laboratory, which have a strong potential of producing harmful vapors if the containers are damaged to the point that the chemicals are exposed. There are no acids stored in this storage room. The acids (including but not limited to sulfuric, nitric, acetic, perchloric, phosphoric and hydrochloric acids) are stored in the main laboratory area in 2.5 liter or 500-ml bottles. MSDS

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books for all chemicals in the laboratory are located in the Laboratory, Safety Department, Mill Maintenance office and Mill Central Control room.

c) *Electrical*

Electrical transformers and electrical switches are located in the laboratory at the east end of the chemical storage room.

d) *Fire Protection System*

The fire protection systems in the office building and laboratory include:

- a fire hose station located on the east end of the office building. The station includes two sets of turnout gear, two SCBA units and Incident Commander materials;
- automatic "wet" sprinkler system which is actuated at 212° F; and
- portable dry chemical extinguishers strategically located throughout the building.

1.2.6 Solvent Extraction Building

The solvent extraction (SX) building (approximately 21,000 square feet) houses the uranium and vanadium solvent extraction circuits and the ELUEX circuit. The SX circuits may contain up to 200,000 gallons of kerosene (757,000 liters) which has a flash point of 185° F.

Associated equipment in the SX building includes a temporary boiler located at the southwest end of the SX building which maintains the temperature for the fire system.

Chemicals which may be encountered in the SX building include:

- Kerosene;
- Caustic Soda;
- Anhydrous Ammonia;
- Sulfuric Acid;
- Salt (Brine);
- Soda Ash;
- Ammonium Sulfate;
- Amines;
- Alcohol;
- Sodium Chlorate;
- Sodium Vanadate; and
- Propane.

The VPL product is stored in the SX building.

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a) *Electrical*

All electrical switches are located outside in the Mill Central Control room north of the SX building. The main control panel for all of the equipment is located in the Central Control Room in the main Mill building.

b) *Fire Protection System*

The SX building fire protection systems include:

- a "wet" AFFF foam sprinkler system with heat actuated sprinkler heads that release at 212°F; and
- portable dry chemical extinguishers strategically located throughout the building.

For fire hydrant and hose cabinet locations in the SX building refer to the Fire System Schematic included as Figure 1 in this Plan.

1.2.7 Mill Building

The mill building (approximately 22,000 square feet) contains process equipment related to grind, leach, counter current decantation, precipitation, and drying and packaging of uranium and vanadium products.

Chemicals which may be encountered in the mill building include:

- Caustic Soda;
- Anhydrous Ammonia;
- Sulfuric Acid;
- Soda Ash;
- Ammonium Sulfate;
- Sodium Chlorate;
- Sodium Vanadate; and
- Propane.

The finished products which are contained in the mill building include AMV, V_2O_5 and U_3O_8 (or yellowcake).

a) *Electrical*

The main electrical switch gear is located west of the SAG mill on the ground floor in the north west corner of the mill building. Circuit control panels are located in the SAG mill control room, the central control room, the vanadium roaster control room and the AMV area.

b) *Fire Protection System*

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The main mill building fire protection systems include:

- portable dry chemical extinguishers strategically located throughout the building; and
- water hoses throughout the building.

For fire hydrant and hose cabinet locations in the mill building refer to the Fire System Schematic included as Figure 1 of this Plan.

1.2.8 Maintenance Shop/Warehouse/Change Room Building

This building (approximately 20,000 square feet) contains the main maintenance shop area (located on the north end of the building), the main warehouse (located on the south end of the building) and the personnel change rooms and lunch/training room (located on the extreme south end of the building on the ground and second floors).

Within the maintenance shop area are the following work area and specialty shops:

- the main maintenance shop area contains welding and cutting equipment, lathes, presses, and drill presses;
- a carpenter shop which contains various saws and planes. Fiberglass work is also done within this shop area and it is located at the northwest end of the maintenance shop area;
- an electrical shop which is located south of the carpenter shop;
- a heavy equipment maintenance shop area is located at the north end of the maintenance shop in the center of the building;
- a rubber room for rubber lining of equipment is located east of the equipment shop area; and
- the maintenance shop office, instrument shop and tool room are located at the south end of the maintenance shop area.

The warehouse area contains primarily dry good storage for repair parts and consumables for the operation of the Mill. There is an electrical water heater for the change room which is located in the warehouse area at the south end.

Within the warehouse and maintenance shops there are some oils and chemicals stored in the following locations:

- small quantities of flammable material such as starting fluid and spray paint are kept in the warehouse;
- drums of new oil and anti-freeze are stored along the east wall of the equipment maintenance area and on the east side of the warehouse on oil storage racks;
- used oil is stored in a tank located northeast of the equipment shop. The tank has a capacity of approximately 5,800 gallons;

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- in the main maintenance shop area and the rubber room there are flammable storage cabinets and east of the warehouse there is a trailer which is used to store flammable items such as rubber cements, paints and fiberglass resins; and
- compressed gas cylinder storage, both empty and full is located outside, east of the maintenance shop.

a) *Electrical*

The main electrical circuit breaker for the maintenance shop and warehouse building is located on the east wall inside the Maintenance shop. Auxiliary electrical panels for the change room and warehouse are located in the southwest corner of the warehouse area.

b) *Fire Protection System*

The fire protection system within the maintenance shop/warehouse/change room building includes:

- “wet” automatic sprinkler system that releases at 212° F; and
- portable dry chemical extinguishers strategically located throughout the maintenance area, warehouse area and the change room and lunch room.

For fire hydrant and hose cabinet locations refer to the Fire System Schematic (Figure 1).

1.2.9 Reagent and Fuel Storage

The following lists the reagents and fuel stored at the Mill site:

- a sulfuric acid tank located northwest of the mill building which has a capacity of approximately 1.4 million gallons;
- a storage tank for propane is located on the north edge of the Mill site, northwest of the mill building. It has a storage capacity of 30,000 gallons;
- four sodium chlorate tanks located east of the SX building, north of the office building and east of the pulp storage tanks. The two tanks east of the SX building are for sodium chlorate storage and the other two tanks are for dilution of the sodium chlorate;
- two anhydrous ammonia tanks located east of the SX building, with capacity of 31,409 gallons each;
- three kerosene tanks located east of the SX building, with a capacity of 10,152 gallons each;
- one caustic soda tank north of the SX building, with a capacity of 19,904 gallons; and
- three soda ash tanks which are located east of the SX building. One tank is the dry soda ash tank with a capacity of 70,256 gallons. Two of the tanks are soda ash dilution tanks with capacities of 16,921 gallons each.

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- diesel fuel and gasoline are stored in two tanks located on the eastern side of the ore pad. The gasoline storage capacity is 3,200 gallons, while diesel storage capacity is 8,000 gallons.

Other reagents are stored in steel barrels or super sacks in a reagent yard located east of the office building. Typical reagents which are stored in this yard include:

- polymers and flocculants;
- boiler feed water chemicals;
- methanol;
- tributyl phosphate;
- "dirty" soda ash and ammonium sulfate;
- SX amines and emulsion breakers;
- decyl alcohol;
- minimal amounts of acid in barrels; and
- used oil in drums and overpacks.

1.2.10 Boiler Facilities

The main building (approximately 12,400 square feet) is located on the west side of the Mill site and contains air compressors and water treatment facilities. To the north of the main building is a building which houses a propane-fired boiler. The vanadium oxidation tank, oxidation thickener, and pH adjustment tank are located south of the boiler house facilities.

a) *Electrical*

The main electrical panel for the boiler facilities is located outside of the building, on the south wall.

b) *Fire Protection System*

The fire protection system for the boiler facilities is comprised of strategically located portable dry chemical extinguishers.

1.2.11 Sample Plant

The sample plant building (approximately 8,000 square feet) is located on the ore pad, east of the maintenance shop/warehouse building. The sampling plant equipment has been removed from the building and it is currently used as a storage area for maintenance.

a) *Electrical*

The electrical panel for the sample plant building is located on the east wall upstairs.

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b) *Fire Protection System*

There are no extinguishers or sprinkler systems in the sample plant.

1.2.12 Tailings Cells and Roberts Pond

Tailings and wastes generated from processing conventional ores and alternate feed materials are disposed of permanently in the Mill's lined tailings impoundments. The Mill's tailings cells are comprised of four below grade engineered cells, Cell 1, 2, 3 and 4A. Liquids are stored in Cell 1, Cell 3 and Cell 4A the active tailings cell. The liquid in the tailings cells is very acidic. It also contains virtually all of the radionuclides contained in the ores and alternate feed materials that are processed at the Mill, other than uranium, which is included in the tailings at approximately 5% of its concentration in the ores and alternate feed materials.

In addition to the tailings cells, there is also an emergency lined catchment basin (Roberts Pond) west of the mill building. Solutions in this basin or the tailings cells should not be used to fight fires in the Mill facility.

1.2.13 Stack Heights, Diameters and Typical Flow Rates

Emissions from the Mill process are in the form of air emissions from exhaust stacks and solid/liquid tailings which are stored in the Mill's tailings cells located west/southwest of the main Mill building. The major exhaust stack parameters are shown in the following table.

Description	Height (ft from surface)	Diameter (inches)	Estimated Flow Rate (cfm)
Leach Exhaust	~100	36	13,700
Yellow Cake Drying (3 stacks)	~85	18	4,000 per stack
Vanadium Roasting & Fusion	~85	38	4100

There are also smaller exhaust stacks associated with the Laboratory in the Mill Office building and the boiler exhaust stack.

1.2.14 Main Shut-Off Valves

The main shut-off valves and their locations are indicated on Exhibit 7.

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1.3 Description of Area Near the Site

The site and surrounding area are indicated on the general area map included as Exhibit 4 and on the Drainage Map indicated on Exhibit 5.

The Mill lies within a region designated as the Canyon Lands section of the Colorado Plateau physiographic province. Elevations in the region range from approximately 3,000 feet in the bottom of canyons to over 11,000 feet among the peaks of the Henry, Abajo and La Sal Mountains. The average elevation for the area, excluding deeper canyons and isolated mountain peaks is about 5,000 feet. The average elevation at the Mill site is approximately 5,600 feet above mean sea level.

Although varying somewhat with elevation and terrain, the climate in the vicinity of the Mill can be considered as semi-arid with normal annual precipitation of about 13.4 inches. Primary land uses in the region include livestock grazing, wildlife range, recreation, and exploration of minerals, oil and gas. The area within 5 miles of the Mill site is predominantly range land owned by residents of Blanding or of the White Mesa Ute community of the Ute Mountain Ute Tribe.

There are no perennial surface waters on or in the vicinity of the Mill site. Corral Creek, located east of the site is an intermittent tributary to Recapture Creek. Westwater Creek is an intermittent tributary of Cottonwood Wash, with its confluence with Cottonwood Wash located 1.5 miles west of the Mill site. Both Recapture Creek and Cottonwood wash are similarly intermittent. They both drain to the south and are tributaries to the San Juan River approximately 18 miles south of the Mill Site.

The Mill site is near Utah State Highway 191 and can be accessed by a paved access road from the highway to the Mill facilities. This would be the primary route for access of emergency equipment and evacuation. A municipal airport is also located approximately 3 miles north of the Mill site. There are no significant potential impediments to traffic flow in the area, such as rivers, drawbridges, railroad grade crossings, etc.

The nearest residence to the Mill is approximately 1.2 miles to the north of the Mill, the next is a residence approximately two miles north of the Mill, followed by the community of White Mesa, about 3.5 miles to the south. The City of Blanding is located approximately 6 miles to the northeast. Exhibit 6 shows these population centers.

The local fire station and police station are located in Blanding, Utah. Blanding also has a medical clinic. The closest hospital is located in Monticello, Utah, approximately 30 miles north of the Mill. St. Mary's hospital in Grand Junction, Colorado, approximately 3 hours drive by highway, is the nearest trauma center. Specialized medical attention for radioactive contamination or chemical exposure would be located either in Salt Lake City at the University of Utah Medical Center (approximately 5 hours drive by highway), or in Denver, Colorado (approximately 7 hours drive by highway).

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There are no facilities close to the Mill site that could present potential protective action problems. All schools, arenas, stadiums, prisons, nursing homes and hospitals are located in Blanding, approximately 6 miles north of the Mill site.

There are no sites of potential emergency significance such as liquefied petroleum gas (LPG) terminals, chemical plants, pipelines, electrical transformers and underground cables in the vicinity of the Mill, other than Mill site facilities described in detail in Section 1.2 above.

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2. TYPES OF ACCIDENTS

2.1 Description of Postulated Accidents

The following is a description of each type of radioactive materials and other accident that could potentially occur at the Mill site that could require an emergency response.

2.1.1 **Unloading, Storage of Ammonia**

A release of anhydrous ammonia could occur through tank failure, overfilling, and failures of piping, loading hoses, hose couplings, and emergency relief valves.

No radiological impacts are foreseen from a release of anhydrous ammonia. However, in the event of an ammonia tank spill, the material would be expected to evaporate quickly. Release of the entire contents of one or both of the onsite ammonia tanks during a short period of time could result in a significant release to the environment (the atmosphere) of a hazardous material that could require a response by an offsite organization to protect persons offsite. Such a release is addressed in the Mill's Risk Management Plan, required under Section 112r of the Clean Air Act, a copy of which plan is attached hereto as Appendix K. The Risk Management Plan contemplates a worst case scenario of the release of the entire 140,000 pound contents of one of the anhydrous ammonia tanks over a 10 minute period, which could result in a dangerous cloud of anhydrous ammonia that could extend 12 miles from the point of origin at the Mill. An alternate scenario of a release of 500 pounds of ammonia over a one minute period could result in a dangerous cloud of anhydrous ammonia that extends 0.8 miles from the point of origin.

Therefore, an uncontrolled release of ammonia that could result in the release of 100 or more pounds of ammonia is classified as a Site Area Emergency. Any other uncontrolled release of ammonia, other than a minor release, is classified as an Alert. A minor release of ammonia is classified as an On-Site Emergency. See Section 3 below for a discussion of the significance of these classifications.

A minor release of ammonia would be any release that is expected to be of a small amount (less than 7 gallons (36 pounds)) that is not expected to be uncontrolled. Minor releases of ammonia are not subject to the notification requirements of this Plan; however they are subject to the procedures for response to an ammonia release outlined in Appendix A.

The procedures for response to an ammonia release are outlined in Appendix A. An uncontrolled release of 100 lbs or more of anhydrous ammonia would also require that notice be given to the Community Emergency Coordinator for the local Emergency Planning Committee under the Emergency Response and Community Right to Know Act (see Section 10 below). The procedures for giving such notifications are also set out in Appendix A to this Plan.

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2.1.2 Ammonia Explosion in a Building

An ammonia-air explosive mixture could be formed inside the Mill and SX buildings if a line ruptured. Existing controls include emergency powered vent fans, operator presence at all times for surveillance, and one-half inch piping that minimizes potential release amounts.

Radiological impacts from the explosion would be minimal and most likely contained within the restricted area, unless the explosion resulted in a fire (see Sections 2.1.6 and 2.1.7 below for the emergency response procedures to follow in the event of a fire). An ammonia explosion would be classified as a Site Area Emergency if it involved the uncontrolled release of greater than 100lbs of anhydrous ammonia, and as an Alert if it involved an uncontrolled release of 36 lbs (7 gallons) to 100 lbs of anhydrous ammonia. Releases of less than 7 gallons are classified as On-Site Emergencies (see Section 3 for significance of this classification). Any contamination would be recycled or disposed of, as appropriate.

The procedure for response to an ammonia explosion are set out in Appendix B.

2.1.3 Unloading/Storage of Propane/Propane Fire or Explosion

A release of propane could occur through tank failure, overfilling, and failures of piping, loading hoses, hose couplings, and emergency relief valves.

Daily inspections of the propane tank for leaks and integrity are conducted to minimize potential hazards associated with propane leaks.

No radiological impacts are predicted for a release of propane, unless the release is associated with a fire. Inhalation of propane is also less a hazard than inhalation of ammonia, and would not be expected to be a significant threat to the public, although it could pose hazards to workers in the immediate vicinity of the release. Vapors can cause dizziness or asphyxiation without warning.

However, there is a significant risk of fire or explosion in the event that the release was uncontrolled and the propane was ignited. Such a release is addressed in the Mill's Risk Management Plan, required under Section 112r of the Clean Air Act, a copy of which plan is attached hereto as Appendix K. The Risk Management Plan contemplates a worst case scenario of the release of 110,000 pounds of propane, resulting in a vapor cloud explosion extending 0.40 miles from the point of origin. An alternate scenario of a release of 500 pounds of propane could result in a vapor cloud explosion extending 0.01 miles from the point of origin. The propane tank is located approximately 0.5 miles from Highway 191 and the nearest Mill property boundary, so a propane explosion is unlikely to have direct offsite impacts. However, as a matter of caution, notice is provided to offsite authorities.

An uncontrolled release of propane that could result in the possibility of an explosion is classified as an Alert. A minor release of propane (see below) is classified as an On-Site Emergency. See Section 3 below for a discussion of the significance of these classifications.

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A minor release of propane would be any release that is expected to be of a small amount and that is not expected to be uncontrolled or pose a risk of explosion. Minor releases of propane are not subject to the notification requirements of this plan; however, they are subject to the procedures set out in Appendix C.

The procedures for response to a propane release are outlined as Appendix C.

2.1.4 Leach Tank Failure

The rubber lined leach tanks contain the nearly boiling ore/sulfuric acid slurry. Tank failure due to corrosion and break-out is a possibility. Procedures and practices are in place and functioning to minimize this possibility. Failure due to loss of structural integrity is also possible. The tanks are evaluated periodically to determine structural stability and the potential need for replacement.

Radiological impacts are minimal from an occurrence of this type. Any release of material would be contained in the leach area or would flow to the lined catchment basin (Roberts Pond) west of the Mill for containment, as designed.

Accidents of this type are classified as On-Site Emergencies. See Section 3 for the significance of this classification.

The procedures for response to a leach tank failure are outlined in Appendix C and in the Mill's Spill Prevention, Control, and Countermeasures Plan For Chemicals and Petroleum Products (the Spill Response Plan"), a copy of which is attached as Appendix L to this Plan.

2.1.5 Sulfuric Acid Storage Tank Failure

The Mill's sulfuric acid storage tanks consist of one large above ground tank that can hold up to 1,600,000 gallons and two smaller tanks with capacities of 269,160 gallons each. Tank failure due to corrosion and break out is possible. Failure due to loss of structural integrity, as well as failures of piping, loading hoses, hose couplings, and emergency relief valves.

A sulfuric acid tank spill would flow via an above ground path to tailings Cell 1 or to Roberts Pond.

There would be no radiological impacts associated with an accident of this type. Nor would there be any significant hazards to the environment from off gases from any such release. However, there would be potential hazards to workers in the close vicinity from contact with sulfuric acid or inhalation of sulfuric acid vapors, and a release to the surface soils.

The large tank is equipped with a high level audible alarm which sounds prior to tank overflows. The two smaller tanks are also equipped with high level audible alarms.

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Accidents of this type are classified as On-Site Emergencies, because they will not lead to a significant release to the environment of radioactive or other hazardous material. See Section 3 below for the significance of this classification.

The procedures for response to a sulfuric acid tank failure are outlined in Appendix D and in the Mill's Spill Response Plan.

2.1.6 SX Fire

The possibility of a major fire in the solvent extraction building is remote, as very strict safety precautions are adhered to. This part of the process is kept isolated and in separate buildings due to the large quantities of kerosene present. These facilities are equipped with an independent fire detection and protection system. In the event of a fire in the solvent extraction building, the fire suppression system delivers foam to the affected area. The foam is designed to spray for 25 minutes, followed by water at 100 psig and up to 2,000 gpm.

In spite of the safety precautions, a major fire in the solvent extraction building could occur. NRC staff concluded in NUREG-1140 that a fire in the solvent extraction circuit is the accident of greatest significance for emergency preparedness for a uranium mill, from the point of view of potential radiological impacts offsite. However, NRC staff concluded that the calculated dose from this type of accident is small (0.1 rem or less) because of the very low specific activity of the uranium and the low volatility of the uranium compounds, which causes a low release fraction. NRC staff noted that these low release fractions are the reason why no offsite ground contamination was ever detected due to the historic fires that have occurred at other uranium mills. In the 1980s, two solvent extraction fires occurred at other uranium Mills. Neither fire resulted in appreciable release of uranium to the unrestricted environment, and essentially complete recovery of the uranium was obtained.

As a result, NRC staff concluded in NUREG-1140 that no credible accident would justify emergency protective actions because radiation doses to the public offsite from an accident would be below the EPA's protective action guides. Also, the quantity of uranium inhaled is below the quantity where chemical toxicity effects are observed. Thus, neither radiation doses nor chemical toxicity from licensed materials is a concern with respect to the need for prompt protective actions.

If a major fire were to occur, the radiological environmental effects would be confined within a few hundred feet of the buildings. Recovery of uranium that would be scattered by the burning solvent would be accomplished. Uranium-contaminated soil would be processed in the Mill circuit or disposed of in the Mill's tailings cells, as appropriate. The Mill would be required by existing regulations to take certain actions. Among these, the Mill would be required by 10 CFR 20.201(b) to conduct surveys (offsite if appropriate) to determine whether the NRC's limits on radioactivity in effluents to unrestricted areas in 10 CFR 20.106 were exceeded. A major fire would also require immediate notification of the Executive Secretary by telephone (10 CFR 20.403)

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Consequently, the impact from such an event at the Mill would be limited to (1) cleanup of contaminated material, (2) replacement of destroyed Mill components, and (3) a short duration release of combustion products to the atmosphere.

A major SX fire is classified as an Alert. See Section 3 for the significance of this classification.

The procedures for response to an SX fire are outlined in Appendix E.

2.1.7 Other Fire

A fire could start anywhere in or around Mill facilities as a result of a number of causes, such as lightning strikes, electrical malfunction, human error etc. However, at the Mill there is an increased risk of fire and of severe onsite or offsite consequences in the following areas, due to the nature of the chemicals stored or used at those areas:

- SX Building (see Section 2.1.6 above);
- Propane Tanks (see Section 2.1.3 above); and
- Lab or Lab Storage Area.

Fires could start in these areas due to equipment malfunction or human error and the intensity and consequences of the fire could be severe, although direct radiological hazard from any such fires would be expected to be relatively low (see Section 2.1.6 for a discussion of the radiological impacts of an SX fire, which is the type of accident considered to have the highest risk of radiological impacts at a uranium mill). To the extent that facilities are damaged as a result of any such fire, there could be secondary radiological hazards, such as fire damage in the yellowcake product drying, packaging and storage areas that would have to be evaluated.

As discussed in Section 2.1.6 above, an uncontrolled fire in the SX building is classified as an Alert. All other uncontrolled fires in Mill buildings are classified as On-Site Emergencies. See Section 3 for a discussion of the significance of these classifications.

Should a fire (other than an SX fire) occur, the procedure outlined in Appendix F for reporting and responding to fires will be followed (the procedure to be followed for an SX fire is outlined in Appendix E).

2.1.8 Tornado

Although this is highly unlikely, a tornado could occur at the Mill. A severe tornado could cause buildings and other structures to collapse, chemical or gas releases, major fires as well as general panic. The environmental impacts from a tornado could be the transport of tailings solids and liquids, ores or product from the Mill area into the environment. This dispersed material would contain some uranium, radium, and thorium. An increase in background radiation could result,

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and, if sufficient quantities are detected and isolated, they would be cleaned up. However, NRC staff have concluded in NUREG-1140 that while tornadoes could release a large amount of radioactive material, they spread the material so greatly that resulting doses are very small. As a result, tornadoes are not discussed further in NUREG-1140 and are not considered to be a significant radiological risk at uranium mills.

However, to the extent that a tornado has caused or is likely to result in an ammonia leak or propane release, an SX building fire or a breach of the Mill's tailings cells, it would be classified as a Site Area Emergency or Alert depending on which one of these other accidents resulted from the tornado. All other tornadoes would be classified as On-Site Emergencies. See Section 3 below for the significance of these classifications.

In the event of a major tornado, the procedures outlined in Appendix G will be followed.

2.1.9 Major Earthquake

Although this is highly unlikely, an earthquake could occur at the Mill. A severe earthquake could cause buildings and other structures to collapse, chemical and/or gas releases, major fires as well as general panic. NRC staff concluded in NUREG-1140 that earthquakes were not identified as leading to significant releases of radionuclides unless they were followed by a fire.

To the extent that an earthquake has caused or is likely to result in an ammonia leak or propane release, an SX building fire or a breach of the Mill's tailings cells, it would be classified as a Site Area Emergency or Alert, depending on which one of these accidents resulted from the earthquake. All other major earthquakes would be classified as On-Site Emergencies. See Section 3 for the significance of these classifications.

In the event of a major earthquake the procedures outlined in Appendix G will be followed.

2.1.10 Tailings Accidents

2.1.10.1 Flood Water Breaching of Retention System

In general, flood water breaching of tailings embankments presents one of the greatest dangers for the sudden release of tailings solids and impounded water. The tailings cells are designed with sufficient freeboard (at least three feet) to withstand back-to-back 100-year storm events or 40% of the probable maximum flood (PMF) followed by the 100-year storm event. The flood design is equivalent to 15 inches of rainfall. In addition, the tailings dikes were designed in accordance with NRC regulations and allow a sufficient margin of safety even in the event of an earthquake.

The possibility of floods in Westwater Creek, Corral Creek, or Cottonwood Wash causing damage to the tailings retention facility is extremely remote. This is due to the approximately 200 foot elevation difference between the streambeds of the creeks and the toe of the tailings dikes.

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Flood water breaching a tailings embankment is classified as an On-Site Emergency, because it is unlikely that any releases to the environment will leave the Mill property, and in the event that any contamination were to leave the property, it is unlikely that the release is expected to require a response by an offsite response organization to protect persons offsite. See Section 3 below for the significance of this classification.

In the event of a Flood Water Breach of the tailings retention system, to procedures in Appendix H will be followed.

2.1.10.2 Structural Failure of Tailings Dikes

All tailings dikes have been designed with an ample margin of safety as per NRC regulations. This has included design calculations showing dike stability even when the dike is saturated with moisture during a seismic event, the most severe failure mode. In addition, the tailings discharge system is checked at least once per shift during operation, or once per day during Mill standby.

NRC staff concluded in NUREG-1140 that tailings pond failures also release a large quantity of material. However, NRC staff concluded that rapid emergency response is not needed to avoid doses exceeding protection action guides because dose rates at a spill site are very low. NRC staff concluded that an appropriate response is to monitor drinking water, especially for radium-226, to be sure that drinking water standards are met. Gamma ray monitoring of the ground is also appropriate to determine where the tailings have been deposited. However, NRC staff concluded that ground contamination presents little immediate hazard to the public because the gamma dose rates are low. Gamma dose rates in contact with tailings should be less than 0.1 mR/hr. A clean-up of the spilled tailings would be expected, but this could be done effectively without pre-existing emergency preparedness.

Although the discharge from a dike failure would soon cross the restricted area boundary, the flow path is over three miles in length before leaving the Mill property. In the event of a dam failure, large operating equipment will be mobilized to construct temporary earthen dikes or berms downgradient to the failed dike. In addition, the State of Utah, Division of Radiation Control Executive Secretary (the "Executive Secretary), MSHA, and State of Utah, Department of Natural Resources, Division of Dam Safety will be notified. The contamination from such an event would be cleaned up and returned to the tailings area.

A tailings dam failure is classified as an On-Site Emergency, because it is unlikely that any releases to the environment will leave the Mill property, and in the event that any contamination were to leave the property, it is unlikely that the release is expected to require a response by an offsite response organization to protect persons offsite. See Section 3 for the significance of this classification.

In the event of a tailings dam failure the procedures outlined in Appendix H will be followed.

2.1.10.3 Seismic Damage to Transport System

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In the event of a seismic rupture of a tailings slurry pipeline, the released slurry will be contained in the tailings cells regardless of the quantity released. The tailings retention system pipe is in the same drainage basin as the retention system. Any tailings slurry released by a pipe rupture, no matter what the cause, would flow downhill where it would be impounded inside a tailings cell.

If a break occurred, the pumping system would be shut off, personnel removed from the immediate area, and the Executive Secretary notified. The break would be repaired and the affected area cleaned up in the safest and most expeditious manner. The advice and direction of the Executive Secretary would be sought and heeded throughout the episode.

A seismic rupture in the tailings slurry pipeline would be classified as an On-Site Emergency. See Section 3 for the significance of this classification.

In the event of a rupture in the tailings slurry pipeline the procedures outlined in Appendix H will be followed.

2.1.11 Terrorist/Bomb Threat

In the event that any person should receive a threat of a bomb, the procedure set out in Appendix I should be followed.

Because of the unknown nature of the risk, a terrorist/bomb threat is classified as an Alert. See Section 3 for the significance of this classification.

In the event of a terrorist/bomb threat, the procedures in Appendix I will be followed.

2.1.12 Chemical or Reagent Spills

Tanks which are likely to overflow are equipped with high level alarms to reduce the possibility of spillage due to tank overflow and dikes and/or curbs are constructed around process and storage tanks (excluding the water tank) to confine the material in the event of a tank spill. However, as an operating facility, it is possible for spills of chemicals or reagents to occur from time to time. Unless such a spill qualifies as an ammonia release (see Section 2.1.1 above), a propane release (see Section 2.1.3 above) or a sulfuric acid release (see Section 2.1.5 above), the spill will be considered a minor spill and will be addressed and cleaned up in accordance with the Mill's Spill Response Plan.

It is unlikely that any such minor spills will impact the environment if cleaned up in accordance with the Mill's Spill Response Plan. The entire Mill facility is graded such that run-off will drain into the Mill's tailings cells.

A copy of the Mill's Spill Response Plan is included as Appendix L to this Plan.

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Any such minor spills are classified as Non-Subject Incidents. See Section 3 for the significance of this classification.

2.1.13 Transportation Accident on the Mill Property Involving a Spill of Yellowcake

In the event of a transportation-related accident on the Mill property involving a spill of yellowcake, immediate containment of the product will be achieved by covering the spill area with a plastic sheeting or equivalent material to prevent wind and water erosion. If sheeting is not available, and depending on where the spill occurs, soil from the surrounding area may be used. Perimeter ditching will be used to contain the spill if it should occur in an area where runoff could result from precipitation.

All human and vehicular traffic through the spill area will be restricted. The area would be cordoned off if possible. All persons not participating in the accident response will be restricted to 50 feet from the accident site. Local law enforcement officers will be notified and may be asked to assist in controlling traffic and keeping unauthorized persons out of the spill area.

Covered containers and removal equipment, i.e., large plastic sheeting, radioactive signs, ropes, hoses, shovels, vacuums, axes, stakes, heavy equipment (front-end loaders, graders, etc.), will be available to clean up the yellowcake. A Radioactive Material Spill Kit is available and under the control of the Radiation Department. If conditions warrant, water will be applied to the spilled yellowcake in a fine spray to assist in dust abatement.

Gloves, protective clothing and any personal clothing contaminated during cleanup operations will be encased in plastic bags and kept in the plant area for decontamination or disposal.

Any fire at the site will be controlled by local experienced fire fighting personnel wearing appropriate respiratory protective equipment.

Response team members will have a thorough knowledge in basic first aid and of the physical hazards in inhalation, ingestion, or absorption of radionuclides. Team members will adequately protect themselves.

As per R313-15 requirements, the Executive Secretary will be notified promptly of any accident of this type.

Any minor spills are classified as Non-Subject Incidents. See Section 3 for the significance of this classification.

2.1.14 Offsite Transportation Accidents

2.1.14.1 Concentrate Shipments

Concentrates will be shipped in sealed 55-gallon drums built to withstand normal handling and

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minor accidents. Each drum will contain approximately 900 pounds of yellowcake. A maximum of 43 drums will be shipped in each closed van. The drums will be sealed and marked "Radioactive LSA" (low specific activity), and the trucks will be properly marked. Because most of the radioactive daughter products of uranium are removed in the extraction process and radioactive buildup of daughter products is slow, yellowcake has a very low level of radioactivity and is therefore classified by the Department of Transportation as a low specific activity material.

The environmental impact of a transportation accident involving release of the product would be minimal. Yellowcake, having a high density, even in a severe accident in which multiple drums are breached, would not easily disperse. More than likely, the drums and any released material would remain within the damaged vehicle or in an area of close proximity of the accident site.

Driver or carrier instructions are given to each driver of each transport leaving the plant site with a load of yellowcake. These instructions will consist of an explanation of the product, preliminary precautions at the accident site, whom to notify and what to do in case of fire. A copy of these instructions is included in the Mill's Transportation Accidents Plan, a copy of which is attached as Appendix M to this Plan.

Mill personnel would respond if requested for the initial spill response to handle any yellowcake transport accident. A procedure for this likelihood is included in the Mill's Transportation Accidents Plan. DUSA may contract with a carrier or firm properly trained to handle any yellowcake transport accident.

Offsite accidents involving the transportation of product concentrates are classified as Non-Subject Incidents. See Section 3 for the significance of this classification.

In the event of an offsite accident involving a spill of yellowcake, the procedures outlined in the Mill's Transportation Accidents Plan, attached as Appendix M hereto, will be followed.

2.1.14.2 Ore or Alternate Feed Material Shipments

Ore is shipped in 20 to 25 ton shipments in highway trailers that are covered by tarpaulins. The truck trailers are labeled "Radioactive LSA". Because the ore is typically in the form of large particles and is typically wet (2% to 5% moisture), the potential for a significant release from an accident involving an ore shipment truck is quite small.

Alternate feed materials can be transported to the Mill in a number of conveyances. Most typically, alternate feed materials are either shipped in bulk in intermodal containers (either with or without a secondary containment such as a supersac), or in steel drums (possibly in plastic overpacs) in the back of a van trailer. Bulk shipments in intermodal containers are labeled "Radioactive LSA". For bulk materials, the potential release from an accident is similar to potential releases from an accident involving conventional ores, but this may vary depending on the feed material and the manner of conveyance. The potential release from alternate feed materials that are transported in drums will vary, depending on the particular alternate feed

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material, and in some cases could be equal to or exceed the risks associated with transportation of yellowcake.

In the event of an accident, the transportation company will respond to clean up any spilled material and ensure that the area is clean. Mill personnel will support the transportation contractor in cleaning up the affected area and radiological scanning of the impacted area.

Offsite accidents involving the transportation of ores and alternate feed materials are classified as Non-Subject Incidents. See Section 3 below for the significance of this classification.

2.1.14.3 Reagent Shipments

Reagents are shipped in properly marked trailers and the driver are trained in hazardous materials transportation and accident procedures. In the event of an accident, all of the reagent suppliers' transportation contractors are required to have emergency response contractors to respond to an accident and a potential spill. Many of the reagents that are used at the Mill are shipped on a daily basis to other industrial facilities throughout the United States. The potential for an accident is minimized due to quick response of the transportation contractor's emergency response team and the training of many of the country's emergency response services.

Offsite accidents involving the transportation of reagents are classified as Non-Subject Incidents. See Section 3 below for the significance of this classification. However, the State of Utah Division of Radiation Control (801-536-4250) should be notified within 24 hours of the incident.

2.1 Detection of Accidents

Mill personnel perform a number of daily and weekly inspections of the Mill facilities. These are:

- The Mill's Shift Foremen conduct inspections of all facility areas each operating shift;
- The Mill's RSO or designee performs a daily inspection of all facility areas;
- Mill personnel perform daily, weekly, monthly and quarterly inspection of the Mill's tailings cells; and
- The Mill's RSO or designee performs weekly inspections of all areas of the Mill.

These inspections, particularly the shift and daily inspections provide a means for Mill personnel to detect and alert the Mill's operating staff of any abnormal operating condition or of any other danger to safe operations. These inspections, along with the observations of operating personnel in any impacted area, are the primary means of detecting the accident and alerting the operating staff for chemical or gas leaks, any fires in areas that do not have fire detection equipment, or any impairment to the tailings cells.

For areas of the Mill with fire detection equipment, such as the SX Building, the office building and the Maintenance/Warehouse Building, in addition to the foregoing inspections, the fire detection equipment would be expected to also provide an early warning of a fire.

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Tanks which are likely to overflow are equipped with high level alarms to reduce the possibility of spillage due to tank overflow.

For terrorist or bomb threats, the threat itself would provide the means of detection of the incident. Where no threats are given, suspicious activity would be observed during the shift and daily inspections. In addition, the Mill employs surveillance cameras in a limited number of areas, which are intended to allow Mill personnel to monitor product storage areas and certain access points to the facility.

The required responses to any detected accidents are set out in Section 2.1 above and in Appendices A through I for the various types of accidents.

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3. CLASSIFICATION AND NOTIFICATION OF ACCIDENTS

In this Emergency Response Plan, accidents have been classified into four categories as described below. It should be noted that Reg. Guide 3.67 concludes that fuel cycle and material facilities, such as the Mill, do not present the same degree of hazard (by orders of magnitude) as are presented by nuclear power plants. Thus the classification scheme for the Mill, which has four classes of accidents (Alerts, Site Area Emergencies, On-Site Emergencies and Non-Subject Incidents), is different from the classification scheme for other nuclear facilities, which have two classes of accidents (Site Area Emergencies and Alerts).

Reg. Guide 3.67 provides that “[t]he NRC intends that licensees be allowed to have a single emergency plan that can apply to all licensee needs and regulatory requirements. To this end it should be understood that a licensee may wish to include in the emergency plan some incidents that do not fall within the jurisdiction of the NRC. For example, the licensee may wish to include industrial accidents or fires unrelated to the licensee’s work with nuclear materials. The licensee may include such incidents in the emergency plan.”

As a result, this Plan includes On-Site Emergencies, most of which do not involve risks of offsite releases of radiation and are therefore not specifically required by Reg. Guide 3.67 to be included in an emergency response plan for the Mill, and Non-Subject Incidents, which are incidents that are addressed by other plans (such as the Mill’s Spill Response Plan and Transportation Accidents Plan) and that either involve incidents that could occur on site but that would not involve risks of offsite releases of radionuclides or that involve offsite accidents, and for these reasons are not required by Reg. Guide 3.67 to be included in this Plan. These On-Site Emergencies and Non-Subject Incidents are included in this Plan in order to compile all potential emergencies into one Plan. Although in some cases this merely involves referencing the type of accident or incident and then referring the reader to another plan, the purpose is to allow Mill personnel to have a reference source that will allow them to be able to respond quickly to each type of incident.

3.1 Classification System

At the Mill, there are four classes of accidents, Alerts, Site Area Emergencies, On-Site Emergencies and Non-Subject Incidents, described as follows:

a) *Alert*

An Alert is defined as an incident that has led or could lead to a release to the environment of radioactive or other hazardous material, but the release is not expected to require a response by an offsite response organization to protect persons offsite. An Alert reflects mobilization of the Mill’s emergency response organization, either in a standby mode that will activate some portions of the Mill’s organization or full mobilization, but does not indicate an expectation of

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offsite consequences. However, an Alert may require offsite response organizations to respond to onsite condition such as a fire.

The following potential accidents are classified as Alerts:

- An uncontrolled release of 36 pounds (7 gallons) or more but less than 100 pounds of anhydrous ammonia (see Section 2.1.1);
- An ammonia explosion that involves a release of 36 pounds (7 gallons) or more but less than 100 pounds of anhydrous ammonia (see Section 2.1.2);
- An uncontrolled release of propane that could result in an explosion (see Section 2.1.3);
- A major fire in the SX building (see Section 2.1.6); and
- A terrorist/bomb threat (see Section 2.1.11)

b) Site Area Emergency

A Site Area Emergency is defined as an incident that has led or could lead to a significant release to the environment of radioactive or other hazardous material and that could require a response by an offsite organization to protect persons offsite. A Site Area Emergency reflects full mobilization of the Mill's emergency response organization and may result in requests for offsite organizations to respond to the site.

Although it is unlikely that a Site Area Emergency requiring offsite actions will occur at a fuel cycle or materials facility such as the Mill, the Mill must nevertheless be able to recognize potential offsite hazards and make the required notifications in such a manner that offsite response organizations can take appropriate actions, such as sheltering or evacuating persons in the affected area.

Accordingly, the following potential accidents have been classified as Site Area Emergencies, because they could require a response by an offsite organization to protect persons offsite:

- An uncontrolled release of 100 lbs or more of anhydrous ammonia (see Section 2.1.1); and
- An ammonia explosion that involves a release of 100 lbs or more of anhydrous ammonia (see Section 2.1.2).

c) On-Site Emergency

An On-Site Emergency is defined as an incident that is of a nature that has not led or could not lead to a significant release to the environment of radioactive or other hazardous material, and hence does not qualify as an Alert or a Site Area Emergency, but that nevertheless could pose significant and unusual safety hazards to workers at the site, and is therefore subject to the procedures under this Plan.

The following potential accidents are or could be classified as On-Site Emergencies:

- A minor release (less than 36 lbs (7 gallons)) of anhydrous ammonia that is not uncontrolled (see Section 2.1.1);
- An ammonia explosion in a building, unless this results in a fire in the SX building, an uncontrolled release of 36 pounds (7 gallons) or more of anhydrous ammonia or an uncontrolled release of propane that could result in an explosion, in which case the classifications applicable to those other incidents would apply (see Section 2.1.2);
- A minor release of propane that is not uncontrolled and could not lead to an explosion (see Section 2.1.3);
- A leach tank failure (see Section 2.1.4);
- A sulfuric acid storage tank failure (see Section 2.1.5);
- A fire (other than a major fire in the SX building) (see Section 2.1.7);
- A tornado, unless this results in a fire in the SX building, an uncontrolled release of anhydrous ammonia or propane, in which case the classifications applicable to those other incidents would apply (see Section 2.1.8);
- A major earthquake, unless this results in a fire in the SX building, an uncontrolled release of anhydrous ammonia or propane, in which case the classifications applicable to those other incidents would apply (see Section 2.1.9); and
- Tailings Accidents
 - A flood water breaching of the tailings retention system (see Section 2.1.10.1)
 - Structural failure of a tailings dike (see Section 2.1.10.2); and
 - Seismic damage to the tailings transportation system (see Section 2.1.10.3).

d) *Non-Subject Incidents*

A Non-Subject Incident is defined as an incident that involves an accident of a specific nature that is covered under a different plan and is not subject to this Plan but is listed in this Plan for informational purposes only.

The following potential incidents are or could be classified as Non-Subject Incidents:

- A chemical or reagent spill (other than a release of anhydrous ammonia or propane, or a sulfuric acid leak or spill). These types of spills are covered by the Mill's Spill Response Plan (see Section 2.1.12);
- A transportation accident on the Mill property involving a spill of yellowcake. These accidents are covered by the Mill's Spill Response Plan (see Section 2.1.13); and
- An offsite transportation accident
 - Concentrate shipments. These types of accidents are covered by the Mill's Transportation Accidents Plan (see Section 2.1.14.1);
 - Ore or alternate feed material shipments (see Section 2.1.14.2); and
 - Reagent Shipments (see Section 2.1.14.3).

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3.2 Notification and Coordination

3.2.1 Alert

The purpose of declaring an Alert is to ensure that emergency personnel are alerted and at their emergency duty stations to mitigate the consequences of the accident, that the emergency is properly assessed, that offsite officials are notified, and that steps can be taken to escalate the response quickly if necessary.

An Alert, like a Site Area Emergency, differs from an On-Site Emergency or a Non-Subject Incident in that offsite response authorities are notified, as well as the State of Utah Division of Radiation Control. This is because there is a potential for offsite consequences.

The actions to be taken in the event of an Alert vary somewhat depending on the incident. The actions to be taken for each incident described in Section 2.1 above that is classified as an Alert are set out in the various subsections in Section 2.1 and corresponding Appendices A through I to this Plan that relate to the specific incidents. The actions set out in the Appendices describe, to the extent appropriate for each incident, how and by whom the following actions will be taken with respect to each specific incident:

- Decision to declare an Alert (this has been predetermined by incident);
- Activation of onsite emergency response organization;
- Prompt notification of offsite response authorities that an Alert has been declared (normally within 15 minutes of declaring an Alert);
- Notification to the State of Utah Division of Radiation Control immediately after notification of offsite authorities, and in any event within one hour of the declaration of an Alert;
- Decision to initiate any onsite protective actions;
- Decision to escalate to a Site Area Emergency, if appropriate;
- Decision to request support from offsite organizations; and
- Decision to terminate the emergency or enter recovery mode.

3.2.2 Site Area Emergency

The purpose of declaring a Site Area Emergency is to ensure that offsite officials are informed of potential or actual offsite consequences, that offsite officials are provided with recommended actions to protect persons offsite, and that the Mill's response organization is augmented by additional personnel and equipment.

A Site Area Emergency, like an Alert, differs from an On-Site Emergency or a Non-Subject Incident in that offsite response authorities are notified, as well as the State of Utah Division of Radiation Control. This is because there is a potential for offsite consequences. Unlike an Alert, a Site Area Emergency assumes that offsite emergency response assistance will be required.

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The Mill has identified only two incidents that should be classified as Site Area Emergencies – an uncontrolled release of greater than 100 pounds of anhydrous ammonia; and an ammonia explosion that involves the release of greater than 100 pounds of anhydrous ammonia. The actions to be taken in the event of such Site Area Emergencies are set out in subsection 2.1.1 above and in Appendices A and B to this Plan, and describe, to the extent appropriate, how and by whom the following actions will be taken:

- Decision to declare a Site Area Emergency (this has been predetermined by incident);
- Activation of onsite emergency response organization;
- Prompt notification of offsite response authorities that a Site Area Emergency has been declared, including recommendation for offsite protective actions (normally within 15 minutes of declaring a Site Area Emergency);
- Notification to the State of Utah Division of Radiation Control immediately after notification of offsite authorities, not later than one hour after the Mill has declared a Site Area Emergency;
- Decision on what onsite protective actions to initiate;
- Decision on what offsite protective actions to recommend;
- Decision to request support from offsite organizations; and
- Decision to terminate the emergency or enter recovery mode.

3.3 Information to be Communicated

Mill personnel will do their best to provide clear, concise information to offsite response organizations. The communication should avoid technical terms and jargon and should be stated to prevent an under- or over-evaluation of the seriousness of the incident.

The procedures set out in the Section 2.1 and Appendices A through I describe the key types of information that will be communicated with respect to facility status, releases of radioactive or other hazardous materials and recommendations for protective actions to be implemented by offsite response organizations, where applicable. Such Appendices also contain the preplanned protective action recommendations the Mill will make to each appropriate offsite organization for each incident that is classified as an Alert or Site Area Emergency, including the size of the area where the actions are to be taken. The Appendices also contain a standard reporting checklist to facilitate timely notifications.

Mill personnel meet annually with the various offsite emergency response providers to ensure that:

- This Plan contains the most practical and efficient protective actions for each postulated accident and that such providers understand and agree with the recommended courses of action; and

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- The notifications set out in this Plan are appropriate and the contact information is current.

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4. RESPONSIBILITIES

4.1 Normal Facility Organization

The Mill Manager is ultimately responsible for the Mill site. The Mill Manager reports to the Executive Vice President, US Operations of DUSA. The Executive Vice President, US Operations of DUSA reports to the President and Chief Executive Officer of DUSA.

The Mill Superintendent, Maintenance Superintendent and Radiation Safety Officer report directly to the Mill Manager. The Utility Crew, Administrative Staff and Chief Metallurgist also report directly to the Mill Manager.

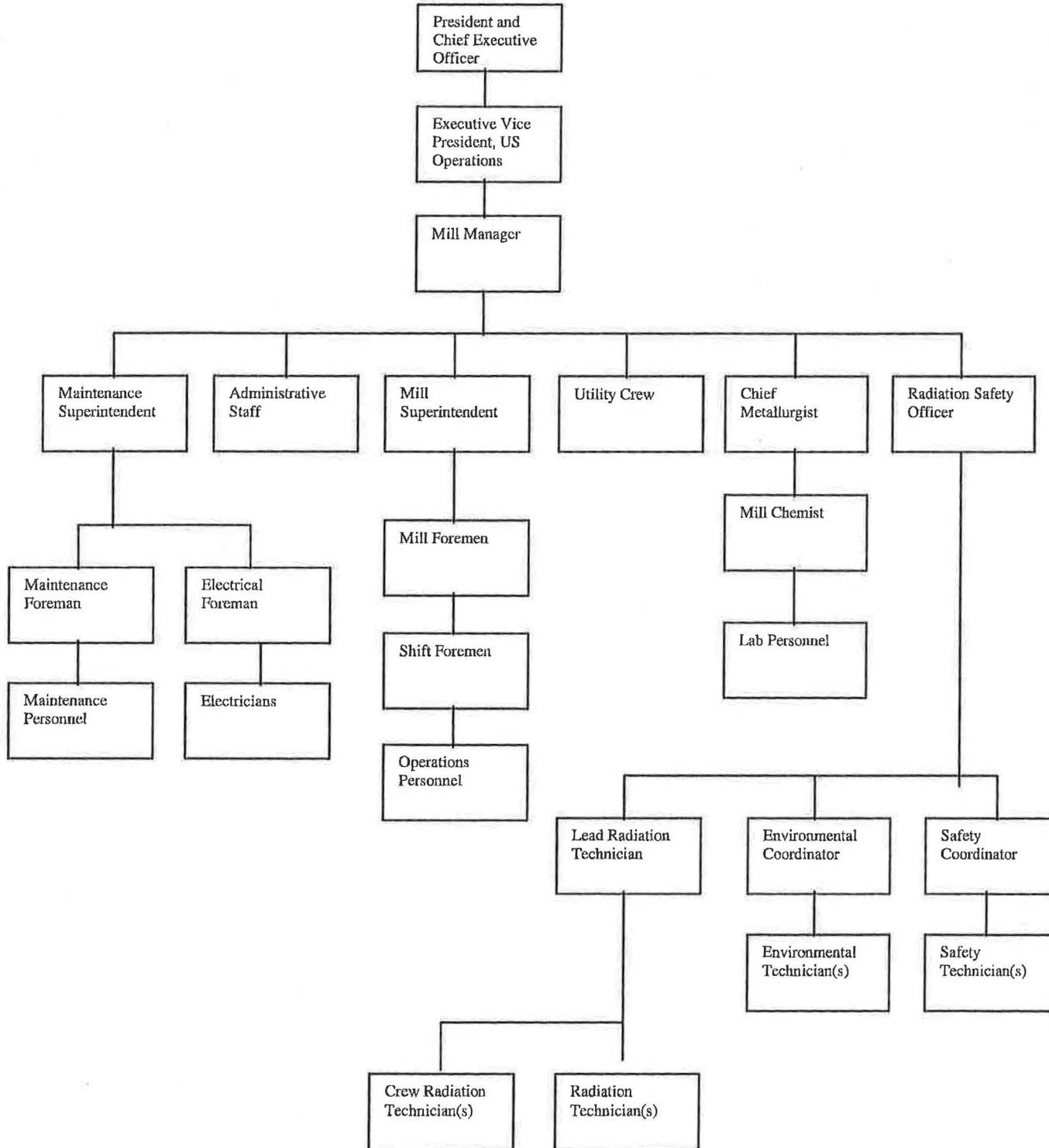
One or more Mill Foremen report to the Mill Superintendent. The number of Mill Foremen will depend on Mill activities. In full operations, there are two Mill Foremen. The Shift Foremen report to the Mill Foremen.

The Radiation Technicians, the Safety Coordinator and his staff and the Environmental Coordinator and his staff report to the Radiation Safety Officer.

The Maintenance Foreman and Electrical Foreman report to the Maintenance Superintendent.

These relationships are indicated on the following diagram:

MILL ORGANIZATION CHART
NORMAL OPERATIONS



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The procedures to be followed for the types of possible emergencies that have been identified for the Mill are set out in Section 2.1 above and more specifically in Appendices A through I. The individuals who have the authority and responsibility to declare the various types of emergencies are detailed in Section 2.1 and those Appendices.

4.2 Onsite Emergency Response Organization

The response crew for each operating shift will normally consist of the following operators under the direction of the shift foreman. This organization may be changed for individual shifts subject to the approval of the RSO/Fire Chief.

4.2.1 Direction and Coordination

The Incident Commander will be the Mill Manager, or in his absence, the Mill Superintendent, or in the absence of both the Mill Manager and the Mill Superintendent, the RSO.

The Incident Commander has the overall responsibility for implementing and directing the emergency response. The Incident Commander has the following duties and authorities:

- Control of the situation;
- directing activities during the emergency;
- coordination of staff and offsite personnel who may augment the staff;
- communication with parties requesting information about the event;
- reporting to local, State and Federal authorities;
- authority to request support from offsite agencies;
- termination of the emergency; and
- authority to delegate any of the foregoing responsibilities to:
 - the Mill Superintendent;
 - the RSO; or
 - such other individual or individuals that the Incident Commander deems appropriate in the circumstances.

The Incident Commander will stop routine radio usage upon learning of an emergency and set up the base station in a safe location for directing activities. Radio usage will be limited to the emergency. The Incident Commander has the responsibility to contact or direct others to contact all outside services.

The Incident Commander has the ultimate responsibility to account for all employees at the Mill, using the assistance of supervisors and/or any DUSA personnel. The Incident Commander has the responsibility for the news media and reports directly to the Executive Vice President or President of DUSA.

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Shift Foremen are in charge until the Incident Commander arrives and are responsible for all functions listed above. Shift Foremen have the responsibility to account for all of their people in addition to any visitors, contractors, etc., in their areas and report to the Incident Commander; or, in the absence of the Incident Commander, to administer all of the above duties.

4.2.2 Onsite Staff Emergency Assignments

The following individuals, organizational group or groups are assigned to the functional areas of emergency activity listed below.

During normal working hours while the Mill is in full operation, all of the individuals or their alternates should be available on site to fulfill their emergency assignments. During evening or night shifts, or during other times when the Mill is not in full operation, not all of the individuals listed below will be on site. However, there will always be a Shift Foreman on site.

Blanding is a small town, and most of the individuals listed below live within a short distance of the Mill. In the event of an emergency during a non-working period, afternoon or night shift, during a period of limited Mill operations or other situation where there is a reduced staff at the Mill, the Shift Foreman or his supervisors, if on site, will initiate procedures to effect any necessary evacuations of the site and will contact the required personnel from the list of assignments below to assemble the team required in order to fill all of the necessary assignments. Two of the first persons contacted will be the Mill Manager and the RSO, who will ensure that the remainder of the team is assembled in order to carry out the emergency procedures set out in this Plan for the emergency.

a) Facility System Operations

The Mill Superintendent, or in his absence a Mill Foreman or the Mill Manager, is responsible for all operational activities on the property. In this capacity, the Mill Superintendent, Mill Foreman or Mill Manager can shut down any affected areas within the process and render aid to the other departments.

The Maintenance Superintendent, or in his absence the Maintenance Foreman or the Mill Manager, is responsible for all mechanical and instrumentation on the site and has the ability to gather resources during any declared emergency.

Shift Foremen are in charge until the foregoing personnel arrive and are responsible for all of the foregoing functions until relieved by one or more of the foregoing individuals.

b) Fire Control

As Fire Chief, the RSO has the responsibility to maintain trained fire crews and operable equipment, mobilize and direct the fire crews and equipment in a fire emergency or one containing the threat of fire, and to assist in evacuation and rescue or recovery operations. The RSO/ Fire Chief makes sure that the team or crew has been established, equipped and properly

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trained every six months. The RSO/Fire Chief works with the Safety Department and the Safety Coordinator under 30 CFR 56.4330 Firefighting, evacuation, and rescue procedures.

In the absence of the RSO, the Mill Safety Coordinator will assume these duties. If the Safety Coordinator is not present, those responsibilities fall to the next senior member of the Safety Department. Scheduled time off at the Mill is worked around the RSO and Safety Coordinators time off. Both individuals will not be given time off work at the same time, thereby ensuring supervised coverage in the event of an emergency.

During an emergency situation, the Safety Coordinator will also be present and receive direction from the RSO/Fire Chief as to how to proceed. If the RSO is present during the emergency, the Safety Coordinator will act as the Assistant Fire Chief to free up the RSO's time to deal with radiation decontamination or other issues that may arise. If the RSO is not present the Safety Coordinator will be the acting Fire Chief and the radiation designee will act as the Assistant Fire Chief, but will only deal with radiation related issues.

c) Personnel Evacuation and Accountability

The Maintenance Supervisor will direct all personnel in evacuation and in activities to cope with the emergency, including isolation of utilities and providing technical advice as needed. The Maintenance Supervisor will be assisted by the Mill Safety Coordinator.

The Laboratory Supervisor has the responsibility to direct and account for all office personnel (including DUSA personnel and office visitors) in evacuation and in activities to cope with the emergency. In case of a mill tour, the Supervisor accompanying the tour will be responsible for evacuation of visitors.

The Scale house person on shift will be responsible to account for ore truck drivers and reagent truck drivers.

The Mill's Emergency Evacuation and Shut-Down Procedure are outlined in Appendix J to this Plan.

d) Search and Rescue Operations

The RSO will direct rescue operations and provide the necessary emergency medical personnel and facilities to cope with the emergency.

e) First Aid

First aid will initially be the responsibility of the Safety Coordinator or a Safety Technician. If the need for first aid is minimal, there may not be a need to require offsite assistance. However, if there are any significant injuries, or there is a risk of any significant injuries, the Safety Coordinator or a Safety Technician will have the responsibility of contacting offsite medical and ambulance services for assistance.

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f) *Communications*

The Incident Commander will stop routine radio usage upon learning of an emergency and set up the base station in a safe location for directing activities. Radio usage will be limited to the emergency. The Incident Commander has the responsibility to contact all outside services.

g) *Radiological Survey and Assessment (Onsite and Offsite)*

On-site and offsite radiological surveys and assessments will be performed by one or more Radiation Technician(s) under the direction of the RSO. The RSO may assist in performing any such surveys.

The surveys and assessments that will be required will depend on the incident. In most cases, radiological contamination resulting from the Mill would be expected to be limited and restricted to the Mill site. In some cases, however, radiological contamination could be dispersed offsite. The RSO will determine what surveys and assessments are required in order to: a) determine to what extent if any, radiological contamination has or could be dispersed offsite as a result of the incident; and b) determine what surveys are necessary in the circumstances to assess any onsite or offsite radiological contamination that may have resulted from the incident. In the absence of the RSO, the Lead Radiation Technician will make these determinations.

The Mill has established an emergency call sheet that will be used in the event of an emergency to alert all members of the department, whether on-site and on-duty or not. When an emergency occurs, the RSO is notified first. If the RSO is not available, the Lead Radiation Technician is notified. The on-shift Radiation Technicians notify the off-shift Radiation Technicians. All Radiation Technicians are required to report to the site to assist in the emergency, unless advised otherwise by the RSO. This ensures that there will be adequate Radiation Safety Staff available for any emergency that may arise.

h) *Personnel Decontamination*

Personnel decontamination will be performed by Mill Radiation Technicians under the direction of the RSO, or in the absence of the RSO, under the direction of the Lead Radiation Technician, as needed.

i) *Facility Decontamination*

Facility decontamination will be performed by Mill operations personnel, maintenance personnel and/or utility crew personnel under the direction of the Mill Manager, Mill Superintendent or Maintenance Superintendent, to decontamination standards set by the RSO and monitored by Radiation Safety Staff.

j) *Facility Security and Access Control*

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The Mill Superintendent, or in his absence a Mill Foreman, has the responsibility of directing outside emergency personnel and has the responsibility for plant security and will report directly to the Incident Commander.

k) Request Support from Offsite Agencies

During an emergency, the Incident Commander and/or the RSO/Fire Chief will coordinate that the crew or team has the available members needed to respond to the emergency. After the team or crew has responded and is in the process of handling the situation, the Incident Commander and/or RSO/Fire Chief will then coordinate with the Radiation/Safety Departments to maintain scene safety. Scene safety includes, but is not limited to, crowd control, outside emergency assistance requests and any decontamination.

l) Post-Event Assessment

A post-event assessment of facility conditions for future operations will be performed by the Mill Manager, Mill Superintendent and/or Maintenance Superintendent. A post-event assessment of facilities for occupational safety will be performed by the Safety Coordinator. A post-event assessment of any on-site or offsite radiological contamination resulting from the incident will be performed by the Radiation Safety Staff under the direction of the RSO.

m) Recordkeeping

The RSO will coordinate all record keeping relating to the incident and will be responsible for the preparation of an incident report.

n) Media Contact

The Incident Commander, President and Chief Operating Officer or Executive Vice President, US Operations of DUSA shall be the sole media contact in the event of an emergency at the Mill.

4.3 Local Offsite Assistance to Facility

Under a Letter of Agreement with the San Juan County Emergency Management Office, DUSA will be assisted in the event of an emergency with all needed equipment and services at the disposal of San Juan County. Local agencies have also volunteered services in the event of an emergency. These local agencies are (see Section 4.4 below and Exhibit 1 for contact information):

a) First Aid and Initial Medical Services

- Blanding Family Practice Medical Clinic – This facility is located approximately 8 miles north of the Mill in Blanding, Utah; and

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- Blanding Clinic – This facility is located approximately 11 miles north of the Mill in Blanding, Utah.
- b) *Ambulance and Paramedic Services*
- San Juan County Ambulance Service – This facility is located approximately 11 miles north of the Mill in Blanding, Utah.
- c) *Fire Department*
- Blanding City Fire Department – This agency is located approximately 9 miles north of the Mill in Blanding, Utah. This agency is a volunteer fire department.
- d) *Law Enforcement*
- Blanding City Police Department – This agency is located approximately 11 miles north of the Mill in Blanding, Utah; and
 - San Juan County Sheriff – This agency is located approximately 30 miles north of the Mill in Monticello, Utah.
- e) *Highway Patrol*
- Utah Highway Patrol – This agency is located approximately 30 miles north of the in Monticello, Utah.
- f) *Hospitals*
- San Juan County Hospital – This facility is located in Monticello, Utah, approximately 33 miles north of the facility; and
 - Blue Mountain Hospital – This facility is located approximately 8 miles north of the facility in Blanding, Utah.

The Mill has provided all of the foregoing facilities and agencies with Material Safety Data Sheets (MSDS's) for any potential incident at the Mill. These are updated periodically by the Mill. Also, each facility has an understanding with DUSA, that DUSA will perform all radiological assessments and decontaminate any area or equipment that has been contaminated during emergency activities.

Annual visits with each agency or facility are conducted to update and refresh the various departments about potential emergencies that may be encountered. These visits are documented and housed in the Safety Office at the Mill.

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Given that Mill personnel will be in attendance at any emergency situation, there is no need to make any provisions to suspend security or safeguard measures for site access during an emergency in order to accommodate any of the agencies referred to above.

4.4 Coordination with Participating Government Agencies

Below are listed the principal State agency and other government (local, county, State, and Federal) agencies or organizations having responsibilities for radiological or other hazardous material emergencies at the Mill:

- State of Utah, Division of Radiation Control.....801-536-4250
- NRC.....301-951-0550
- MSHA Field Office--801-524-3450 District Office.....303-231-5465
- MSHA, Arlington800-746-1553
- State Emergency Response Comm.801-538-3400
- State of Utah, Natural Resources, Dam Safety801-538-7200
- National Response Center.....800-424-8802
- Utah Poison Control Center800-456-7707
- Blanding City Fire Department.....Dial 911 or 678-2313
- Blanding City Police Department.....Dial 911 or 678-2916 or 678-2334
- San Juan County Sheriff, Monticello, Utah.....Dial 911 or 587-2237
- Utah Highway Patrol, Monticello, Utah.....Dial 911 or 587-2000

Mill personnel meet annually with San Juan County Office of Emergency Management and Fire Control and City of Blanding Fire Department to review items of mutual interest, including relevant changes in this Plan. During those meetings Mill personnel discuss the Plan, notification procedures, and overall response coordination, as necessary.

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5. EMERGENCY RESPONSE MEASURES

Reg. Guide 3.67 suggests that specific response measures should be identified for each class of emergency and related to action levels or criteria that specify when the measures are to be effected. However, rather than describe specific responses applicable to classes of emergencies, this Plan describes the specific response measures for each type of accident. Since the number of different types of accidents that have been postulated for the Mill is relatively small, it was concluded that this more direct approach is most appropriate for a facility such as the Mill. There is no need to describe the specific actions and responses for each class of emergency when the actual specific response measures can be described more directly for each accident.

Section 2.1 and Appendices A through I set out the specific response measures for each postulated accident.

5.1 Activation of Emergency Response Organization

Activation of the Emergency Response Organization for each type of accident is set out in Section 2.1 and the applicable Appendix A through I.

A contact list is maintained through the Mill Safety Department. All supervisors and key personnel onsite have a copy of this contact list. The individuals listed are available at all times. Blanding is a small town, and most of the individuals listed live within a short distance of the Mill. In the event of an emergency during a non-working period, afternoon or night shift, or during a period of limited Mill operations or other situation where there is a reduced staff at the Mill, the Shift Forman or his supervisors, if on site, will initiate procedures. In addition, the Radiation Safety Department has established an emergency call sheet that will require notification throughout the department. When an emergency occurs, the RSO/Fire Chief is notified and then the Shift Radiation Technicians notify the off shift Radiation Technicians. The shift Radiation Technicians will maintain scene security until directed by the RSO to do otherwise. When the off duty Radiation Technicians arrive, they will report immediately to the RSO and receive their instructions.

5.2 Assessment Actions

For each type of emergency, the actions to be taken to determine the extent of the problem and to decide what corrective actions may be required are set out in Section 2.1 and the applicable Appendix A through I. Where appropriate, Section 2.1 and the applicable Appendix describe the types and methods of onsite and offsite sampling and monitoring that will be done in case of release of radioactive or other hazardous material. To the extent not specifically addressed in Section 2.1 or in Appendices A through I, Mill personnel will use procedures contained in existing Mill Standard Operating Procedures.

5.3 Mitigating Actions

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The means and equipment provided for mitigating the consequences of each type of accident are specified in Section 2.1 and Appendices A through I. To the extent applicable, these include the mitigation of consequences to workers onsite as well as to the public offsite, as well as the criteria that will be used to decide whether a single process or the entire facility will be shut down.

The Mill's Emergency Evacuation and Shut Down Procedure is set out in Appendix J.

5.4 Protective Actions

The nature of onsite and offsite protective actions, the criteria for implementing those actions, the areas involved, and the procedures for notification to affected persons are described in Section 2.1 and Appendices A through I for each type of accident. In order to prevent or minimize exposure to radiation, radioactive materials, and other hazardous materials, the procedures specified in Section 2.1 and those Appendices provide for timely relocation of onsite persons, timely recommendation of offsite actions, effective use of protective equipment and supplies, and use of appropriate contamination control measures, appropriate for each specified type of accident. To the extent that any actions and equipment are described generally in Section 2.1 and those Appendices, Mill personnel will take actions and use equipment in accordance with Mill Standard Operating Procedures.

5.4.1 Onsite Protective Actions

5.4.1.1 Personnel Evacuation and Accountability

For each type of accident, Section 2.1 and Appendices A through I include:

- Criteria for ordering an evacuation;
- The means and time required to notify persons involved;
- Evacuation routes, transportation of personnel;
- Locations of onsite and offsite assembly areas;
- Search and rescue;
- Monitoring of evacuees for contamination and control measures if contamination is found;
- Criteria for command center and assembly area evacuation and reestablishment at alternate location;
- Procedures for evacuating and treating injured personnel, including contaminated personnel; and
- Provisions for determining and maintaining the accountability of assembled and evacuated personnel.

5.4.1.2 Use of Protective Equipment and Supplies

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Section 2.1 and Appendices A through I specify the required protective equipment and supplies, to the extent not already covered by Mill Standard Operating Procedures. To the extent that Section 2.1 and Appendices A through I do not specify protective equipment and supplies, then protective equipment and supplies normally required or available under existing Mill Standard Operating Procedures for the required procedure or activity will apply.

In addition to normal supplies of equipment at the Mill, such as respirators, protective clothing etc., the Mill maintains supplies of specialized equipment in certain locations for use in emergency situations as follows:

a) *Fire Hose*

Fire hose cabinets are located at the following sites with a minimum of 300 feet of 2-1/2" hose, two spanner wrenches, spray nozzles and one hydrant wrench:

- South of SX;
- West of CCD;
- North of mill building;
- East of pulp storage tanks;
- Northwest of Maintenance Shop;
- West of Warehouse; and
- East of office building.

b) *Self Contained Breathing Apparatus*

Two Self-Contained Breathing Apparatus (SCBA) units are located at each of the following locations:

- Hose station east of office building;
- Hose Station South of SX;
- North End SX Outside Wall; and
- North end of mill building, outside wall.

c) *Spill Clean-up Equipment*

Barrels of soda ash are located throughout the Mill to be used in case of a chemical spill. Soda ash is also stored in bulk if needed. There are also a few drums of absorbent stored near the laboratory. The laboratory also contains acid spill kits and absorbent materials to be used in case of a spill.

d) *Fire Fighting PPE*

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Two complete sets of turnout gear for firefighting and/or emergency extrication are located in the Fire Hose Station located on the east side of the office building.

e) *Maintenance of Emergency Equipment*

Fire extinguishers are inspected on an annual basis, as well as the fire pump system. The Mill Safety Coordinator performs regular spot checks on the emergency equipment locations to ensure that all of the equipment is in place. (Extinguishers are serviced on an annual basis and then checked monthly to make sure units are still charged. The SCBA units are also checked monthly and then pressure tested every five years.)

5.4.1.3 Contamination Control Measures

Because of the nature of potential accidents that can occur at uranium mills, it is unlikely that an accident would result in a significant risk of overexposure to any workers or members of the public (see the conclusions of NRC staff in NUREG-1140 discussed in section 2.1.6 above). Therefore the Mill's existing Standard Operating Procedures are considered adequate for preventing further spread of radioactive materials and for minimizing radiation exposures from radioactive materials that could be unshielded or released by abnormal conditions. Section 2.1 and Appendices A through I describe isolation, area access control, and application of criteria for permitting return to normal use to the extent necessary and not otherwise covered by existing Standard Operating Procedures for the types of accidents that could occur at the Mill.

5.4.2 Offsite Protective Actions

Section 2.1 and Appendices A through I describe the conditions that would require protective actions offsite for the various types of accidents, and describe the protective action recommendations that would be made to offsite authorities, when each recommendation would be made, and what area offsite would be affected.

5.5 Exposure Control in Radiological Emergencies

Given the radioactive materials found at the Mill and the types of postulated accidents, it is not likely that Mill personnel or offsite workers would be exposed to levels of radiation that cannot be adequately addressed under existing Mill Standard Operating Procedures.

5.5.1 Emergency Radiation Exposure Control Program

5.5.1.1 Radiation Protection Program

During the emergency situation, the Radiation Protection Manual, SOP Book 9, will be the guide for all decontamination and exposure monitoring.

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The Mill's RSO will be responsible for the determination of exposures to be allowed during the event of an emergency situation. This includes the unlikely event of authorizing workers to receive emergency doses and for permitting onsite volunteers to receive radiation doses in the course of carrying out lifesaving and other emergency activities.

5.5.1.2 Exposure Guidelines

The onsite exposure guidelines to be used for all postulated accidents, including actions to control fires, stop releases or protect facilities will be those set out in UAC R313-15 and the Mill's Radiation Protection Manual. These exposure guidelines will also apply to

- Removing injured persons;
- Undertaking mitigating actions;
- Providing onsite first aid;
- Performing personnel decontamination;
- Providing ambulance service; and
- Providing offsite medical treatment.

5.5.1.3 Monitoring

DUSA will provide all needed instrumentation for determining doses received by individuals during all emergency situations. DUSA will also provide OSL badge monitoring to those emergency response individuals during situations that may require extended periods of exposure to high radiation areas.

In the event of an accident, such as an accident that involved the dispersion of yellowcake, or a fire in the SX building or elsewhere on the facility that could involve the dispersion of radioactive materials, breathing zone samples will be taken if practicable in the circumstances.

Emergency personal who must wear respiratory devices, must have their own devices. DUSA will not furnish these devices.

Radiation safety personnel will also monitor various areas of the facility occupied by emergency personnel, to the extent practicable.

Records of dose and dose commitments will be maintained for Mill personnel and offsite support organization's emergency workers involved in the accident.

5.5.1.4 Decontamination of Personnel

Any emergency response equipment that enters the Mill's Restricted Area in response to an incident will be scanned and decontaminated prior to leaving the site according to the

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requirements found in Table 1 of the NRC's Policy and Guidance Directive FC-85-23, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material" issued May 1987.

Any personnel leaving the Mill's restricted area, or otherwise exposed to radiation from the incident, will be scanned and decontaminated in accordance with the procedures set out in the Mill's Radiation Protection Manual for personnel leaving the Mill's restricted area.

Injured personnel will be evaluated for radiation contamination at the earliest convenience, if there is a potential for contamination. Should it be necessary, contaminated articles will be gathered by the radiological staff after medical treatment has been rendered. If the personnel cannot be decontaminated, the clinic/hospital personnel will be notified in advance. Mill radiation safety personnel will be available to provide health physics support clinic/hospital personnel.

5.6 Medical Transportation

One fully-equipped First Responder Unit (Ambulance) is located west of the office building.

Other motor pool vehicles on the property will be utilized as needed in emergency situations with support as needed from the local Emergency Medical Services.

All transportation vehicles will be surveyed and decontaminated by the Radiation Department at the Mill. Any emergency response equipment or personnel that enters the Restricted Area in response to an incident will be scanned and decontaminated prior to leaving the site according to the requirements found in Table 1 of the NRC's Policy and Guidance Directive FC-85-23, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material" issued May 1987. If any injured personnel who may also be radiologically contaminated, will be transported to medical treatment facilities, the inside of the transport vehicle will also be scanned and decontaminated in accordance with the foregoing Guidance.

Injured personnel will be evaluated for radiation contamination, if there was a potential for contamination, at the earliest convenience. Should it be necessary, contaminated articles will be gathered by the radiological staff after medical treatment has been rendered. If the personnel cannot be decontaminated, clinic/hospital personnel will be notified in advance.

5.7 Medical Treatment

All medical facilities will be made aware of potential radiological and chemical hazards associated with the postulated accidents described in Section 2.1. St. Mary's hospital in Grand Junction, Colorado, approximately 3 hours drive by highway, is the nearest trauma center. Specialized medical attention for radioactive contamination or chemical exposure would be

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located either in Salt Lake City at the University of Utah Medical Center (approximately 5 hours drive by highway), or in Denver, Colorado (approximately 7 hours drive by highway).

All facilities are aware that DUSA will take responsibility for the monitoring and potential decontamination of all facilities contaminated during these emergencies. The Mill will provide ambulance and hospital personnel with health physics support if needed.

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6. EMERGENCY RESPONSE EQUIPMENT AND FACILITIES

6.1 Command Center

When the evacuation alarm sounds or when personnel are verbally notified by radio or other means, all personnel will assemble at:

- The parking lot south of the office;
- The Scalehouse;
- North side of Tailings Cell 1; or
- North of the Mill.

The assembly site will depend upon conditions, i.e. nature of the emergency, wind conditions, etc. The Incident Commander, RSO/Fire Chief or Shift Foreman will specify the appropriate assembly site.

The Mill does not have a specific communication or assessment center. Key personnel are equipped with handheld VHF transceivers, which will serve as the primary means of communication while personnel are assembling to the designated relocation areas and as needed thereafter to deal with the emergency. The relocation area will serve as the initial assessment center. Other communications and assessment centers will be set up in the Mill's office building, Scalehouse, Warehouse or other areas of the Mill that have communication capability, as needed depending on the nature and location of the emergency.

6.2 Communications Equipment

6.2.1 Onsite Communications

Employees will be notified to evacuate the area by dialing 184 on any area telephone and announcing that the Mill should be evacuated. This announcement will be repeated three times. When the paging system cycles through, the evacuation siren (continuous frequency) will automatically sound for approximately forty-five seconds, and then automatically shut off, allowing communications by radio from that point. If the 184 number is dialed accidentally the evacuation alarm may be canceled by disconnecting the phone until the page cycle ends, then re-dial 184. (See Exhibits 1 and 2.).

The primary onsite communications will be by radio throughout the course of the emergency and the subsequent recovery. Onsite communication by radio is the typical day-to-day manner of communication within the Mill facility, and is performed by individual hand held VHF transceivers. There is no central relay or similar system that could be disabled in the event of an emergency. As a result, there is no need to provide for an alternative onsite communication system or perform operational tests of that communications system.

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6.2.2 Offsite Communications

During an emergency situation, DUSA's onsite ambulance is equipped with a radio to communicate with the San Juan County Dispatch. This service provides a backup means of offsite communication, other than commercial telephone, and will allow the Mill to be in communication with all emergency response services.

Operational tests are conducted on this system periodically during the normal weekly operational checks of the onsite ambulance.

6.3 Onsite Medical Facilities

The Mill maintains medical supplies at the site for typical occupational injuries as required by MSHA.

One fully-equipped First Responder Unit (Ambulance) is located west of the office building.

Other motor pool vehicles on the property will be utilized as needed in emergency situations with support as needed from the local Emergency Medical Services.

Given the types of accidents identified, it is unlikely that any personnel would require contamination control over and above the controls set out in the Mill's Radiation Protection Manual, which would be applied to injured personnel. If it is not possible or there is not sufficient time to decontaminate individuals, then advance notice will be applied to offsite medical personnel and facilities. In addition, Mill personnel will be available to provide health physics assistance to such medical personnel if necessary.

6.4 Emergency Monitoring Equipment

The monitoring equipment used on a day-to-day basis by the Radiation Safety Department will be available to monitor personnel and perform area monitoring, as well as to assess the release of radioactive materials to the environment. As discussed in Section 2.1.6 above, none of the postulated accidents described in Section 2.1 above is expected to release significant quantities of radionuclides into the environment. The greatest risk of that would be a fire in the solvent extraction building, but, as NRC concluded in NUREG-1140 the potential for overexposures offsite would not be significant. Mill personnel will monitor to assess the magnitude and dispersion of any releases after the fact by use of hand held gamma meters in the areas offsite that could have been impacted. The existing high volume particulate stations will also provide some information on the magnitude and dispersion of any such releases.

Onsite area monitoring and personnel scanning will be performed by use of existing monitoring equipment, which is located in the Radiation Safety Department. This is considered to be as

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"non-hazardous" a location as possible at the site, because it is not located particularly close to any locations that could involve one of the postulated accidents.

Mill Radiation Safety Staff will use dragger tubes primarily to detect dangerous levels of anhydrous ammonia and propane and other chemically toxic materials. If necessary, monitoring personnel will be equipped with SCBA respiratory protection while performing such monitoring.

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7. MAINTAINING EMERGENCY PREPAREDNESS CAPABILITY

7.1 Written Emergency Plan Procedures

This Plan will be reviewed annually by the RSO and, if required, updated by the ALARA Committee. The SERP Committee will then validate all changes that are being requested before such changes will be implemented into a new revision of this Plan.

After final SERP approval, changes will be updated to the Document Control System. The Document Control supervisor will update this Plan and then amend all current copies of the Plan to the recipients listed on the Distribution List at the beginning of this document.

7.2 Training

Semi-annual training for the emergency response teams will be conducted. This training will include, but not be limited to, fire suppression, emergency medical services, evacuation under hazardous atmosphere conditions, search and rescue, proper PPE usage during each potential emergency situation and radiological contamination surveying onsite and offsite.

Each member of the emergency response team will be assigned his or her tasks and trained in detail about those tasks. The Radiation Staff will be trained in the proper decontamination of personnel, PPE and potentially offsite medical facilities.

All employees onsite will be trained in the use of respiratory protection and on radiological hazards during their normal monthly safety meetings and as needed during special radiation training sessions as processes change at the facility.

Because appropriately trained Mill personnel will be in attendance at the Mill to accompany any offsite emergency response personnel, there is no need to provide periodic orientation tours of the facility to such personnel.

7.3 Drills and Exercises

Quarterly drills, as required by MSHA, are conducted by the Safety and Radiation Departments to monitor performance of personnel responding to emergency situations. Each drill is enacted upon one or more of the potential emergencies contemplated by this Plan. The drill and evacuation activities are documented by the Mill's Safety Coordinator and maintained within plant files. Management reviews all drills at quarterly ALARA Committee Meetings.

Because the impacts associated with most types of emergencies that could occur at the Mill are limited to the Mill site itself, and the risks to the public are very low, offsite agencies are not typically invited to participate in any drills or exercises at the Mill.

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7.3.1 Biennial Exercises

Training exercises will be held every two years with the potential offsite emergency responders. These exercises consist of training and information pertaining to the operational activities at the time.

7.3.2 Quarterly Communications Checks

Quarterly communication checks with all potential offsite emergency responders will be performed. The communication checks will be documented and housed in the Safety Department records. These checks will update any changes to contact information for needed parties.

Emergency response groups that are required to be contacted are:

- Blanding Police Department;
- Blanding City Fire Department;
- San Juan County Sheriff;
- San Juan County EMS;
- All local medical clinics and or hospitals; and
- Utah Highway Patrol

7.4 Critiques

This Plan is subject to audit by the ALARA audit team (see Section 7.5 below), and the periodic drills and exercises referred to in Section 7.3 above are subject to review periodically by the Mill's ALARA Committee. Given the nature of the potential incidents that could occur at the Mill and the low risk to the public relative to incidents that could occur at other types of facilities, such as nuclear power reactors, the Mill does not require that a critique be prepared for each drill and exercise by one or more of the nonparticipating observers, other than the audits and reviews conducted by the ALARA Audit Committee and the ALARA Committee.

7.5 Independent Audit

This Plan, including all procedures, training activities, emergency facilities, equipment, and supplies, and records associated with offsite support agency interface, described therein, is subject to annual review by the Mill's ALARA audit team. The Mill's ALARA audit team is comprised of DUSA corporate environmental and safety personnel who do not have direct responsibilities for implementing the emergency response program, as well as an independent outside consultant with expertise in environmental and radiation safety matters.

Any recommendations or deficiencies observed by the ALARA audit team will be presented to the ALARA Committee for consideration typically within approximately 60 days after the audit

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has been completed. Decisions by the Mill's ALARA Committee to make any changes to this Plan will be submitted to the Mill's SERP for implementation. Any changes in plant layout, process or facilities are included in the types of changes that will be reviewed and could warrant revision to this Plan.

7.6 Maintenance and Inventory of Emergency Equipment, Instrumentation and Supplies

Fire extinguishers, as well as the fire pump system, are inspected on an annual basis. The Mill Safety Coordinator performs regular spot checks on the emergency equipment locations to ensure that all of the equipment is in place. Extinguishers are serviced on an annual basis and then checked monthly to make sure units are still charged. The SCBA units are also checked monthly and then pressure tested every five years.

7.7 Letters of Agreement

Any changes to this Plan that would impact the actions of any offsite response organizations will be communicated to such organizations. The Mill will review all letters of agreement with offsite agencies periodically to ensure that they are kept up to date and in force.

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8. RECORDS AND REPORTS

8.1 Records of Incidents

A written report will be prepared for all incidents of abnormal operation, equipment failure and accidents that led to a plant emergency that is classified as an Alert or Site Area Emergency.

The report will include the cause of the incident, personnel and equipment involved, extent of injury and damage (onsite and offsite) resulting from the incident, all locations of contamination with the final decontamination survey results, corrective actions taken to terminate the emergency, and the action taken or planned to prevent a recurrence of the incident. The report will also include the onsite and offsite support assistance requested and received, as well as any program changes resulting from the lessons learned from any critique of emergency response activities.

All such reports unique to a radiological emergency, not covered by existing regulations or License conditions will be retained until the License is terminated.

The foregoing reports will be prepared under the direction of the RSO, and will be maintained in the Mill's files for inspection.

8.2 Records of Preparedness Assurance

Records will be maintained in accordance with all MSHA, State of Utah and ALARA criteria. These documents will be available on site and housed in the Safety Department for review.

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9. RECOVERY AND PLANT RESTORATION

The Incident Commander will make the determination as to when the facility has been restored to safe status. In making this determination, the Incident Commander will:

- i) Assess the damage to and the status of the facility's capabilities to control radioactive materials and hazardous materials. Specifically, the Incident Commander must be satisfied that all safety-related equipment required for safe occupation and use of the facility, in those areas to be occupied and used (e.g., radiation monitoring instruments, respiratory protection equipment, fire-suppression and fire-fighting equipment, containments, and air filters) have been checked and restored to normal operations. The Incident Commander will be assisted by the RSO, the Safety Coordinator and the Maintenance Supervisor or Maintenance Forman in making these determinations; and
- ii) Determine the actions necessary to reduce any ongoing releases of radioactive or other hazardous material and to prevent further incidents. The Incident Commander will be assisted by the RSO, the Safety Coordinator and the Maintenance Supervisor or Maintenance Forman in making these determinations.

The Incident Commander will direct the resources and personnel required in order to accomplish the tasks to meet any required restoration action. During any planned restoration operations, personnel exposures to radiation will be maintained within UAC R313-15 limits and as low as is reasonably achievable.

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10. COMPLIANCE WITH COMMUNITY RIGHT-TO-KNOW ACT AND CLEAN AIR ACT

10.1 Community Right to Know Act

Section 11002 and 11004 of the Emergency Response and Community Right to Know Act ("EPCRA") of 1986; 42 U.S.C. 11001 et seq., requires that notice be given to the community emergency response coordinator for the local emergency planning committee in the event of a release of an extremely hazardous substance offsite. This requirement does not apply to any release which results in exposure to persons solely within the sites or sites within which the facility is located.

The Mill maintains inventories of two extremely hazardous substances: anhydrous ammonia and propane. Mill personnel are required to provide notice to the community response coordinator for the local emergency planning committee in the event of an offsite release of either of those two substances. See Sections 2.1.1, 2.1.2 and 2.1.3 above and Appendices A, B and C.

10.2 Clean Air Act

When Congress passed the Clean Air Act Amendments of 1990, Section 112r required EPA to publish regulations and guidance for chemical accident prevention at facilities using substances that posed the greatest risk of harm from accidental releases. These regulations require facilities such as the Mill that use, store or otherwise handle a threshold quantity of certain listed regulated flammable and toxic substances to develop a Risk Management Program.

The Mill uses, stores and handles threshold quantities of two substances listed under the regulations promulgated under Section 112r of the Clean Air Act: anhydrous ammonia and propane, and has submitted to EPA a Risk Management Program for those two substances. A copy of that Risk Management Program is attached as Appendix K to this Plan.

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EXHIBIT 1
EMERGENCY NOTIFICATION LIST

ATTEND TO ANY INJURED PERSONS AND NOTIFY THE SUPERVISOR:

- Give artificial respiration if necessary.
- Control bleeding.
- Treat for shock.
- Immobilize fractures and stabilize for transportation.
- Scan the injured person for excessive alpha prior to transporting if time allows.
(If alpha is excessive or there is no time to scan, notify the clinic/hospital personnel and the Radiation Safety Office).
- Perform other first aid as more specifically described in Section 2.1 or Appendices A through I for the specific types of accidents and resulting injuries

THE INCIDENT COMMANDER OR HIS DESIGNEE WILL NOTIFY THE FOLLOWING AS NEEDED:

- Blanding Clinic678-2254 or 678-3434 (930 N. 400 W.)
- Blue Mountain Hospital, Blanding ...678-3993 (802 S. 200 W.)
- San Juan Hospital, Monticello678-2830 or 587-2116 (364 W. 1st N.)

EMT TRAINED – The following personnel should be contacted, if they are on-site, in the event of an emergency to aid in the event of any injuries to personnel.

David Turk

AMBULANCE SERVICE

BlandingDial 911

If the Company Ambulance is used, an attendant must ride with the injured in addition to the driver, except where the injured could normally be transported in a car or pickup.

OTHER EMERGENCY NUMBERS

- Fire DepartmentDial 911 or 678-2313
- County Sheriff.....Dial 911 or 587-2237
- Highway PatrolDial 911 or 587-2000
- Blanding Police.....Dial 911, 678-2916 or 678-2334

MANAGERS

The Supervisor will notify one of the following of all incidents:

- R.E. Bartlett435-678-2495 or 435-979-3893
- D. Turk.....435-678-7802 or 435-459-9786
- R. Wallace.....435-459-1093

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A MEMBER OF MANAGEMENT WILL NOTIFY THE PROPER REGULATING AGENCIES AS REQUIRED FOR EACH INCIDENT (SEE SECTION 2.1 AND APPENDICES A THROUGH I):

State of Utah, Division of Radiation Control.....801-536-4250
 MSHA Field Office--801-524-3450 District Office.303-231-5465
 MSHA, Arlington800-746-1553
 State Emergency Response Comm.801-538-3400
 State of Utah, Natural Resources, Dam Safety801-538-7200
 National Response Center.....800-424-8802
 Utah Poison Control Center800-456-7707

Notification of surrounding communities and or residences will be handled by the appropriate agencies as required by EPCRA (Emergency Planning and Community Right to Know Act). See Section 2.1 and Appendices A through I.

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EXHIBIT 2
INTERNAL NOTIFICATIONS

Internal reporting requirements for Incidents, Spills and Significant Events are as follows: (see Section 2.1 of the Plan and Appendices A through I for more specific internal notification requirements that may apply to each type of emergency situation):

Report Immediately:

Event Criteria:

- Release of toxic or hazardous substances.
- Fire, explosions or other accidents.
- Government investigations information, requests or enforcement actions.
- Private actions or claims (corporations or employees).
- Deviations from Corporate policies or government requirements by Management.

Other significant events, which have resulted or could result in:

- Death, serious injury or adverse health effect (employees or public).
- Property damage exceeding \$1,000,000.
- Government investigation or enforcement action – limiting operation or penalties of \$100,000 or more.
- Significant criminal actions.
- Substantial media coverage.
- Unscheduled down time of more than 24 hours.

Report at the Beginning of the Next Business Day:

Incident Criteria:

- Was reported to a government agency as required by law.
- Worker (DUSA or contractor) recordable injury or illness associated with a release.
- Community impact - reported or awareness.
- Publicity resulted or is anticipated.
- Release of 5,000 pounds or more of process material, waste or product.

The local manager in charge is to call Harold Roberts, Ron Hochstein or David Frydenlund.

Harold Roberts (Executive Vice President).....303-389-4160 (office)
303-756-9050 (home)
303-902-2870 (cell)

Ron Hochstein (President/CEO).....604-689-7842 (office)
604-931-6334 (home)
604-377-1167 (cell)

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David Frydenlund (Vice President)303-628-7798 (office)
 303-221-0098 (home)
 303-808-6648 (cell)

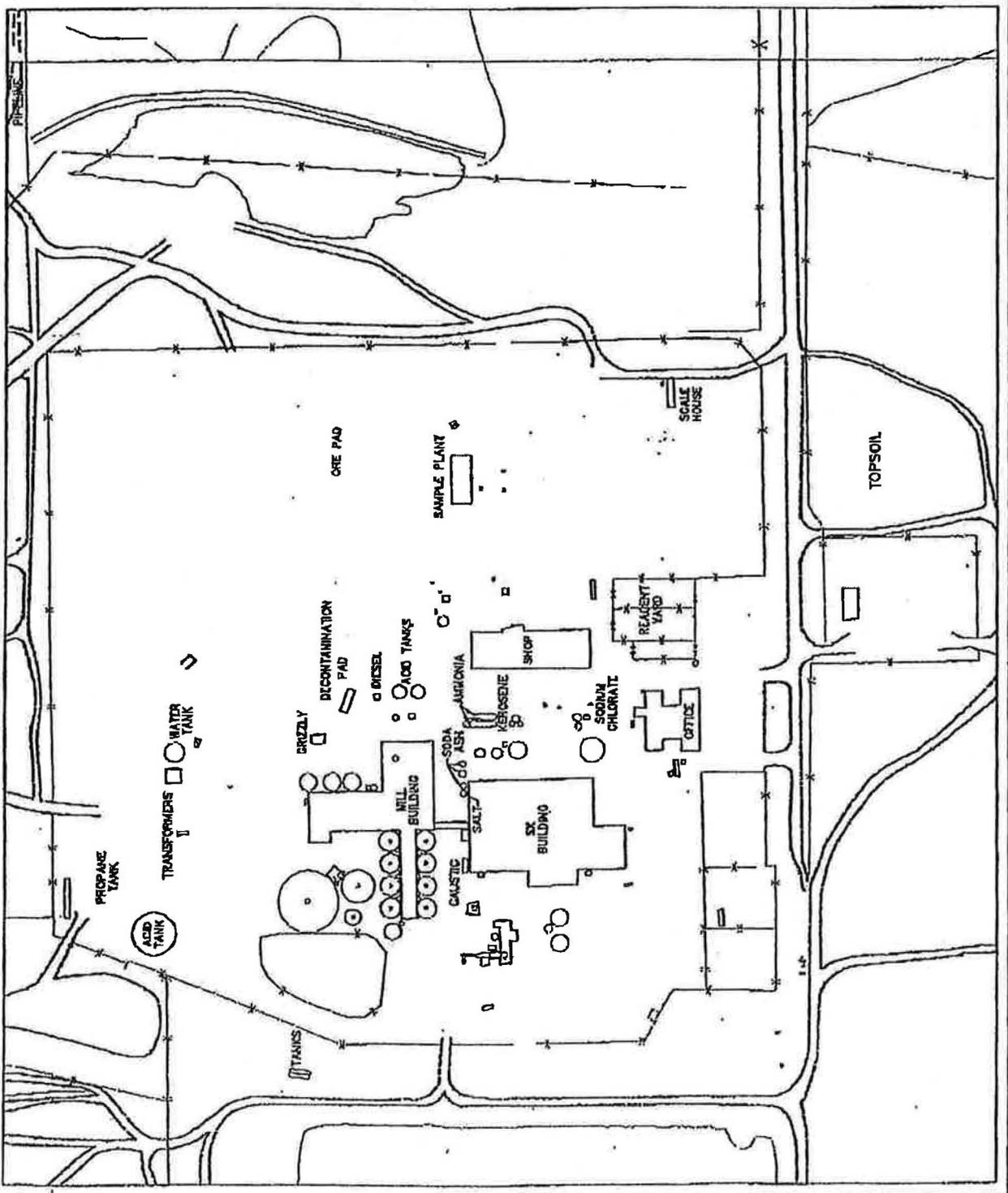
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EXHIBIT 3

SITE LAYOUT MAP

International Uranium (USA) Corporation	
Project	WHITE HISSA MILL
Revised	2007-08-08
By	2007-08-08
Scale	1" = 100'
Drawn	2007-08-08
Checked	2007-08-08
Approved	2007-08-08
Location	White Hissa Mill
Scale	1" = 100'
Drawn	2007-08-08
Checked	2007-08-08
Approved	2007-08-08

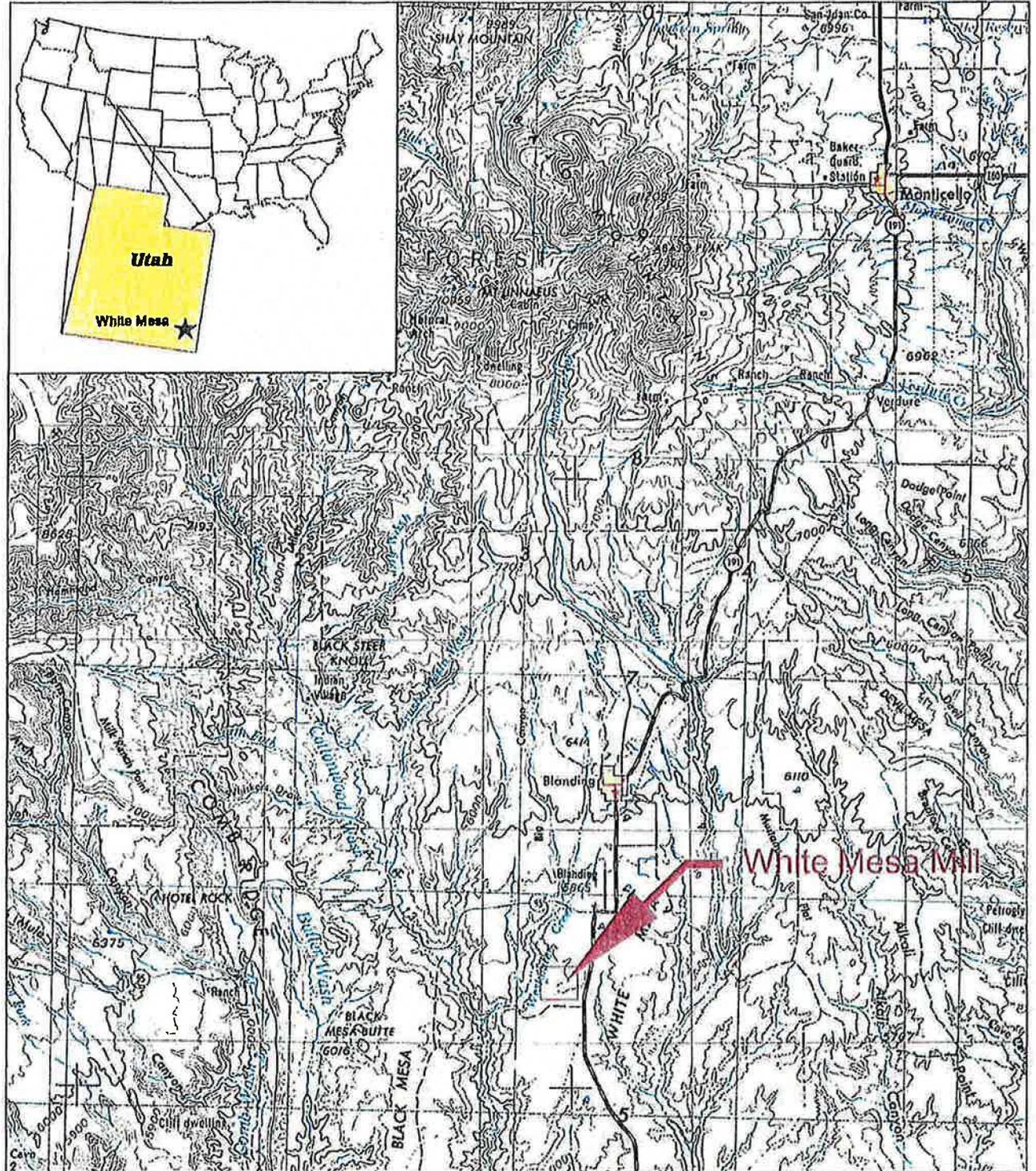
MILL SITE LAYOUT



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EXHIBIT 4

GENERAL AREA MAP



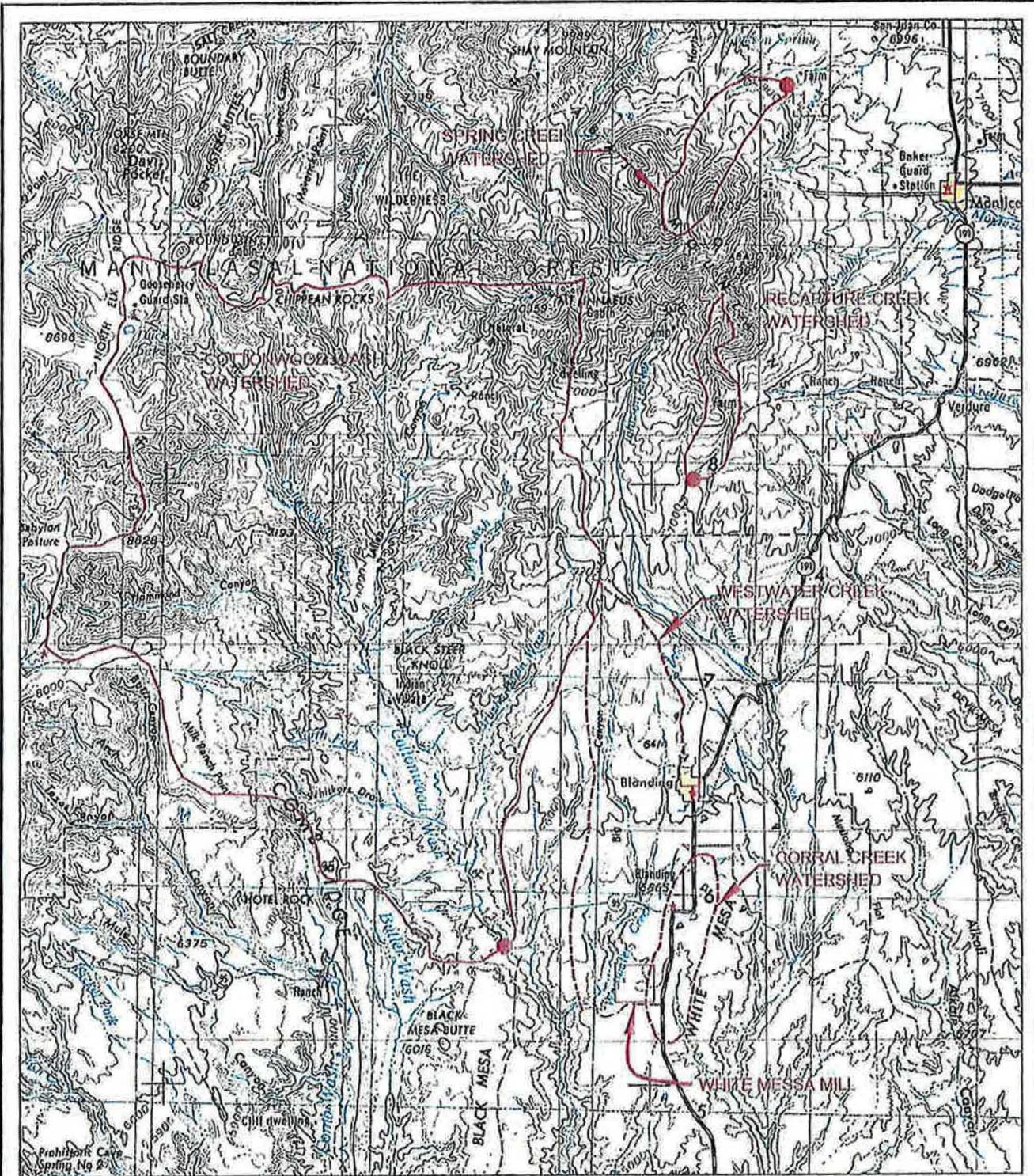
International Uranium (USA) Corporation			
Project		WHITE MESA MILL	
REVISIONS	County:	State: UT	
Date	By	Location:	
		Figure 3.2 - 1 White Mesa Mill Location Map	
		Scale: :250,000	Date: March 2003
		Author: HRR	Drafted By:

figure 3.2-1.dwg

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EXHIBIT 5

DRAINAGE MAP



- 1 USGS GAUGE NO. 09376900
- 2 USGS GAUGE NO. 09378630
- 3 USGS GAUGE NO. 09378700

International Uranium (USA) Corporation			
Project		WHITE MESA MILL	
REVISIONS	County:	State: UT	
Date	By	Location:	
<p>Figure 3.7 - 1 Drainage Map of the Vicinity of the White Mesa Mill</p>			
Scale: 1:250,000		Date: March 2003	figure 3.7-1.dwg
Author: HRR		Drafted By:	

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EXHIBIT 6

POPULATION CENTERS MAP

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EXHIBIT 7

MAIN SHUT-OFF VALVES

During an emergency this list should be used along with Site Layout Map (Exhibit 3) to locate tanks and valves associated with these tanks.

REAGENT SHUT-OFF VALVE LOCATIONS

Sulfuric Acid

- 4" Main located south side of acid tank
- East acid pump discharge valve
- West acid pump discharge valve
- 3" Main (leach area) located 25 feet west of Derrick screens next to walkway
- 1-1/2" Main (SX area) located south of Central Control room

Ammonia

- 4" Main (east tank) located on end at bottom
- 4" Main (west tank) located on end at bottom
- 2" Valve located on top of tank (east tank)
- 2" Valve located on top of tank (west tank)

Kerosene

- 2" Main valve located at bottom of tank (east tank)
- 2" Main valve located at bottom of tank (north tank)
- 2" Main valve located at bottom of tank (south tank)
- Pump discharge 2" valve

Soda Ash

- Main valve located at bottom of tank (dry storage)
- 4" Main valve located at bottom of tank on 30% dilution tank
- 4" Main valve locate at bottom of tank on dilution tank

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Salt

3" Main valve located at bottom of tank

Caustic Soda

3" Main valve located at bottom of tank east and west between supports

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Sodium Chlorate

- 3" Main valve located at bottom of tank (east tank)
- 3" Main valve located at bottom of tank (north tank)
- 3" Main valve located at bottom of tank (south tank)

Propane

- 4" Main located 15 feet east of tank
- 3" Main located on pipe off top of tank
- 3" Main located at bottom of tank (also fill pipe)

PLANT UTILITY SHUT-OFF VALVE LOCATIONS

Process Water

- Main valve located on west side of water storage tank
- Discharge valve off service water pump east
- Discharge valve off service water pump west
- Mill process water main located east wall by SAG mill

Fire Water

- Main valve located west side of water storage tank
- Emergency fire pump discharge valve to fire system
- Emergency fire pump discharge valve to header west side of pump house
- 8" Main valve located south of Central Control room for SX and boilers

Potable Water

- 2" Main (suction) from potable water storage tank
- 2" Main (discharge) from potable water storage tank
- 4" Main located at east wall by SAG mill
- 4" Main located south of Central Control room for SX, Maintenance shop, and offices

Steam

Main discharge valve for Superior boiler located at top of boiler

Main steam valve located south side of boiler house

Plant Air

Main valve located at receiver tank in compressor room at boiler house

Main valve to mill building located south of Central Control room

PROCESS SHUT-OFF VALVE LOCATIONS

Pulp Storage

No. 1 valve located on west side of tank

No. 3 valve located on west side of tank

Pre-leach (old No. 2 pulp storage) valve located on west side of tank

Pre-leach Thickener

Main valve located underneath at center cone

Clarifier

Main valve located underneath at center cone

Main valve located underneath at center cone

CCD Thickeners

Main valve located underneath at center cone of each thickener

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APPENDIX A

EMERGENCY RESPONSE PROCEDURE FOR A RELEASE OF ANHYDROUS AMMONIA

(See also Section 2.1.1 of the Emergency Response Plan)

The following steps will be followed for an uncontrolled release of anhydrous ammonia. The steps should be followed in the order set out below, unless more than one crew is mobilized, in which case some of the steps can be taken simultaneously by different crews. The Incident Commander has the authority to vary from the steps set out below if he deems it necessary in the circumstances to protect public health, safety or the environment.

CAUTION: INHALATION OF ANYDROUS AMMONIA CAN CAUSE INCAPACITATION, SERIOUS INJURY AND DEATH.

1. A release of anhydrous ammonia would most likely occur suddenly. The person who would first witness the release should immediately contact his or her supervisor who would activate the evacuation alarm by using the "dial 184" notification system.
2. Evacuate all personnel from the Mill site to a location upwind of the spill, and account for all personnel, including all contractors and visitors at the Mill and all ore, product and reagent truck drivers, in accordance with the Emergency Evacuation and Shutdown Procedure described in Appendix J.
3. Determine Incident Commander. The Incident Commander will be the Mill Manager, or in his absence the Mill Superintendent, or in the absence of both the Mill Manager and the Mill Superintendent, the RSO. Shift Foremen are in charge and are responsible for all emergency procedures until the Incident Commander arrives.
4. Determine crews that may be required (see Section 4.2.2 of the Plan for a discussion of the available crews at the disposal of the Incident Commander).
5. Mobilize trained personnel and emergency equipment such as SCBAs, first aid equipment etc. See U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration 2008 Emergency Response Guidebook (the "DOT Guidebook") for appropriate protective clothing. In that Guidebook, Anhydrous ammonia has an ID No. of 1005 and is covered by Guide No. 125. A copy of Guide 125 is attached to this Appendix.
6. Initiate rescue operations for any people who may be trapped by the release; do this only with properly trained and equipped personnel.

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7. Attend to any injured persons:

- One of the following EMT-trained personnel should be contacted, if they are on-site to aid in the event of any injuries to personnel:
 - David Turk
- Move victim to fresh air;
- Give artificial respiration if victim is not breathing;
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device;**
- Administer oxygen if breathing is difficult;
- Remove and isolate contaminated clothing and shoes;
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes;
- Control any bleeding;
- Treat for shock, if necessary;
- Immobilize any fractures and stabilize for transportation;
- Scan the injured for excessive alpha prior to transporting if time allows
 - (If alpha is excessive or there is no time to scan, notify the clinic/hospital personnel and the RSO);
- Keep victim warm and quiet.
- Keep victim under observation. Effects of contact or inhalation may be delayed;
- The Safety Coordinator or a Safety Technician will notify the following as needed:
 - Blanding Clinic 678-2254 or 678-3434 (930 N. 400 W.)
 - Blue Mountain Hospital, Blanding 678-3993 (802 S. 200 W.)
 - San Juan Hospital, Monticello 678-2830 or 587-2116 (364 W. 1st N.)
 - Ambulance Service, Blanding Dial 911
- Ensure that medical personnel are aware of the materials involved and take precautions to protect themselves; and
- If the Mill ambulance is used, an attendant must ride with the injured person in addition to the driver, except where the injured person could normally be transported in a car or pickup.

8. Initiate necessary steps to contain and/or neutralize the release, such as spraying with water fog, turning off valves, etc.

- See Material Safety Data Sheet attached to this Appendix; and
- See Exhibit 7 for a list and locations of main shut-off valves.

9. Guard against possible fires by shutting off electrical circuits, isolating gas lines and eliminating ignition sources from affected areas.

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11. If the incident involves an uncontrolled release of greater than 36 lbs (7 gallons) of anhydrous ammonia, report the release to the State of Utah Division of Radiation Control (801-536-4250) immediately after notification of offsite authorities, and in any event within one hour after declaration of the emergency, if possible. This immediate notification is required because an uncontrolled release of anhydrous ammonia of greater than 36 lbs (7 gallons) and 100 pounds is classified as an Alert and a release of greater than 100 pounds is classified as a Site Area Emergency.

12. Notification of Mill Management

The Incident Commander will notify one of the following of all incidents, if not already alerted and part of the Emergency Response crew:

- R.E. Bartlett 435-678-2495 or 435-979-3893
- D. Turk 435-678-7802 or 435-459-9786
- R. Wallace 435-459-1093

13. Notification of Corporate Management:

The Incident Commander is to call Harold Roberts, Ron Hochstein or David Frydenlund immediately.

- Harold Roberts (Executive Vice President).....303-389-4160 (office)
303-756-9050 (home)
303-902-2870 (cell)
- Ron Hochstein (President/CEO).....604-689-7842 (office)
604-931-6334 (home)
604-377-1167 (cell)
- .. David Frydenlund (Vice President).....303-628-7798 (office)
303-221-0098 (home)
303-808-6648 (cell)

14. Inspect facility for residual concentrations of anhydrous ammonia, paying particular attention to low points. The RSO or Safety Coordinator will make a determination if it is safe for personnel to re-enter the facility or any portion of the facility or whether or not any portion of the facility must remain shut down.

15. The Site Incident Commander will make the decision to terminate the emergency or enter into recover mode.

16. Notification of Regulatory Agencies:

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A member of Mill management or Corporate management will notify the following regulating agencies as indicated below:

- Report to MSHA

Any release of anhydrous ammonia at the Mill facility must be reported within 15 minutes to the MSHA -1-800-746-1553.

17. Written Reports

The RSO will prepare a written report of the incident for Mill files, containing the information set out in Section 8.1 of the Plan.

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APPENDIX B

EMERGENCY RESPONSE PROCEDURE FOR AN AMMONIA EXPLOSION IN A BUILDING

(See also Section 2.1.2 of the Emergency Response Plan)

The following steps will be followed in the event of an ammonia explosion in a building. The steps should be followed in the order set out below, unless more than one crew is mobilized, in which case some of the steps can be taken simultaneously by different crews. The Incident Commander has the authority to vary from the steps set out below if he deems it necessary in the circumstances to protect public health, safety or the environment.

CAUTION: INHALATION OF ANYDROUS AMMONIA CAN CAUSE INCAPACITATION, SERIOUS INJURY AND DEATH.

1. An ammonia explosion would most likely occur suddenly. The person who would first witness the explosion should immediately contact his or her supervisor who would activate the evacuation alarm by using the "dial 184" notification system.
2. Evacuate all personnel from the Mill site to a location upwind of the impacted area, and account for all personnel, including all contractors and visitors at the Mill and all ore, product and reagent truck drivers, in accordance with the Emergency Evacuation and Shutdown Procedure described in Appendix J.
3. Determine Incident Commander. The Incident Commander will be the Mill Manager, or in his absence the Mill Superintendent, or in the absence of both the Mill Manager and the Mill Superintendent, the RSO. Shift Foremen are in charge and are responsible for all emergency procedures until the Incident Commander arrives.
4. Determine crews that may be required (see Section 4.2.2 of the Plan for a discussion of the available crews at the disposal of the Incident Commander).
5. Mobilize trained personnel and emergency equipment such as SCBAs, first aid equipment etc. See U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration 2008 Emergency Response Guidebook (the "DOT Guidebook") for appropriate protective clothing. In that Guidebook, anhydrous ammonia has an ID No. of 1005 and is covered by Guide No. 125. A copy of Guide 125 is attached to this Appendix.
6. Initiate rescue operations for any people who may be trapped as a result of the explosion; do this only with properly trained and equipped personnel.
7. Guard against possible fires by shutting off electrical circuits, isolating gas lines and eliminating ignition sources from affected areas.

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8. In the event of fire, follow procedures set out on Guide No. 125. If the fire is in the SX Building, follow the procedures in Appendix E in addition to the procedures in this Appendix.
9. Isolate utility lines affected by the fire.
10. Extinguish the fire and post a fire watch for flare-ups.
11. In cases where the fire is not extinguished within thirty minutes of discovery, the area must be barricaded off after extinguishing and left undisturbed until released by MSHA and DUSA management.
13. Attend to any injured persons:
 - One of the following EMT-trained personnel should be contacted, if they are on-site to aid in the event of any injuries to personnel:
 - David Turk
 - Move victim to fresh air;
 - Give artificial respiration if victim is not breathing;
 - **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device;**
 - Administer oxygen if breathing is difficult;
 - Remove and isolate contaminated clothing and shoes;
 - In case of contact with liquefied gas, thaw frosted parts with lukewarm water;
 - In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes;
 - In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin;
 - Control any bleeding;
 - Treat for shock, if necessary;
 - Immobilize any fractures and stabilize for transportation;
 - Scan the injured for excessive alpha prior to transporting if time allows
 - (If alpha is excessive or there is no time to scan, notify the clinic/hospital personnel and the Radiation Safety Office);
 - Keep victim warm and quiet;
 - Keep victim under observation. Effects of contact or inhalation may be delayed;
 - The Safety Coordinator or a Safety Technician will notify the following as needed:
 - Blanding Clinic 678-2254 or 678-3434 (930 N. 400 W.)
 - Blue Mountain Hospital, Blanding 678-3993 (802 S. 200 W.)
 - San Juan Hospital, Monticello 678-2830 or 587-2116 (364 W. 1st N.)
 - Ambulance Service, Blanding Dial 911

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authorities should follow the recommendations for releases of anhydrous ammonia contained in the DOT Guidebook. In the DOT Guidebook, Anhydrous ammonia has an ID No. of 1005 and is covered by Guide No. 125. Initial isolation and protective action distances are set out in Table 1 to the DOT Guidebook. Copies of the relevant portions of the Guidebook are attached to this Appendix. An uncontrolled release of the contents of one of the anhydrous ammonia tanks at the Mill would be similar to an uncontrolled release from a rail car or tanker truck and would be considered to be a "large spill" under Table 1 of the DOT Guidebook. The foregoing offsite officials should also be advised of the conclusions of the Mill's Risk Management Plan, attached hereto as Appendix K, as it relates to anhydrous ammonia.

16. If the incident involves an uncontrolled release of greater than 36 lbs (7 gallons) of anhydrous ammonia, report the release to the State of Utah Division of Radiation Control (801-536-4250) immediately after notification of offsite authorities, and in any event within one hour after declaration of the emergency, if possible. This immediate notification is required because an uncontrolled release of anhydrous ammonia of greater than 36 lbs (7 gallons) and 100 pounds is classified as an Alert and a release of greater than 100 pounds is classified as a Site Area Emergency.

17. Notification of Mill Management

The Incident Commander will notify one of the following of all incidents, if not already alerted and part of the Emergency Response crew:

- R.E. Bartlett 435-678-2495 or 435-979-3893
- D. Turk 435-678-7802 or 435-459-9786
- R. Wallace 435-459-1093

18. Notification of Corporate Management:

The Incident Commander is to call Harold Roberts, Ron Hochstein or David Frydenlund immediately.

- Harold Roberts (Executive Vice President).....303-389-4160 (office)
303-756-9050 (home)
303-902-2870 (cell)
- Ron Hochstein (President/CEO).....604-689-7842 (office)
604-931-6334 (home)
604-377-1167 (cell)
- .. David Frydenlund (Vice President).....303-628-7798 (office)
303-221-0098 (home)
303-808-6648 (cell)

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19. Inspect facility for residual concentrations of anhydrous ammonia, paying particular attention to low points. The RSO or Safety Coordinator will make a determination if it is safe for personnel to re-enter the facility or any portion of the facility or whether or not any portion of the facility must remain shut down;

20. Inspect facility for damage that may have resulted from a fire or explosion and identify any of the following types of damage to facilities

- Structural damage that could pose a hazard to workers. Any such areas should be cordoned off as appropriate;
- Damage or disability to equipment that is required to prevent releases of radionuclides exceeding regulatory limits, to prevent exposures to radioactive materials exceeding regulatory limits or to mitigate the consequences of an accident, when:
 - The equipment is required to be available and operable when it is disabled or fails to function; and
 - No redundant equipment is available and operable to perform the required safety function.

In the event of any such damage, the Incident Commander or RSO will make a determination if it is safe for personnel to re-enter the facility or any portion of the facility or whether or not any portion of the facility must be shut down because it cannot be operated safely and in accordance with all license or permit conditions, laws and regulations; and

- Damage to any licensed material or any device, container or equipment containing licensed material.
21. The Incident Commander or RSO will make a determination if it is safe for personnel to re-enter the facility or any portion of the facility or whether or not any portion of the facility must remain shut down;
22. The Incident Commander will make the decision to terminate the emergency or enter into recover mode.
23. Notification of Regulatory Agencies:

A member of Mill management or Corporate management will notify the following regulating agencies as indicated below:

- Immediate Report to UDEQ may be necessary

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The State of Utah, Division of Radiation Control (801-536-4250) must be notified:

- Immediately if the event involved byproduct, source or special nuclear material possessed by the Mill that may have caused or threatens to cause any individual to receive doses at the levels specified in 10 CFR 20.2202 (a)(1) or the release of radioactive material inside or outside of the restricted area that could cause an individual to receive an intake five times the annual permissible intake as specified in 10 CFR 20.2202(a)(2); and
- as soon as possible, but not later than 4 hours after the discovery of an event that prevents immediate protective actions necessary to avoid exposures to radiation or radioactive materials that could exceed regulatory limits or releases of licensed material that could exceed regulatory limits (events may include fires, explosions, toxic gas releases etc.) (see 10 CFR 40.60)

- 24 Hour Report to UDEQ may be necessary

The State of Utah, Division of Radiation Control (801-536-4250) must be notified within 24 hours after the discovery of:

- any of the events listed in 10 CFR 40.60. ; or
- any of the events listed in 10 CFR 20.2202(b).

- Report to MSHA

Any fire at the Mill facility must be reported within 15 minutes to the MSHA -1-800-746-1553.

24. Written Reports

The RSO will prepare a written report of the incident for Mill files. In addition, the RSO will prepare a written report and submit it to the State of Utah Division of Radiation Control within 30 days of the incident. The written report will contain the information required by 10 CFR 20.2203(b) and 10 CFR 40.60 (c)(2), as applicable.

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APPENDIX C

EMERGENCY RESPONSE PROCEDURE FOR A RELEASE OF PROPANE

(See also Section 2.1.3 of the Emergency Response Plan)

The following steps will be followed for an uncontrolled release of propane. The steps should be followed in the order set out below, unless more than one crew is mobilized, in which case some of the steps can be taken simultaneously by different crews. The Incident Commander has the authority to vary from the steps set out below if he deems it necessary in the circumstances to protect public health, safety or the environment.

CAUTION: PROPANE IS EXTREMELY FLAMMABLE. RISK OF FIRE OR EXPLOSION

1. A release of propane would most likely occur suddenly. The person who would first witness the release should immediately contact his or her supervisor who would activate the evacuation alarm by using the "dial 184" notification system.
2. Evacuate all personnel from the Mill site to a location upwind of the spill, and account for all personnel, including all contractors and visitors at the Mill and all ore, product and reagent truck drivers, in accordance with the Emergency Evacuation and Shutdown Procedure described in Appendix J.
3. Determine Incident Commander. The Incident Commander will be the Mill Manager, or in his absence the Mill Superintendent, or in the absence of both the Mill Manager and the Mill Superintendent, the RSO. Shift Foremen are in charge and are responsible for all emergency procedures until the Incident Commander arrives.
4. Determine crews that may be required (see Section 4.2.2 of the Plan for a discussion of the available crews at the disposal of the Incident Commander).
5. Mobilize trained personnel and emergency equipment such as SCBAs, first aid equipment etc. See U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration 2008 Emergency Response Guidebook (the "DOT Guidebook") for appropriate protective clothing. In that Guidebook, propane has an ID No. of 1075 and is covered by Guide No. 115. A copy of Guide 115 is attached to this Appendix.
6. Initiate rescue operations for any people who may be trapped by the release; do this only with properly trained and equipped personnel.
7. In the event of a spill or leak, follow the procedures set out under the heading "Spill or Leak" in Guide No. 115.

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8. Guard against possible fires by shutting off electrical circuits, isolating gas lines and eliminating ignition sources from affected areas. See Exhibit 7 for a list and locations of main shut-off valves.
9. In the event of fire, follow procedures set out under the heading "Fire" in Guide No. 115.
10. Isolate utility lines affected by the fire.
11. Extinguish the fire and post a fire watch for flare-ups.
12. In cases where the fire is not extinguished within thirty minutes of discovery, the area must be barricaded off after extinguishing and left undisturbed until released by MSHA and DUSA management.
13. Attend to any injured persons:
 - One of the following EMT-trained personnel should be contacted, if they are on-site to aid in the event of any injuries to personnel:
 - David Turk
 - Move victim to fresh air;
 - Give artificial respiration if victim is not breathing;
 - Administer oxygen if breathing is difficult;
 - Remove and isolate contaminated clothing and shoes;
 - Clothing frozen to the skin should be thawed before being removed;
 - In case of contact with liquefied gas, thaw frosted parts with lukewarm water;
 - In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin;
 - Control any bleeding;
 - Treat for shock, if necessary;
 - Immobilize any fractures and stabilize for transportation;
 - Scan the injured person for excessive alpha prior to transporting if time allows
 - (If alpha is excessive or there is no time to scan, notify the clinic/hospital personnel and the Radiation Safety Office);
 - Keep victim warm and quiet;
 - The Safety Coordinator or a Safety Technician will notify the following as needed:
 - Blanding Clinic 678-2254 or 678-3434 (930 N. 400 W.)
 - Blue Mountain Hospital, Blanding 678-3993 (802 S. 200 W.)
 - San Juan Hospital, Monticello 678-2830 or 587-2116 (364 W. 1st N.)
 - Ambulance Service, Blanding Dial 911
 - Ensure that medical personnel are aware of the materials involved and take precautions to protect themselves;

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notification of offsite authorities, and in any event within one hour after declaration of the emergency, if possible. This immediate notification is required because an uncontrolled release of propane that could result in an explosion is classified as an Alert.

16. Perform scans on personnel that may have been exposed to areas of high radiation. Perform bioassays if appropriate.

17. Notification of Mill Management

The Incident Commander will notify one of the following of all incidents, if not already alerted and part of the Emergency Response crew:

- R.E. Bartlett 435-678-2495 or 435-979-3893
- D. Turk 435-678-7802 or 435-459-9786
- R. Wallace 435-459-1093

18. Notification of Corporate Management:

The Incident Commander is to call Harold Roberts, Ron Hochstein or David Frydenlund immediately.

- Harold Roberts (Executive Vice President).....303-389-4160 (office)
303-756-9050 (home)
303-902-2870 (cell)
- Ron Hochstein (President/CEO).....604-689-7842 (office)
604-931-6334 (home)
604-377-1167 (cell)
- .. David Frydenlund (Vice President).....303-628-7798 (office)
303-221-0098 (home)
303-808-6648 (cell)

19. Inspect facility for residual concentrations of propane, paying particular attention to low points.

20. Inspect facility for damage that may have resulted from a fire or explosion and identify any of the following types of damage to facilities

- Structural damage that could pose a hazard to workers. Any such areas should be cordoned off as appropriate;

- Damage or disability to equipment that is required to prevent releases of radionuclides exceeding regulatory limits, to prevent exposures to radioactive materials exceeding regulatory limits or to mitigate the consequences of an accident, when:
 - The equipment is required to be available and operable when it is disabled or fails to function; and
 - No redundant equipment is available and operable to perform the required safety function.

In the event of any such damage, the Incident Commander or RSO will make a determination if it is safe for personnel to re-enter the facility or any portion of the facility or whether or not any portion of the facility must be shut down because it cannot be operated safely and in accordance with all license or permit conditions, laws and regulations;

- Damage to any licensed material or any device, container or equipment containing licensed material

21. The Incident Commander or RSO will make a determination if it is safe for personnel to re-enter the facility or any portion of the facility or whether or not any portion of the facility must remain shut down;

22. The Site Incident Commander will make the decision to terminate the emergency or enter into recover mode, or to escalate the emergency to a different category if necessary.

23. Notification of Regulatory Agencies:

A member of Mill management or Corporate management will notify the following regulating agencies as indicated below:

- Immediate Report to UDEQ may be necessary

The State of Utah, Division of Radiation Control (801-536-4250) must be notified:

- Immediately if the event involved byproduct, source or special nuclear material possessed by the Mill that may have caused or threatens to cause any individual to receive doses at the levels specified in 10 CFR 20.2202 (a)(1) or the release of radioactive material inside or outside of the restricted area that could cause an individual to receive an intake five times the annual permissible intake as specified in 10 CFR 20.2202(a)(2); and
- as soon as possible, but not later than 4 hours after the discovery of an event that prevents immediate protective actions necessary to avoid exposures to radiation or radioactive materials that could exceed regulatory limits or releases of licensed

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material that could exceed regulatory limits (events may include fires, explosions, toxic gas releases etc.) (see 10 CFR 40.60);

- 24 Hour Report to UDEQ may be necessary

The State of Utah, Division of Radiation Control (801-536-4250) must be notified within 24 hours after the discovery of:

- any of the events listed in 10 CFR 40.60.; or
- any of the events listed in 10 CFR 20.2202(b).

- Report to MSHA

Any fire or explosion at the Mill facility must be reported within 15 minutes to the MSHA -1-800-746-1553.

24. Written Reports

The RSO will prepare a written report of the incident for Mill files. In addition, the RSO will prepare a written report and submit it to the State of Utah Division of Radiation Control within 30 days of the incident. The written report will contain the information required by 10 CFR 20.2203(b) and 10 CFR 40.60 (c)(2), as applicable.

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APPENDIX D

EMERGENCY RESPONSE PROCEDURE FOR A LEACH TANK FAILURE OR SULFURIC ACID TANK FAILURE

(See also Sections 2.1.4 and 2.1.5 of the Emergency Response Plan)

The following steps will be followed for a leach tank failure or a sulfuric acid tank failure. The steps should be followed in the order set out below, unless more than one crew is mobilized, in which case some of the steps can be taken simultaneously by different crews. The Incident Commander has the authority to vary from the steps set out below if he deems it necessary in the circumstances to protect public health, safety or the environment.

1. The person who would first witness the tank failure should immediately contact his or her supervisor who would, as an immediate precautionary measure, isolate the spill or leak area in all directions for at least 150 feet. All unauthorized personnel will be required to stay out of this area.
2. Determine Incident Commander. The Incident Commander will be the Mill Manager, or in his absence the Mill Superintendent, or in the absence of both the Mill Manager and the Mill Superintendent, the RSO. Shift Foremen are in charge and are responsible for all emergency procedures until the Incident Commander arrives.
3. Determine crews that may be required (see Section 4.2.2 of the Plan for a discussion of the available crews at the disposal of the Incident Commander).
4. Mobilize trained personnel and emergency equipment such as SCBAs, first aid equipment etc. See the Material Data Safety Sheet for sulfuric acid, a copy of which is attached to this Appendix.
5. Initiate rescue operations for any people who may be trapped by the release; do this only with properly trained and equipped personnel.
6. Guard against possible fires by shutting off electrical circuits, isolating gas lines and eliminating ignition sources from affected areas. See Exhibit 7 for a list and locations of the main shut-off valves.
7. Attend to any injured persons:
 - One of the following EMT-trained personnel should be contacted, if they are on-site to aid in the event of any injuries to personnel:
 - David Turk
 - Move victim to fresh air;

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- Give artificial respiration if victim is not breathing;
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device;**
- Administer oxygen if breathing is difficult;
- Remove and isolate contaminated clothing and shoes;
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes;
- For minor skin contact, avoid spreading material on unaffected skin;
- Removal of solidified molten material from skin requires medical assistance;
- Control any bleeding;
- Treat for shock, if necessary;
- Immobilize any fractures and stabilize for transportation;
- Scan the injured person for excessive alpha prior to transporting if time allows
 - (If alpha is excessive or there is no time to scan, notify the clinic/hospital personnel and the RSO);
- Keep victim warm and quiet;
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed;
- The Safety Coordinator or a Safety Technician will notify the following as needed:
 - Blanding Clinic 678-2254 or 678-3434 (930 N. 400 W.)
 - Blue Mountain Hospital, Blanding 678-3993 (802 S. 200 W.)
 - San Juan Hospital, Monticello 678-2830 or 587-2116 (364 W. 1st N.)
 - Ambulance Service, Blanding Dial 911
- Ensure that medical personnel are aware of the materials involved and take precautions to protect themselves; and
- If the Mill ambulance is used, an attendant must ride with the injured in addition to the driver, except where the injured could normally be transported in a car or pickup.

8. Notification of Mill Management

The Incident Commander will notify one of the following of all incidents, if not already alerted and part of the Emergency Response crew:

- R.E. Bartlett 435-678-2495 or 435-979-3893
- D. Turk 435-678-7802 or 435-459-9786
- R. Wallace 435-459-1093

9. Notification of Corporate Management:

The Incident Commander is to call Harold Roberts, Ron Hochstein or David Frydenlund immediately.

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- Harold Roberts (Executive Vice President).....303-389-4160 (office)
 303-756-9050 (home)
 303-902-2870 (cell)
 - Ron Hochstein (President/CEO).....604-689-7842 (office)
 604-931-6334 (home)
 604-377-1167 (cell)
 - .. David Frydenlund (Vice President).....303-628-7798 (office)
 303-221-0098 (home)
 303-808-6648 (cell)
10. Initiate necessary steps to contain and/or neutralize the release, in accordance with precautions set out in the Material Safety Data Sheet attached to this Appendix.
11. In the case of a release from the sulfuric acid tank, remove any contaminated soil to the Mill's tailings cells for disposal, in accordance with the precautions set out in the Material Safety Data Sheet attached to this Appendix. Make any notifications required under the Mill's Spill Response Plan, a copy of which is attached to this Plan as Appendix L.
12. Inspect facility for damage that may have resulted from a leach tank failure and identify any of the following types of damage to facilities
- Structural damage that could pose a hazard to workers. Any such areas should be cordoned off as appropriate;
 - Damage or disability to equipment that is required to prevent releases of radionuclides exceeding regulatory limits, to prevent exposures to radioactive materials exceeding regulatory limits or to mitigate the consequences of an accident, when:
 - The equipment is required to be available and operable when it is disabled or fails to function; and
 - No redundant equipment is available and operable to perform the required safety function.

In the event of any such damage, the Incident Commander or RSO will make a determination if it is safe for personnel to re-enter the facility or any portion of the facility or whether or not any portion of the facility must be shut down because it cannot be operated safely and in accordance with all license or permit conditions, laws and regulations;
 - Damage to any licensed material or any device, container or equipment containing licensed material.

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13. The Incident Commander or RSO will make a determination if it is safe for personnel to re-enter the facility or any portion of the facility or whether or not any portion of the facility must remain shut down.

14. The Incident Commander will make the decision to terminate the emergency or enter into recover mode.

15. Notification of Regulatory Agencies:

A member of Mill management or Corporate management will notify the following regulating agencies as indicated below:

- Immediate Report to UDEQ may be necessary:

The State of Utah, Division of Radiation Control (801-536-4250) must be notified;

- Immediately if the event involved byproduct, source or special nuclear material possessed by the Mill that may have caused or threatens to cause any individual to receive doses at the levels specified in 10 CFR 20.2202 (a)(1) or the release of radioactive material inside or outside of the restricted area that could cause an individual to receive an intake five times the annual permissible intake as specified in 10 CFR 20.2202(a)(2); and
- as soon as possible, but not later than 4 hours after the discovery of an event that prevents immediate protective actions necessary to avoid exposures to radiation or radioactive materials that could exceed regulatory limits or releases of licensed material that could exceed regulatory limits (events may include fires, explosions, toxic gas releases etc.) (see 10 CFR 40.60);

- 24 Hour Report to UDEQ may be necessary:

The State of Utah, Division of Radiation Control (801-536-4250) must be notified within 24 hours after the discovery of:

- any of the events listed in 10 CFR 40.60; or
- any of the events listed in 10 CFR 20.2202(b).

- Report to MSHA

Not reportable to MSHA.

16. Written Reports

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The RSO will prepare a written report of the incident for Mill files. In addition, if notification is required to be submitted to the State under paragraph 15 above, the RSO will prepare a written report and submit it to the State of Utah Division of Radiation Control within 30 days of the incident. The written report will contain the information required by 10 CFR 20.2203(b) and 10 CFR 40.60 (c)(2), as applicable.

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Dial 911, 678-2916 or 678-2334

- Highway Patrol
Dial 911 or 587-2000
6. Report the fire to and request the assistance of the following Emergency offsite centers:
- Blanding Fire House and Sheriff's office:

Blanding Fire
350 West 200 South, Blanding
Phone number is 911
 - Sheriff's Office

297 West South Main, Monticello
Phone number is 911 or (435) 587-2237
7. Report the fire to the State of Utah Division of Radiation Control (801-536-4250) immediately after notification of offsite authorities, and in any event within one hour after declaration of the emergency, if possible. This immediate notification is required because a fire in the SX building is classified as an Alert.
8. Determine other crews that may be required (see Section 4.2.2 of the Plan for a discussion of the available crews at the disposal of the Incident Commander)
9. Rescue any victims of the fire; do this only with properly trained and equipped personnel.
10. Isolate utility lines affected by the fire and shut off all valves as appropriate. See Exhibit 7 for a list and locations of the main shut-off valves.
11. Extinguish the fire and post a fire watch for flare-ups.
12. In cases where the fire is not extinguished within thirty minutes of discovery, the area must be barricaded off after extinguishing and left undisturbed until released by MSHA and DUSA management.
13. Attend to any injured persons:
- One of the following EMT-trained personnel should be contacted, if they are on-site to aid in the event of any injuries to personnel:
 - David Turk
 - Give artificial respiration if necessary;
 - Control any bleeding;

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- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhered to skin;
- Treat for shock, if necessary;
- Immobilize any fractures and stabilize for transportation;
- Scan the injured person for excessive alpha prior to transporting if time allows
 - (If alpha is excessive or there is no time to scan, notify the clinic/hospital personnel and the RSO);
- The Safety Coordinator or a Safety Technician will notify the following as needed:
 - Blanding Clinic 678-2254 or 678-3434 (930 N. 400 W.)
 - Blue Mountain Hospital, Blanding 678-3993 (802 S. 200 W.)
 - San Juan Hospital, Monticello 678-2830 or 587-2116 (364 W. 1st N.)
 - Ambulance Service, Blanding Dial 911
- If the Mill ambulance is used, an attendant must ride with the injured person in addition to the driver, except where the injured person could normally be transported in a car or pickup.

14. Perform scans on personnel that may have been exposed to areas of high radiation. Perform bioassays if appropriate.

15. Notification of Mill Management

The Incident Commander will notify one of the following of all incidents, if not already alerted and part of the Emergency Response crew:

- R.E. Bartlett 435-678-2495 or 435-979-3893
- D. Turk 435-678-7802 or 435-459-9786
- R. Wallace 435-459-1093

16. Notification of Corporate Management:

The Incident Commander is to call Harold Roberts, Ron Hochstein or David Frydenlund immediately.

- Harold Roberts (Executive Vice President).....303-389-4160 (office)
 303-756-9050 (home)
 303-902-2870 (cell)
- Ron Hochstein (President/CEO).....604-689-7842 (office)
 604-931-6334 (home)
 604-377-1167 (cell)
- .. David Frydenlund (Vice President).....303-628-7798 (office)

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303-221-0098 (home)
303-808-6648 (cell)

17. Perform radiation surveys to determine if the fire has caused a dispersion of radioactive materials and record the results of the surveys. These surveys will be performed in various areas of the Mill's restricted area as well as outside of the restricted area, particularly in areas downwind of the fire. In addition, surveys will be taken in the vicinity of the nearest residence downwind of the fire.

18. Inspect facility for damage and identify any of the following types of damage to facilities

- Structural damage that could pose a hazard to workers. Any such areas should be cordoned off as appropriate;
- Damage or disability to equipment that is required to prevent releases of radionuclides exceeding regulatory limits, to prevent exposures to radioactive materials exceeding regulatory limits or to mitigate the consequences of an accident, when:
 - The equipment is required to be available and operable when it is disabled or fails to function; and
 - No redundant equipment is available and operable to perform the required safety function.

In the event of any such damage, the Incident Commander or RSO will make a determination if it is safe for personnel to re-enter the facility or any portion of the facility or whether or not any portion of the facility must be shut down because it cannot be operated safely and in accordance with all license or permit conditions, laws and regulations;

- Damage to any licensed material or any device, container or equipment containing licensed material

19. The Incident Commander or RSO will make a determination if it is safe for personnel to re-enter the facility or any portion of the facility or whether or not a portion of the facility must remain shut down.

20. The Incident Commander will make the decision to terminate the emergency or enter recovery mode or to escalate the emergency to a different category if necessary.

21. Notification of Regulatory Agencies:

A member of Mill management or Corporate management will notify the following regulating agencies as indicated below:

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- Immediate Report to UDEQ may be necessary

The State of Utah, Division of Radiation Control (801-536-4250) must be notified:

- Immediately if the event involved byproduct, source or special nuclear material possessed by the Mill that may have caused or threatens to cause any individual to receive doses at the levels specified in 10 CFR 20.2202 (a)(1) or the release of radioactive material inside or outside of the restricted area that could cause an individual to receive an intake five times the annual permissible intake as specified in 10 CFR 20.2202(a)(2); and
- as soon as possible, but not later than 4 hours after the discovery of an event that prevents immediate protective actions necessary to avoid exposures to radiation or radioactive materials that could exceed regulatory limits or releases of licensed material that could exceed regulatory limits (events may include fires, explosions, toxic gas releases etc.) (see 10 CFR 40.60);

- 24 Hour Report to UDEQ may be necessary

The State of Utah, Division of Radiation Control (801-536-4250) must be notified within 24 hours after the discovery of:

- any of the events listed in 10 CFR 40.60.; or
- any of the events listed in 10 CFR 20.2202(b).

- Report to MSHA

Any fire at the Mill facility must be reported within 15 minutes to the MSHA -1-800-746-1553.

22. Any contaminated soil identified off of the Mill property will be cleaned up and disposed of in the Mill's tailings cells.

23. Written Reports

The RSO will prepare a written report of the incident for Mill files. In addition, the RSO will prepare a written report and submit it to the State of Utah Division of Radiation Control within 30 days of the incident. The written report will contain the information required by 10 CFR 20.2203(b) and 10 CFR 40.60 (c)(2), as applicable.

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APPENDIX F

EMERGENCY RESPONSE PROCEDURE FOR A FIRE

(See also Section 2.1.7 of the Emergency Response Plan)

(See Appendix E for a fire in the Solvent Extraction Building)

The following steps will be followed for all fires, other than a fire in the SX building, which is addressed in Appendix E. The steps should be followed in the order set out below, unless more than one crew is mobilized, in which case some of the steps can be taken simultaneously by different crews. The Incident Commander has the authority to vary from the steps set out below if he deems it necessary in the circumstances to protect public health, safety or the environment.

1. The fire will be reported by the individual who finds the incident by activating the fire paging system by dialing 185 on any telephone in the area and announcing the location of the fire over the paging system. This announcement will be repeated twice, for a total of three announcements. When the paging system cycles through, the fire siren (alternating frequency) will automatically sound for approximately forty-five seconds then automatically shut off, allowing radio communications to resume.
2. Evacuate all personnel and account for all personnel, including all contractors and visitors at the Mill and all ore, product and reagent truck drivers, in accordance with the Emergency Evacuation and Shutdown Procedure described in Appendix J.
3. Determine Incident Commander. The Incident Commander will be the Mill Manager, or in his absence the Mill Superintendent, or in the absence of both the Mill Manager and the Mill Superintendent, the RSO. Shift Foremen are in charge and are responsible for all emergency procedures until the Incident Commander arrives.
4. Mobilize the fire crew.
5. Determine other crews that may be required (see Section 4.2.2 of the Plan for a discussion of the available crews at the disposal of the Incident Commander)
6. Rescue any victims of the fire; do this only with properly trained and equipped personnel.
7. Isolate utility lines affected by the fire and shut off all valves as appropriate. See Exhibit 7 for a list and locations of the main shut-off valves.
8. Extinguish the fire and post a fire watch for flare-ups.

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9. If the Incident Commander determines that the fire is not capable of being controlled by the Mill's Emergency Response crews, then Report the fire to the following Emergency offsite centers:

- Blanding Fire House and Sheriff's office:

Blanding Fire
350 West 200 South, Blanding
Phone number is 911

- Sheriff's Office
297 West South Main, Monticello
Phone number is 911 or (435) 587-2237

10. In cases where the fire is not extinguished within thirty minutes of discovery, the area must be barricaded off after extinguishing and left undisturbed until released by MSHA and DUSA management.

11. Attend to any injured persons:

- One of the following EMT-trained personnel should be contacted, if they are on-site to aid in the event of any injuries to personnel:
 - David Turk
- Give artificial respiration if necessary;
- Control any bleeding;
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhered to skin;
- Treat for shock, if necessary;
- Immobilize any fractures and stabilize for transportation;
- Scan the injured person for excessive alpha prior to transporting if time allows
 - (If alpha is excessive or there is no time to scan, notify the clinic/hospital personnel and the Radiation Safety Office);
- The Safety Coordinator or a Safety Technician will notify the following as needed:
 - Blanding Clinic 678-2254 or 678-3434 (930 N. 400 W.)
 - Blue Mountain Hospital, Blanding 678-3993 (802 S. 200 W.)
 - San Juan Hospital, Monticello 678-2830 or 587-2116 (364 W. 1st N.)
 - Ambulance Service, Blanding Dial 911
- If the Mill ambulance is used, an attendant must ride with the injured person in addition to the driver, except where the injured person could normally be transported in a car or pickup.

12. Perform scans on personnel that may have been exposed to areas of high radiation. Perform bioassays if appropriate.

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In the event of any such damage, the Incident Commander or RSO will make a determination if it is safe for personnel to re-enter the facility or any portion of the facility or whether or not any portion of the facility must be shut down because it cannot be operated safely and in accordance with all license or permit conditions, laws and regulations;

- Damage to any licensed material or any device, container or equipment containing licensed material
17. The Incident Commander or RSO will make a determination if it is safe for personnel to re-enter the facility or any portion of the facility or whether or not a portion of the facility must remain shut down
18. The Incident Commander will make the decision to terminate the emergency or enter recover mode or to escalate the emergency to a different category if necessary.
19. Notification of Regulatory Agencies:

A member of Mill management or Corporate management will notify the following regulating agencies as indicated below:

- Immediate Report to UDEQ may be necessary

The State of Utah, Division of Radiation Control (801-536-4250) must be notified:

- Immediately if the event involved byproduct, source or special nuclear material possessed by the Mill that may have caused or threatens to cause any individual to receive doses at the levels specified in 10 CFR 20.2202 (a)(1) or the release of radioactive material inside or outside of the restricted area that could cause an individual to receive an intake five times the annual permissible intake as specified in 10 CFR 20.2202(a)(2); and
- as soon as possible, but not later than 4 hours after the discovery of an event that prevents immediate protective actions necessary to avoid exposures to radiation or radioactive materials that could exceed regulatory limits or releases of licensed material that could exceed regulatory limits (events may include fires, explosions, toxic gas releases etc.) (see 10 CFR 40.60);

- 24 Hour Report to UDEQ may be necessary

The State of Utah, Division of Radiation Control (801-536-4250) must be notified within 24 hours after the discovery of:

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- any of the events listed in 10 CFR 40.60.; or
- any of the events listed in 10 CFR 20.2202(b).

- Report to MSHA

Any fire at the Mill facility must be reported within 15 minutes to the MSHA -1-800-746-1553 if there is an injury that has a reasonable potential to cause death.

20. Written Reports

The RSO will prepare a written report of the incident for Mill files.

In addition, if a report is required to be given to the State of Utah, Division of Radiation Control as indicated in paragraph 19 above, the RSO will prepare a written report and submit it to the State of Utah Division of Radiation Control within 30 days of such initial report. The written report will contain the information required by 10 CFR 20.2203(b) and 10 CFR 40.60 (c)(2), as applicable.

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APPENDIX G

EMERGENCY RESPONSE PROCEDURE FOR A TORNADO OR MAJOR EARTHQUAKE

(See also Sections 2.1.8 and 2.1.9 of the Emergency Response Plan)

The following steps will be followed for a tornado or major earthquake. The steps should be followed in the order set out below, unless more than one crew is mobilized, in which case some of the steps can be taken simultaneously by different crews. The Incident Commander has the authority to vary from the steps set out below if he deems it necessary in the circumstances to protect public health, safety or the environment.

1. In the case of a tornado, seek cover in areas where there is no potential for falling objects. Such as in a doorway. After the incident has concluded, the emergency evacuation alarm will be sounded and a head count will then take place. After all employees have been accounted for, the emergency response activities will begin, such as shutting down valves, flows, etc...
2. In case of a major earthquake, seek cover in areas where there is no potential for falling objects. Such as in a doorway. After the incident has concluded, the emergency evacuation alarm will be sounded and a head count will then take place. After all employees have been accounted for, the emergency response activities will begin, such as shutting down valves, flows, etc...
3. Determine Incident Commander. The Incident Commander will be the Mill Manager, or in his absence the Mill Superintendent, or in the absence of both the Mill Manager and the Mill Superintendent, the RSO. Shift Foremen are in charge and are responsible for all emergency procedures until the Incident Commander arrives.
4. If the earthquake or tornado has caused one of the other incidents referred to in the Plan, refer to the specific procedures to be followed for that incident set out in Section 2.1 of the Plan and the applicable Appendix A through I.
5. Determine the crews that may be required (see Section 4.2.2 of the Plan for a discussion of the available crews at the disposal of the Incident Commander)
6. Rescue any victims of the tornado or earthquake; do this only with properly trained and equipped personnel.
7. Isolate utility lines and turn off any valves etc necessary in order to prevent fires or explosions. See Exhibit 7 for a list and locations of the main shut-off valves.
8. Attend to any injured persons:

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604-377-1167 (cell)

- .. David Frydenlund (Vice President).....303-628-7798 (office)
 303-221-0098 (home)
 303-808-6648 (cell)

12. Perform radiation surveys to determine if the tornado or earthquake has caused a dispersion of radioactive materials and record the results of the surveys. In the case of a tornado, those surveys will be performed in various areas of the Mill's restricted area as well as outside of the restricted area, particularly in areas along the path of the tornado.

13. Inspect facility for damage and identify any of the following types of damage to facilities

- Structural damage that could pose a hazard to workers. Any such areas should be cordoned off as appropriate;
- Damage or disability to equipment that is required to prevent releases of radionuclides exceeding regulatory limits, to prevent exposures to radioactive materials exceeding regulatory limits or to mitigate the consequences of an accident, when:
 - The equipment is required to be available and operable when it is disabled or fails to function; and
 - No redundant equipment is available and operable to perform the required safety function.

In the event of any such damage, the Incident Commander or RSO will make a determination if it is safe for personnel to re-enter the facility or any portion of the facility or whether or not any portion of the facility must be shut down because it cannot be operated safely and in accordance with all license or permit conditions, laws and regulations;

- Damage to any licensed material or any device, container or equipment containing licensed material

14. The Incident Commander or RSO will make a determination if it is safe for personnel to re-enter the facility or any portion of the facility or whether or not a portion of the facility must remain shut down.

15. The Site Incident Commander will make the decision to terminate the emergency or enter recover mode or to escalate the emergency to a different category if necessary.

16. Notification of Regulatory Agencies:

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A member of Mill management or Corporate management will notify the following regulating agencies as indicated below:

- Immediate Report to UDEQ may be necessary

The State of Utah, Division of Radiation Control (801-536-4250) must be notified:

- Immediately if the event involved byproduct, source or special nuclear material possessed by the Mill that may have caused or threatens to cause any individual to receive doses at the levels specified in 10 CFR 20.2202 (a)(1) or the release of radioactive material inside or outside of the restricted area that could cause an individual to receive an intake five times the annual permissible intake as specified in 10 CFR 20.2202(a)(2); and
- as soon as possible, but not later than 4 hours after the discovery of an event that prevents immediate protective actions necessary to avoid exposures to radiation or radioactive materials that could exceed regulatory limits or releases of licensed material that could exceed regulatory limits (events may include fires, explosions, toxic gas releases etc.) (see 10 CFR 40.60)

- 24 Hour Report to UDEQ may be necessary

The State of Utah, Division of Radiation Control (801-536-4250) must be notified within 24 hours after the discovery of:

- any of the events listed in 10 CFR 40.60.; or
- any of the events listed in 10 CFR 20.2202(b).

- Report to MSHA

Any tornado or major earthquake that resulted in structural damage or potentially life threatening injuries at the Mill facility must be reported within 15 minutes to the MSHA -1-800-746-1553.

17. Any contaminated soil identified off of the Mill property will be cleaned up and disposed of in the Mill's tailings cells.

18. Written Reports

The RSO will prepare a written report of the incident for Mill files. In addition, if a report has been given to the State under paragraph 61 above, the RSO will prepare a written report and submit it to the State of Utah Division of Radiation Control within 30 days of the incident. The written report will contain the information required by 10 CFR 20.2203(b) and 10 CFR 40.60 (c)(2), as applicable.

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APPENDIX H

EMERGENCY RESPONSE PROCEDURE FOR TAILINGS ACCIDENTS

(See also Sections 2.1.10.1, 2.1.10.2 and 2.1.10.3 of the Emergency Response Plan)

The following steps will be followed in the event of a tailings accident (flood water breaching, structural failure of tailings dike or damage to tailings transport system). The steps should be followed in the order set out below, unless more than one crew is mobilized, in which case some of the steps can be taken simultaneously by different crews. The Incident Commander has the authority to vary from the steps set out below if he deems it necessary in the circumstances to protect public health, safety or the environment.

1. The person who first witnesses the tailings accident should immediately contact his or her supervisor, who will initiate the procedures set out below.
2. Evacuate personnel from areas around the impacted area as necessary to prevent possible injury to those personnel. Access to those areas will be limited to authorized personnel.
3. Turn off all feed of tailings or solutions to the tailings cells and to the tailings transport system.
4. Determine Incident Commander. The Incident Commander will be the Mill Manager, or in his absence the Mill Superintendent, or in the absence of both the Mill Manager and the Mill Superintendent, the RSO. Shift Foremen are in charge and are responsible for all emergency procedures until the Incident Commander arrives.
5. Notification of Mill Management

The Supervisor will notify one of the following if not already alerted and part of the Emergency Response crew:

- R.E. Bartlett 435-678-2495 or 435-979-3893
- D. Turk 435-678-7802 or 435-459-9786
- R. Wallace 435-459-1093

6. To the extent possible, solutions from an impacted tailings cell will be pumped to an un-impacted tailings cell.
7. Notification of Corporate Management:

The Incident Commander is to call Harold Roberts, Ron Hochstein or David Frydenlund immediately.

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- Harold Roberts (Executive Vice President).....303-389-4160 (office)
303-756-9050 (home)
303-902-2870 (cell)
- Ron Hochstein (President/CEO).....604-689-7842 (office)
604-931-6334 (home)
604-377-1167 (cell)
- .. David Frydenlund (Vice President).....303-628-7798 (office)
303-221-0098 (home)
303-808-6648 (cell)

8. In the event of damage to the transport system, the system will be shut down and repaired. Any spills will be cleaned up and deposited in the tailings cells.
9. In the case of flood water breaching the retention system or structural failure of the tailings dikes, mobilize large operating equipment to construct temporary earthen dikes or berms downgradient to the impacted dike, if appropriate in the circumstances.
10. In the case of flood water breaching the retention system or structural failure of the tailings dikes, report the incident to the State of Utah Division of Radiation Control (801-536-4250) within 24 hours of the discovery of the incident.
11. Take other measures and perform remediation work as necessary and in accordance with advice and instructions of the State of Utah Division of Radiation Control.
12. Other reporting
 - Report to MSHA

Does not have to be reported.

 - Report to State of Utah Department of Natural Resources, Division of Dam Safety
 - A written report will be made to the State of Utah Division of Radiation Control within 5 days after the incident.

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- Blanding Police
Dial 911, 678-2916 or 678-2334
 - Highway Patrol
Dial 911 or 587-2000
5. Notify the State of Utah Division of Radiation Control (801-536-4250) immediately after notification of offsite authorities, and in any event within one hour after declaration of the emergency, if possible.

6. Notification of Mill Management

The Incident Commander will notify one of the following of all incidents, if not already alerted and part of the Emergency Response crew:

- R.E. Bartlett 435-678-2495 or 435-979-3893
- D. Turk 435-678-7802 or 435-459-9786
- R. Wallace 435-459-1093

7. Notification of Corporate Management:

The Incident Commander is to call Harold Roberts, Ron Hochstein or David Frydenlund immediately.

- Harold Roberts (Executive Vice President),.....303-389-4160 (office)
303-756-9050 (home)
303-902-2870 (cell)
- Ron Hochstein (President/CEO).....604-689-7842 (office)
604-931-6334 (home)
604-377-1167 (cell)
- .. David Frydenlund (Vice President).....303-628-7798 (office)
303-221-0098 (home)
303-808-6648 (cell)

8. Follow instructions given by offsite emergency response officials.

9. To the extent that the threat or bomb results in any of the incidents, such as fire, release of anhydrous ammonia etc. described elsewhere in the Plan, follow the specific procedures applicable to such incidents set out in Section 2.1 of the Plan and in Appendices a through I, to the extent applicable.

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10. The Site Incident Commander will make the decision to terminate the emergency or enter into recover mode or to escalate the emergency to a different category if necessary.

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APPENDIX J

EMERGENCY EVACUATION AND SHUT DOWN PROCEDURE

1. Activate evacuation alarm by using the "dial 184" notification system. Evacuate and account for all personnel.
2. Personnel are to assemble in one of the following areas:
 - The parking lot south of the office building;
 - The scalehouse;
 - The north side of Tailings Cell 1, or
 - North of the Mill.

The area will be designated by the Incident Commander or Shift Foreman.

3. Specific Procedure for Operations Personnel
 - See specific emergency shutdown procedure for Operations by area under the relevant Operating Procedure for your area.
 - A list of the main shut-off valves and their locations is set out in Exhibit 7 to the Plan.
 - All employees not mentioned under Operating Procedures are to immediately report to the assembly area and congregate by crew so that all persons can be accounted for. As employees leave their work areas, they must pass the word to evacuate to any persons who may not be aware of the emergency.
 - After the Mill has been determined to be safe for re-entry, employees will be verbally notified to return to their work stations.

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FIGURE 1
FIRE SYSTEM SCHEMATIC DRAWING

Appendix

A

ID Guide Name of Material
No. No.

— 112 Ammonium nitrate-fuel oil mixtures
— 158 Biological agents
— 112 Blasting agent, n.o.s.
— 112 Explosive A
— 112 Explosive B
— 114 Explosive C
— 112 Explosives, division 1.1, 1.2, 1.3, 1.5 or 1.6
— 114 Explosives, division 1.4
— 153 Toxins
1001 116 Acetylene
1001 116 Acetylene, dissolved
1002 122 Air, compressed
1003 122 Air, refrigerated liquid (cryogenic liquid)
1003 122 Air, refrigerated liquid (cryogenic liquid), non-pressurized
1005 125 Ammonia, anhydrous
1005 125 Anhydrous ammonia
1006 121 Argon
1006 121 Argon, compressed
1008 125 Boron trifluoride
1008 125 Boron trifluoride, compressed
1009 126 Bromotrifluoromethane
1009 126 Refrigerant gas R-13B1
1010 116P Butadienes, stabilized
1010 116P Butadienes and hydrocarbon mixture, stabilized
1011 115 Butane
1011 115 Butane mixture
1012 115 Butylene
1013 120 Carbon dioxide

ID Guide Name of Material
No. No.

1013 120 Carbon dioxide, compressed
1014 122 Carbon dioxide and Oxygen mixture
1014 122 Carbon dioxide and Oxygen mixture, compressed
1014 122 Oxygen and Carbon dioxide mixture
1014 122 Oxygen and Carbon dioxide mixture, compressed
1015 126 Carbon dioxide and Nitrous oxide mixture
1015 126 Nitrous oxide and Carbon dioxide mixture
1016 119 Carbon monoxide
1016 119 Carbon monoxide, compressed
1017 124 Chlorine
1018 126 Chlorodifluoromethane
1018 126 Refrigerant gas R-22
1020 126 Chloropentafluoroethane
1020 126 Refrigerant gas R-115
1021 126 1-Chloro-1,2,2,2-tetrafluoroethane
1021 126 Chlorotetrafluoroethane
1021 126 Refrigerant gas R-124
1022 126 Chlorotrifluoromethane
1022 126 Refrigerant gas R-13
1023 119 Coal gas
1023 119 Coal gas, compressed
1026 119 Cyanogen
1026 119 Cyanogen gas
1027 115 Cyclopropane
1028 126 Dichlorodifluoromethane
1028 126 Refrigerant gas R-12
1029 126 Dichlorofluoromethane
1029 126 Refrigerant gas R-21

POTENTIAL HAZARDS**HEALTH**

- **TOXIC; may be fatal if inhaled, ingested or absorbed through skin.**
- Vapors are extremely irritating and corrosive.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

FIRE OR EXPLOSION

- Some may burn but none ignite readily.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Some of these materials may react violently with water.
- Cylinders exposed to fire may vent and release toxic and/or corrosive gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

PUBLIC SAFETY

- **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations **ONLY**; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION**Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

EMERGENCY RESPONSE**FIRE****Small Fire**

- Dry chemical or CO₂.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Do not get water inside containers.
- Damaged cylinders should be handled only by specialists.

Fire Involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. • ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Do not direct water at spill or source of leak.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material. • Isolate area until gas has dispersed.

FIRST AID

- Move victim to fresh air. • Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- **In case of contact with Hydrogen fluoride, anhydrous (UN1052), flush skin and eyes with water for 5 minutes; then, for skin exposures rub on a calcium/jelly combination; for eyes flush with a water/calcium solution for 15 minutes.**
- Keep victim warm and quiet. • Keep victim under observation.
- Effects of contact or inhalation may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

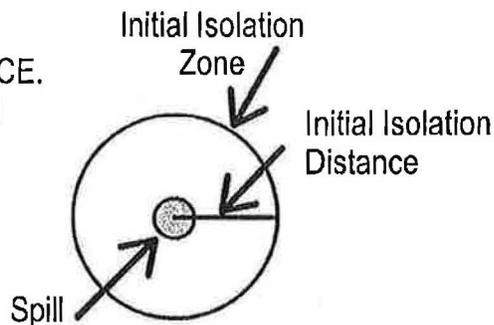
Appendix

B

HOW TO USE TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

- (1) The responder should already have:
 - Identified the material by its ID Number and Name; (if an ID Number cannot be found, use the Name of Material index in the blue-bordered pages to locate that number.)
 - Found the three-digit guide for that material in order to consult the emergency actions recommended jointly with this table;
 - **Noted the wind direction.**
- (2) Look in Table 1 (the green-bordered pages) for the ID Number and Name of the Material involved in the incident. Some ID Numbers have more than one shipping name listed—look for the specific name of the material. (If the shipping name is not known and Table 1 lists more than one name for the same ID Number, use the entry with the largest protective action distances.)
- (3) Determine if the incident involves a SMALL or LARGE spill and if DAY or NIGHT. Generally, a SMALL SPILL is one which involves a single, small package (e.g., a drum containing up to approximately 200 liters), a small cylinder, or a small leak from a large package. A LARGE SPILL is one which involves a spill from a large package, or multiple spills from many small packages. DAY is any time after sunrise and before sunset. NIGHT is any time between sunset and sunrise.

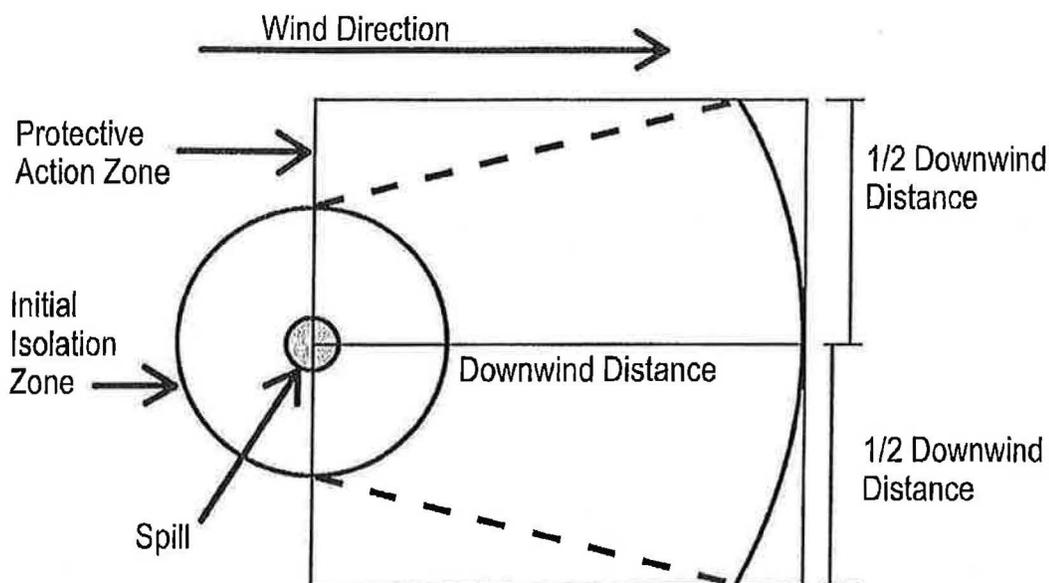
- (4) Look up the INITIAL ISOLATION DISTANCE. Direct all persons to move, in a crosswind direction, away from the spill to the distance specified—in meters and feet.



- (5) Look up the initial PROTECTIVE ACTION DISTANCE shown in Table 1. For a given material, spill size, and whether day or night, Table 1 gives the downwind distance—in kilometers and miles—for which protective actions should be considered. For practical purposes, the Protective Action Zone (i.e., the area in which people are at risk of harmful exposure) is a square, whose length and width are the same as the downwind distance shown in Table 1.

- (6) Initiate Protective Actions to the extent possible, beginning with those closest to the spill site and working away from the site in the downwind direction. When a water-reactive TIH producing material is spilled into a river or stream, the source of the toxic gas may move with the current or stretch from the spill point downstream for a substantial distance.

The shape of the area in which protective actions should be taken (the Protective Action Zone) is shown in this figure. The spill is located at the center of the small circle. The larger circle represents the INITIAL ISOLATION zone around the spill.



NOTE 1: See "Introduction To Table 1 - Initial Isolation And Protective Action Distances" for factors which may increase or decrease Protective Action Distances.

NOTE 2: See Table 2 – Water-Reactive Materials which Produce Toxic Gases for the list of gases produced when these materials are spilled in water.

Call the emergency response telephone number listed on the shipping paper, or the appropriate response agency as soon as possible for additional information on the material, safety precautions, and mitigation procedures.

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

Page 300

ID No.	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
		First ISOLATE in all Directions		Then PROTECT persons Downwind during-		First ISOLATE in all Directions		Then PROTECT persons Downwind during-	
		Meters	(Feet)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)	Meters	(Feet)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)
1005 1005	Ammonia, anhydrous Anhydrous ammonia	30 m	(100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m	(500 ft)	0.8 km (0.5 mi)	2.3 km (1.4 mi)
1008 1008	Boron trifluoride Boron trifluoride, compressed	30 m	(100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	300 m	(1000 ft)	1.9 km (1.2 mi)	4.8 km (3.0 mi)
1016 1016	Carbon monoxide Carbon monoxide, compressed	30 m	(100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	150 m	(500 ft)	0.7 km (0.5 mi)	2.7 km (1.7 mi)
1017	Chlorine	60 m	(200 ft)	0.4 km (0.3 mi)	1.6 km (1.0 mi)	600 m	(2000 ft)	3.5 km (2.2 mi)	8.0 km (5.0 mi)
1023 1023	Coal gas Coal gas, compressed	30 m	(100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m	(200 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)
1026 1026	Cyanogen Cyanogen gas	30 m	(100 ft)	0.2 km (0.1 mi)	0.9 km (0.5 mi)	150 m	(500 ft)	1.0 km (0.7 mi)	3.5 km (2.2 mi)
1040 1040	Ethylene oxide Ethylene oxide with Nitrogen	30 m	(100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m	(500 ft)	0.8 km (0.5 mi)	2.5 km (1.6 mi)
1045 1045	Fluorine Fluorine, compressed	30 m	(100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m	(500 ft)	0.8 km (0.5 mi)	3.1 km (1.9 mi)
1048	Hydrogen bromide, anhydrous	30 m	(100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	300 m	(1000 ft)	1.5 km (1.0 mi)	4.5 km (2.8 mi)
1050	Hydrogen chloride, anhydrous	30 m	(100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)	60 m	(200 ft)	0.3 km (0.2 mi)	1.4 km (0.9 mi)
1051	AC (when used as a weapon)	100 m	(300 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	1000 m	(3000 ft)	3.8 km (2.4 mi)	7.2 km (4.5 mi)
1051 1051	Hydrocyanic acid, aqueous solutions, with more than 20% Hydrogen cyanide	60 m	(200 ft)	0.2 km (0.1 mi)	0.6 km (0.4 mi)	400 m	(1250 ft)	1.6 km (1.0 mi)	4.1 km (2.5 mi)
1051 1051	Hydrogen cyanide, anhydrous, stabilized Hydrogen cyanide, stabilized								
1052	Hydrogen fluoride, anhydrous	30 m	(100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	300 m	(1000 ft)	1.7 km (1.1 mi)	3.6 km (2.2 mi)

PROTECTIVE CLOTHING

Street Clothing and Work Uniforms. These garments, such as uniforms worn by police and emergency medical services personnel, provide almost no protection from the harmful effects of dangerous goods.

Structural Fire Fighters' Protective Clothing (SFPC). This category of clothing, often called turnout or bunker gear, means the protective clothing normally worn by fire fighters during structural fire fighting operations. It includes a helmet, coat, pants, boots, gloves and a hood to cover parts of the head not protected by the helmet and facepiece. This clothing must be used with full-facepiece positive pressure self-contained breathing apparatus (SCBA). This protective clothing should, at a minimum, meet the OSHA Fire Brigades Standard (29 CFR 1910.156). Structural fire fighters' protective clothing provides limited protection from heat and cold, but may not provide adequate protection from the harmful vapors or liquids that are encountered during dangerous goods incidents. Each guide includes a statement about the use of SFPC in incidents involving those materials referenced by that guide. Some guides state that SFPC provides limited protection. In those cases, the responder wearing SFPC and SCBA may be able to perform an expedient, that is quick "in-and-out", operation. However, this type of operation can place the responder at risk of exposure, injury or death. The incident commander makes the decision to perform this operation only if an overriding benefit can be gained (i.e., perform an immediate rescue, turn off a valve to control a leak, etc.). The coverall-type protective clothing customarily worn to fight fires in forests or wildlands is **not** SFPC and is not recommended nor referred to elsewhere in this guidebook.

Positive Pressure Self-Contained Breathing Apparatus (SCBA). This apparatus provides a constant, positive pressure flow of air within the facepiece, even if one inhales deeply while doing heavy work. Use apparatus certified by NIOSH and the Department of Labor/Mine Safety and Health Administration in accordance with 42 CFR Part 84. Use it in accordance with the requirements for respiratory protection specified in OSHA 29 CFR 1910.134 (Respiratory Protection) and/or 29 CFR 1910.156 (f) (Fire Brigades Standard). Chemical-cartridge respirators or other filtering masks are not acceptable substitutes for positive pressure self-contained breathing apparatus. Demand-type SCBA does not meet the OSHA 29 CFR 1910.156 (f)(1)(i) of the Fire Brigades Standard. If it is suspected that a Chemical Warfare Agent (CW) is involved, the use of NIOSH-certified respirators with CBRN protection are highly recommended.

Chemical Protective Clothing and Equipment. Safe use of this type of protective clothing and equipment requires specific skills developed through training and experience. It is generally not available to, or used by, first responders. This type of special clothing may protect against one chemical, yet be readily permeated by chemicals for which it was not designed. Therefore, protective clothing should not be used unless it is compatible with the released material. This type of special clothing offers little or no protection against heat and/or cold. Examples of this type of equipment have been described as (1) Vapor Protective

Suits (NFPA 1991), also known as Totally-Encapsulating Chemical Protective (TECP) Suits or Level A* protection (OSHA 29 CFR 1910.120, Appendix A & B), and (2) Liquid-Splash Protective Suits (NFPA 1992 & 1993), also known as Level B* or C* protection (OSHA 29 CFR 1910.120, Appendix A & B) or suits for chemical/biological terrorism incidents (NFPA 1994), class 1, 2 or 3 Ensembles. No single protective clothing material will protect you from all dangerous goods. Do not assume any protective clothing is resistant to cold and/or heat or flame exposure unless it is so certified by the manufacturer. (NFPA 1991 5-3 Flammability Resistance Test and 5-6 Cold Temperature Performance Test)

* Consult glossary for additional protection levels under the heading "Protective Clothing".

Appendix

C

ID Guide Name of Material
No. No.

1063 115 Refrigerant gas R-40
1064 117 Methyl mercaptan
1065 121 Neon
1065 121 Neon, compressed
1066 121 Nitrogen
1066 121 Nitrogen, compressed
1067 124 Dinitrogen tetroxide
1067 124 Nitrogen dioxide
1069 125 Nitrosyl chloride
1070 122 Nitrous oxide
1070 122 Nitrous oxide, compressed
1071 119 Oil gas
1071 119 Oil gas, compressed
1072 122 Oxygen
1072 122 Oxygen, compressed
1073 122 Oxygen, refrigerated liquid
(cryogenic liquid)
1075 115 Butane
1075 115 Butane mixture
1075 115 Butylene
1075 115 Isobutane
1075 115 Isobutane mixture
1075 115 Isobutylene
1075 115 Liquefied petroleum gas
1075 115 LPG
1075 115 Petroleum gases, liquefied
1075 115 Propane
1075 115 Propane mixture
1075 115 Propylene
1076 125 CG
1076 125 Diphosgene
1076 125 DP
1076 125 Phosgene

ID Guide Name of Material
No. No.

1077 115 Propylene
1078 126 Dispersant gas, n.o.s.
1078 126 Refrigerant gas, n.o.s.
1079 125 Sulfur dioxide
1079 125 Sulphur dioxide
1080 126 Sulfur hexafluoride
1080 126 Sulphur hexafluoride
1081 116P Tetrafluoroethylene, stabilized
1082 119P Trifluorochloroethylene,
stabilized
1083 118 Trimethylamine, anhydrous
1085 116P Vinyl bromide, stabilized
1086 116P Vinyl chloride, stabilized
1087 116P Vinyl methyl ether, stabilized
1088 127 Acetal
1089 129 Acetaldehyde
1090 127 Acetone
1091 127 Acetone oils
1092 131P Acrolein, stabilized
1093 131P Acrylonitrile, stabilized
1098 131 Allyl alcohol
1099 131 Allyl bromide
1100 131 Allyl chloride
1104 129 Amyl acetates
1105 129 Amyl alcohols
1105 129 Pentanols
1106 132 Amylamines
1107 129 Amyl chloride
1108 128 n-Amylene
1108 128 1-Pentene
1109 129 Amyl formates
1110 127 n-Amyl methyl ketone
1110 127 Amyl methyl ketone

POTENTIAL HAZARDS**FIRE OR EXPLOSION**

- **EXTREMELY FLAMMABLE.**
- Will be easily ignited by heat, sparks or flames.
- Will form explosive mixtures with air.
- Vapors from liquefied gas are initially heavier than air and spread along ground.

CAUTION: Hydrogen (UN1049), Deuterium (UN1957), Hydrogen, refrigerated liquid (UN1966) and Methane (UN1971) are lighter than air and will rise. Hydrogen and Deuterium fires are difficult to detect since they burn with an invisible flame. Use an alternate method of detection (thermal camera, broom handle, etc.)

- Vapors may travel to source of ignition and flash back.
- Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

HEALTH

- Vapors may cause dizziness or asphyxiation without warning.
- Some may be irritating if inhaled at high concentrations.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire may produce irritating and/or toxic gases.

PUBLIC SAFETY

- **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.

EVACUATION**Large Spill**

- Consider initial downwind evacuation for at least 800 meters (1/2 mile).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

EMERGENCY RESPONSE**FIRE**

- **DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.**

CAUTION: Hydrogen (UN1049), Deuterium (UN1957) and Hydrogen, refrigerated liquid (UN1966) burn with an invisible flame. Hydrogen and Methane mixture, compressed (UN2034) may burn with an invisible flame.

Small Fire

- Dry chemical or CO₂.

Large Fire

- Water spray or fog.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- Prevent spreading of vapors through sewers, ventilation systems and confined areas.
- Isolate area until gas has dispersed.

CAUTION: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.

FIRST AID

- Move victim to fresh air. • Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Clothing frozen to the skin should be thawed before being removed.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin. • Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.