Lanes Creek Mine
Preliminary Assessment Report

Caribou County
State of Idaho

Department of Environmental Quality

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Table of Contents

List of Figures

List of Tables

List of Attachments

List of Acronyms

Acronym	Definition
BLM	United States Bureau of Land Management
BMP	Best Management Practices
DEQ	Idaho Department of Environmental Quality
EPA	United States Environmental Protection Agency
IDL	Idaho Department of Lands
IDWR	Idaho Department of Water Resources
mg/Kg	milligram per kilogram
mg/L	milligram per liter
PA	Preliminary Assessment
RMP	Area Wide Risk Management Plan
the site	Lanes Creek Mine
TMDL	Total Maximum Daily Loads
µg/L	microgram per liter
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

Section 1. Introduction

The Department of Environmental Quality (DEQ) was contracted by Region 10 of the United States Environmental Protection Agency (EPA) to provide technical support for completion of preliminary assessments at various mines within Idaho.

The DEQ often receives complaints or information about sites that may be contaminated with hazardous waste. These sites can include abandoned mines, rural airfields that have served as bases for aerial spraying, old landfills, illegal dumps, and abandoned industrial facilities that have known or suspected releases.

In February 2002, DEQ initiated a Preliminary Assessment Program to evaluate and prioritize assessment of such potentially contaminated sites. Due to accessibility and funding considerations, priority is given to sites where potential contamination poses the most substantial threat to human health or the environment.

For additional information about the Preliminary Assessment Program, see the following:

http://www.deq.idaho.gov/waste/prog_issues/mining/pa_program.cfm

This report presents the results of the preliminary assessment (PA) of the Lanes Creek Mine and also documents the interagency PA and risk screening activities conducted for this *inactive mine site* located within the boundaries of the *Southeast Idaho Phosphate Mining Resource Area* (Figure 1).

1.1 Background

This PA was conducted to ensure all historic mining sites within the Idaho Phosphate Mining Resource Area have been inspected and evaluated in accordance with the goals and objectives outlined in the *Area Wide Risk Management Plan* (DEQ, 2004), specifically:

- Protecting southeast Idaho's surface water resources by reducing risks to existing aquatic life and sensitive species from selenium and related trace metal concentrations in regional sub-basins and stream segments through (a) compliance with the National Toxics Rule and State Water Quality Regulation numeric criteria (b) development and demonstration of Best Management Practices (BMPs) to prevent future mining releases and associated risks from selenium and related trace metals in receiving streams and water bodies, and (c) development of a long-term monitoring plan for regional surface water resources to ensure effectiveness of risk reduction measures.
- Protecting wildlife, habitat, and ecological resources in southeast Idaho by reducing subpopulation risks to local wildlife to acceptable levels as established by risk-based action levels and by minimizing wildlife risks through the development and demonstration of effective BMPs for future mines.
- Maintaining and protecting multiple beneficial uses of the Southeast Idaho Phosphate Mining Resource Area by reducing livestock grazing risks and associated losses from selenium exposures in forage and drinking water sources

and by preventing potential future public health risks by prohibiting residential land use and development in the immediate vicinity of phosphate mining waste units and/or impacted areas.

- Protecting southeast Idaho's ground water resources by identifying, characterizing, and responding to groundwater contamination sources that may present potential public health or ecological risks and by developing and demonstrating BMPs to control future mining releases and associated risks from selenium and related trace metals in groundwater.

1.2 Site Overview

The Idaho Phosphate Mining Resource Area is located in Bear Lake and Caribou Counties, in the southeast corner of the state. There are a large number of historic mining sites within the phosphate field, although this preliminary assessment addresses only the Lanes Creek Mine (the site).

Lanes Creek Mine is located in Caribou County on private lands approximately 20 miles northeast of Soda Springs, in Township 7 South, Range 44 East, Section 4 and Township 6 South, Range 44 East Section 32. The land/private minerals are owned by and held under a fee lease from the Bear Lake Grazing Association, a cooperative of about 54 area ranchers (Lee, 2000). The Idaho Department of Lands is responsible for permitting of the mineral extraction at this site.

The general location of the mine is identified in Figure 1. Figure 2 shows the topography around the site, and Figure 3 presents an aerial view of the Lanes Creek Mine lease boundary, historic pit, and waste dumps. The former mine can be reached from Soda Springs by driving north along State Highway 34, then east along the Blackfoot River Road, and north on Lanes Creek Road.

1.3 Historical Perspective

The site was patented by George M. Pugmire in May 1888 under the Desert Land laws (Lee, 2000). Phosphate resource exploratory trenches were excavated in the general area of the mine by the United States Geologic Survey (USGS) and others between 1912 and 1975. In the early 1970's John Archer leased the land from the Bear Lake Grazing Company then later sold the lease to the Alumet Company. In the late 1970's the Idaho Department of Lands (IDL) approved a 1.5 million ton phosphate mine on the property. Alumet conducted exploratory drilling in 1974, 1977, and 1978 prior to the start of open pit mining (Lee, 2000).

Alumet opened the mine in 1978 and operated it until late 1988 or early 1989, when the operations were suspended, maintaining the availability for further limited production (Lee, 2000). During its early operations, ore was trucked to the Wooley Valley loadout facility then sent by rail to the Valley Nitrogen Company in Helm, California. Later ore was shipped to Simplot's Conda, Idaho plant by way of the South Maybe Mine's railroad facilities or over-road hauling.

The J.R. Simplot Company acquired Lanes Creek Mine in 1997 along with Alumet's other phosphate holdings. Simplot reshaped and partially reclaimed the south waste rock

dump in 1998 and has maintained the mines inactive/open status. Historic mining activities disturbed approximately 32 acres of the 336 acre lease.

1.4 Ownership

The property is owned by the Bear Lake Grazing Company. The J.R. Simplot Company currently holds the 336 acre mining lease to the Lanes Creek Mine.

1.5 2003 and 2004 Site Investigation

Simplot conducted preliminary environmental monitoring activities to characterized the mine site and indentify areas of potential concern during 2003 and 2004. The investigation collected samples from 14 surface water locations (May 2003, October 2003, and May 2004), 3 sediment locations (September, 2003) and 13 soil and vegetation locations (September 2003). For sample locations see Figures 3 and 4 in Attachment A. Selenium concentration in the sediment catchment ponds, and south waste dump runoff ranged from 19 ug/L to 1180 ug/L, with the highest concentrations of selenium found in the south waste dump runoff. Selenium concentrations in the mine pit sediment catchments, Lances Creek, and North Creek were below detection limits. Sediment sample results from the mine drainage channels upstream and downstream of the east sediment catchment resulted in 15.9 and 11.4 mg/kg of selenium, respectively.

Soil selenium concentrations from around the mine and waste dumps ranged from 0.2 mg/kg to 33.4 mg/kg. Soil samples collected from native pasture east of Lanes Creek Road had concentrations ranging from 0.15 mg/kg to 0.56 mg/kg. Analysis of waste dump vegetation samples resulted in selenium concentrations ranging from 0.3 mg/kg (forage composite) to 173 mg/kg (grass composite). Vegetation samples from the native pastures ranged from 0.2 mg/kg (forage composite) to 1.5 mg/kg (yarrow composite). The 2008 report containing sampling results and locations is included as Attachment A to this report.

Elevated levels of cadmium, chromium, copper, and/or vanadium were also discovered in one or more of the site's surface water, soil and vegetation samples.

1.6 Current and Potential Future Land Uses

The Lanes Creek Mine is accessible from Lanes Creek Road that branches from Blackfoot River Road then State Highway 34. Current land uses in the area are grazing, mining, and recreation. Recreational uses include; hiking, camping, horseback riding, off-road vehicle touring, hunting, and fishing.

The land on which the mine resides is private and used to graze cattle. Surrounding properties are owned and managed by the USFS and the US Bureau of Land Management (BLM) and private entities. See Figure 2 for land ownership. Federal lands remain open to future mining claims. Future land use on federally held properties is likely to remain consistent with current uses, dependent on federal policy and future mining claims. The privately owned properties, including those at the site, are open to future residential development as well as continued mining and grazing of livestock.

Figure 1. Location of the Lanes Creek Mine within the state of Idaho.

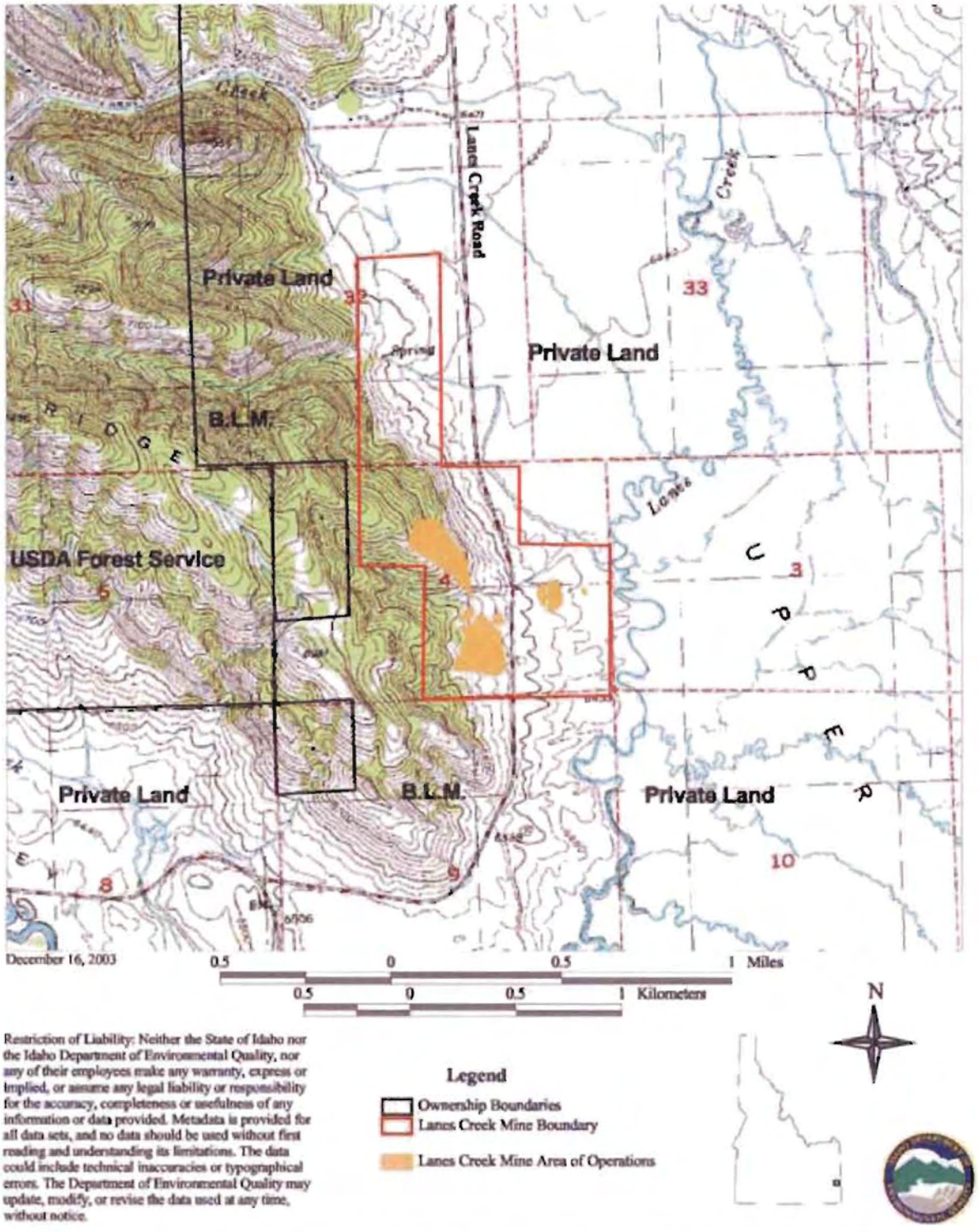

Figure 2. Topographic overview of the Lanes Creek Mine area.

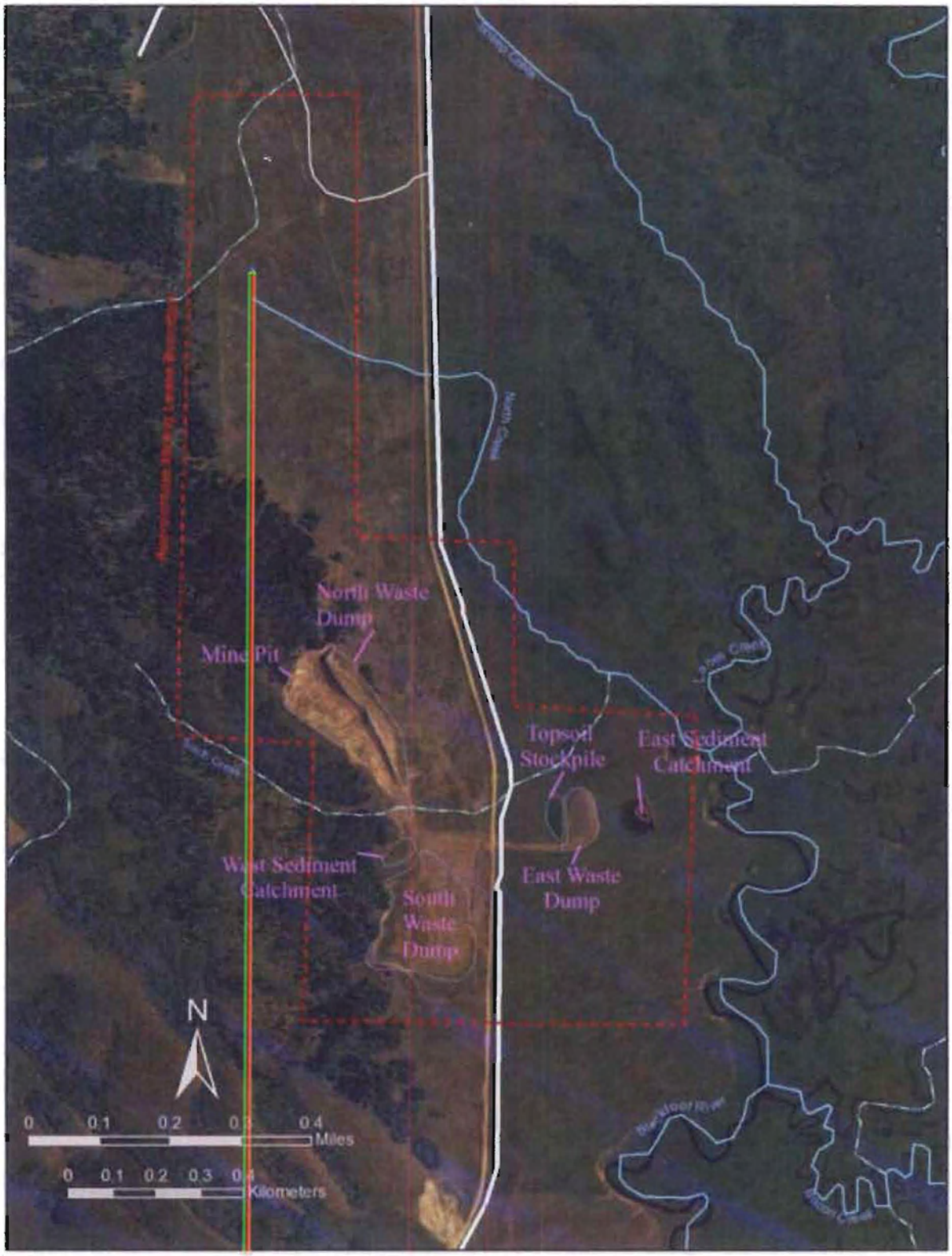

Figure 3. Aerial photograph of the Lanes Creek Mine area.

Section 2. Regional Setting

Regional physical characteristics of the Idaho Phosphate Mining Resource Area as they relate the to Lanes Creek Mine are presented in the following section.

2.1 Climate

Climate in southeast Idaho is influenced by major topographic features, including the pacific coast mountain ranges, and local mountain ranges. The mountains affect local wind, precipitation, and temperature patterns.

Summer temperatures in the valleys are typically dry with warm to hot temperatures during the day and cooling during the night. Summer precipitation is usually associated with thunderstorms. Fall and winter are dominated by cold, dry continental air and by cyclonic storms. Most precipitation during fall and winter falls as snow accumulating in the valleys and on the surrounding mountains. Spring precipitation usually results from cool marine air flowing in from the south.

The average annual precipitation varies widely throughout the resource area, mostly with elevation. Lifton pumping station, located at the north end of Bear Lake, has an average total annual precipitation of 10.62 inches based on a 1935 to 2007 period of record, while on the north end of the resource area Conda reports an annual total average precipitation of 18.91 inches over a period of record from 1948 to 1978 (Western Regional Climate Center, 2007). Precipitation in the surrounding mountains range from 25 to 35 inches annually (BLM, 2000). The heaviest 1-day rainfall during the period of record at Montpelier was 2.50 inches on June 16, 1939. Thunderstorms occur on about 24 days each year, and most occur between May and August (Nature Resource Conservation Service, 2007).

> *"The average seasonal snowfall is 58.3 inches. The greatest snow depth at any one time during the period of record at Montpelier was 31 inches recorded on March 4, 1952. On an average, 108 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 13.0 inches recorded on December 19, 1951".* (Nature Resource Conservation Service, 2007)

The prevailing wind direction is from the west southwest, causing accumulation of snow on east and north facing ridges. Ralston, et al. (1980) states that snow melt is the largest source of ground water recharge to the areas bedrock aquifers giving the east and north facing ridges the greatest potential for significant recharge.

2.2 Geology

The Lanes Creek Mine lies within the northern region of the Basin and Range Physiographic province, which is characterized by linear, north-trending fault bounded ranges and basins created by extensional techtonism initiated during the last 10 to 20 million years. Ranges in southeastern Idaho are generally composed of deformed Paleozoic and Mesozoic sedimentary rocks, including thick marine clastic units, comprised of cherts and limestones. The valleys are largely in–filled with Quaternary alluvium and colluvium

that overlie Pleistocene basalt flows. Thick rhyolite flows of the Snake river Plain regions cover much of the area and complete the geologic sequences in the region.

Massive accumulations of marine sediment occurred during the Paleozoic era over a large area of eastern Idaho. During the Permian Era the Phosphoria Formation was deposited, forming the western phosphate field, part of which is located in the southeastern Idaho phosphate resource area.

2.3 Stratigraphy and Lithology

The stratigraphy encountered by mining activities in the area is generally limited to four principal rock units. The stratigraphy, approximate ages and a description of each unit is described below in Table 1.

Table 1. Generalized Stratigraphic Setting of the Project Area[1]

Unit Name	Age	Description
Dinwoody Formation	Triassic	Interbedded claystone, limestone, and siltstone; ranges from 1,000 to 2,000 feet thick in project area
Phosphoria Formation	Permian	Composed of cherty mudstone, phosphatic mudstone, chert, phosphorite, limestone, and dolomite; phosphorite is the source of phosphate ore and is typically found in the lowermost portion of the formation.
Grandeur Limestone	Permian Pennsylvanian	Massive limestone that is discontinuous in the project area
Wells Formation	Pennsylvanian	Fine to very fine grain quartzitic to calcareous sandstone; approximately 1,500 to 2,000 feet thick in the project area.
Notes: 1. By convention, geologic units are presented from top to bottom as youngest to oldest.		

At the eastern edge of the resource area the Phosphoria Formation corresponds to an ancient ocean shelf area and is more calcareous and less argillaceous than Phosphoria Formation outcrops to the west. A deeper water facies to the west is increasing carbonaceous and pyretic and grades into cherts.

The Phosphoria Formation includes four members: Meade Peak Phosphatic Shale, Rex Chert, Cherty Shale, and Retort Phosphatic Shale. The Meade Peak member which ranges in thickness from about 55 to 200 feet is the oldest and is either overlain by the Rex Chert or the Cherty Shale. The Retort member is discontinuous and is found in the north and eastern parts of the resource area. The Meade Peak member of the Phosphoria Formation is the source of the majority of the produced phosphate ore. Concentrations of select target metals in the Meade Peak member are significantly higher that typical concentrations found in other marine sedimentary rock. (Montgomery Watson, 1998 Regional Investigational Report).

2.4 Structure

The Lanes Creek Mine and surrounding area is located in the Idaho-Wyoming-Utah overthrust belt. The belt extends from the Snake River Plain to near Salt Lake City and is part of the Cordilleran Foreland thrust belt that extends from Alaska to Mexico. Thrusting began in the late Jurassic when movement began on the Paris Thrust, the western most

thrust plate. Movement on the Meade and Crawford Thrusts began in the middle to late Cretaceous. Total displacement on the Meade Thrust Plate was approximately 24 miles in a west to east direction.

The major thrust plate in the study area is the Meade Overthrust. It generally places older Mississippian limestone on top of the upper Twin Creek Limestone or Preuss Sandstone of Jurassic age. The ore bearing units at the Lanes Creek Mine consist of Pennsylvanian to Triassic age (Table 1), rock within an anticline. The strata in the mine area make up the eastern arm of the Snowdrift Anticline, dipping approximately 30 to 40 degrees to the east.

Compressional tectonics subsided in the Cretaceous Period. Subsequently, the Resource Area underwent a period of extensional tectonics in the Miocene Epoch during which the high-angle normal faults cut across the older rocks and Mesozoic folds and thrusts. These large and extensive block fault systems formed the north-trending ranges and valleys of the Basin and Range province that distinguishes the landscape today.

2.5 Hydrogeology

The major ground water flow systems within the phosphate mining resource area exist in the valley fill sediments, Thaynes, Dinwoody, and Wells formations. The Phosphoria formation has not been found to support any major ground water flow systems and generally acts as a confining unit between the Dinwoody and Wells formations.

Ground water flow in the valley sediments is generally from the valley margins towards the valley center then down valley towards lower elevations. Ground water flow within the bedrock aquifers is often controlled by stratigraphy and structural geology, flowing along the bedding in the direction of dip and/or plunge. Regional and localized faulting may form preferential flow paths or boundaries to ground water flow within the bedrock systems.

2.6 Wetlands

Official wetland surveys (USFWS, 2008) for the area showed a large number of emergent wetlands within the 15 mile downstream target distance limit from Lanes Creek Mine. The wetlands are associated with Lanes Creek, the Blackfoot River and numerous small tributaries to the Blackfoot River.

Section 3. Site Overview, Sampling, and Waste Characteristics

DEQ conducted a Lanes Creek Mine site visit during June 26, 2008 in accordance with the goals and objectives in the *Area Wide Risk Management Plan (RMP) (DEQ, 2004)*. The visit included a visual inspection of all mine related features and a discussion of the site with a Simplot representative; no samples were collected during this visit.

3.1 Area Wide Risk Management Plan Action Levels

The RMP was written as a discretionary guidance document to assist Lead and Support Agency representatives with their mine-specific risk management decision-making responsibilities regarding historic mining operation releases and associated impacts from selenium and related trace metals in the Southeast Idaho Phosphate Mining Resource Area. The plan provides removal action goals, objectives, and action levels intended to assist in identifying site-specific areas of concern, focusing regulatory resources, and supporting consistent decision-making using a regional perspective.

The risk-based action levels were developed using deterministic single media dose proportions as the initial basis. These action levels were tested and validated using probabilistic methods that assume simultaneous exposure from all action level media to numerous limited home range surrogate species representing sensitive receptors from the various feeding guilds present in the Resource Area. Due to the limited area of impact and low likelihood of population-level effects, the action level development approach used by DEQ applied slightly less conservative assumptions regarding acceptable hazard quotient ranges than a typical population-level ecological risk assessment might. However, many of the receptor dose model parameters, such as site use, bioavailability and secondary media exposure point concentrations, remained conservatively-biased to represent receptors residing exclusively in impacted areas during toxicologically critical periods such as spawning, nesting, and breeding. The DEQ's risk management decisions focus resources in areas where efforts to minimize potential impacts to ecological subpopulations will provide the greatest benefit.

Action levels were established for the primary media that support sensitive habitats and are most amenable to standard industry measurement and mitigation techniques, which were surface water, groundwater, sediments, fluvial/riparian soils, and vegetation. Elevated contaminant concentrations in the selected action level media are also indicative of the presence of past and/or ongoing releases.

3.2 Inspection Findings

At the time of the site visit no free standing or flowing water was noted in the mine pit, any of the site channels, or sediment catchments with the exception of the east sediment catchment and its outfall channel, which flows directly to Lanes Creek. However, moist to wet soils were note at the sediment control feature located at the south end of the mine pit, on the pit footwall, and in the South Creek catchment located just west of the west

sediment catchment. Site photographs and a map showing the approximate location the photograph were taken are included in Attachment B.

The south waste dump is approximately 12 acres in area and 30 feet high. Not accounting for the slope of the dump wall and base the dump is given a high estimate of containing 6 million cubic yards of waste rock. This waste dump was sparsely vegetated; the sparse vegetation may be due in part to the cattle staging area seen on the west side of this dump. Cattle were present around the south waste dump during the site visit. The east face displayed evidence of active erosion with numerous rills along it length. The armored run-off channel located in the saddle of the south dump appeared to be in good repair and preventing down-cutting in to the dump.

The east waste dump and topsoil stockpile occupy approximately 2.1 and 0.8 acres, respectively, and appeared to be in good repair with little signs of active erosion and well vegetated. They are estimated to be approximately 10 high and contain 48,000 cubic yards of material. The north waste dump was sparsely vegetated and estimated at 3.5 acres in size. The depth of waste rock at this dump was not investigated. Sediment catchments west of Lanes Creek Road showed signs of heavy use by cattle. While the pit footwall is eroding into the pit.

3.3 Sampling

Sampling was not conducted as part of the site visit on June 26, 2008. DEQ has relied on the data collected by Simplot during their 2003-2004 site investigation to provide information on potential selenium contamination at the site. See Section 1.5 and Attachment A for sampling results.

Section 4. Pathway and Environmental Hazard Assessment

The 2003-2004 site investigation conducted by Simplot resulted in surface water, sediment, soil, and vegetation samples exceeding one or more RMP action levels for cadmium, chromium, copper, selenium, vanadium, and zinc (DEQ, 2004). Table 2 summarizes the sampling results of the Simplot site investigation, listing only those samples that exceeded one of more RMP action levels.

4.1 Surface Water

An intermittent stream (South Creek) that drains the basin west of the mine is captured by a sediment catchment located just west of the west sediment catchment (see Figure 3). South Creek overflow runs into a culvert that passes under the main workings of the mine, between the pit and the south waste dump. The creek daylights in a man-made channel that passes under Lanes Creek Road then empties into North Creek.

Runoff from the waste dumps and mine pit enter a man-made channel at various locations prior to entering into the east sediment catchment. Surface water runoff from the south waste dump containing elevated levels of selenium and other trace metals is diluted with cleaner water from the mine pit when they mix in the channel and in the east sediment catchment.

4.2 Soil/Air Exposure

Direct access from Lanes Creek Road to the mine, the waste rock dumps, and the sediment catchments is restricted by barbwire fences. Due to the proximity of the mine to public roads and recreational areas and its fenced access, soil ingestion for occasional recreation is considered possible where soil ingestion for ranch hands is considered likely. Exposure to air borne contaminants is also considered possible.

4.3 Ground Water

No information is currently available concerning ground water directly beneath the Lanes Creek Mine site. However, based on a review of Idaho Department of Water Resources records, ten domestic/industrial wells are located within a 4 mile radius of the mine (Figure 4). Eight of the wells are assumed to be up hydraulic gradient of the site, based on the direction of surface water flow, and/or they are located on the opposite (west) limb of the Snowdrift Anticline. These wells are not likely to be directly affected by the site. The remaining two wells are located near the Blackfoot river downstream (west and southwest) of the mine and are potentially down hydraulic gradient from the mine. Depth to water in the 2 wells of potential concern range from 100 to 140 feet below the measuring point (assumed to be ground surface).

Table 2. Summery of Analytical Results from the 2003 & 2004 Lanes Creek Mine Site Investigation

Surface Water										
Sample ID	**Sample Location**	**Sample Date**		**Cadmium dissolved**	**Chromium total recoverable**	**Copper dissolved**	**Nickel dissolved**	**Selenium total recoverable**	**Vanadium dissolved**	**Zinc dissolved**
	RMP action Level			**0.001**	**0.074**	**0.011**	**0.16**	**0.005**	**0.02**	**0.1**
SC-3	South Creek	5/30/2003		**0.01**	0.0358	0.0071	0.0126	0.001	**0.036**	0.04
SC-3	South Creek	5/11/2004		0.00067	-	**0.0194**	0.0202	0.00077	**0.0579**	0.0048
CP-2	East Sediment Catchment	5/4/2003		0.0004	0.0062	0.0041	0.0097	**0.092**	0.014	0.02
CP-2	East Sediment Catchment	10/21/2003		0.00027	0.0785	0.0033	0.034	0.0022	0.0042	0.0135
CP-1	Sediment Catchment Effluent near Lanes Creek	5/4/2003		0.0005	0.0049	0.0042	0.0159	**0.019**	0.005	0.03
CP-1	Sediment Catchment Effluent near Lanes Creek	5/11/2004		0.00017	-	0.0052	0.0263	**0.0149**	0.0116	0.0108
LCM-1	Lanes Creek Mine Area	5/3/2003		0.0017	0.177	0.0027	0.007	0.001	**0.051**	0.06
LCM-2	Lanes Creek Mine Area	5/3/2003		0.0027	0.689	0.0031	0.0104	0.001	**0.076**	**0.1**
LCM-3	Lanes Creek Mine Area	5/3/2003		0.0002	0.0371	0.0059	0.0063	**1.18**	**0.034**	0.01
LCM-4	Lanes Creek Mine Area	5/3/2003		0.0011	0.61	0.0073	0.0103	**0.204**	**0.032**	0.03

Soil										
Sample ID	**Sample Location**	**Sample Date**	**Soil Depth (inches)**	**Cadmium dissolved**	**Chromium total recoverable**	**Copper dissolved**	**Nickel dissolved**	**Selenium total recoverable**	**Vanadium dissolved**	**Zinc dissolved**
	RMP Action Level for sediment not supporting aquatic life			9.2	187	402	44	7.5	72	210
SLVG-01	Lanes Creek Mine Area	9/3/2003	0 to 2	**46.2**	**424**	57.8	**121**	**15.1**	**289**	**665**
SLVG-01	Lanes Creek Mine Area	9/3/2003	2 to 6	**36.6**	**401**	58.6	**117**	**7.6**	277	**732**
SLVG-02	Lanes Creek Mine Area	9/3/2003	0 to 2	**22.9**	**309**	61.3	**86.6**	**8.9**	**170**	**394**

Soil										
Sample ID	**Sample Location**	**Sample Date**	**Soil Depth (inches)**	**Cadmium dissolved**	**Chromium total recoverable**	**Copper dissolved**	**Nickel dissolved**	**Selenium total recoverable**	**Vanadium dissolved**	**Zinc dissolved**
	RMP Action Level for sediment not supporting aquatic life			9.2	187	402	44	7.5	72	210
SLVG-02	Lanes Creek Mine Area	9/3/2003	2 to 6	**24.7**	**394**	65.1	**90.1**	**19.3**	**192**	**380**
SLVG-03	Lanes Creek Mine Area	9/3/2003	0 to 2	**37.8**	**254**	54.2	**105**	**7.9**	**357**	**698**
SLVG-03	Lanes Creek Mine Area	9/3/2003	2 to 6	**28.2**	168	37.1	**99.3**	4.9	**291**	**658**
SLVG-04	Lanes Creek Mine Area	9/3/2003	0 to 2	**65.6**	**565**	106	**141**	**25**	**704**	**832**
SLVG-04	Lanes Creek Mine Area	9/3/2003	2 to 6	**78.9**	**607**	102	**160**	**13.9**	**889**	**1010**
SLVG-05	Lanes Creek Mine Area	9/3/2003	0 to 2	**24.8**	**485**	97.4	**140**	**33.1**	**206**	**547**
SLVG-05	Lanes Creek Mine Area	9/3/2003	2 to 6	**29.7**	**597**	110	**154**	**38.1**	**238**	**618**

Sediment										
Sample ID	**Sample Location**	**Sample Date**	**Composite Sample Type**	**Cadmium dissolved**	**Chromium total recoverable**	**Copper dissolved**	**Nickel dissolved**	**Selenium total recoverable**	**Vanadium dissolved**	**Zinc dissolved**
	RMP Action Level			**5.1**	**100**	197	**44**	**2.6**	**72**	**315**
SLVG-13	South Creek	9/3/2003		**15.8**	**128**	40.7	**85.2**	**7.4**	**201**	**541**
SLVG-08	Mine Drainage Channel	9/3/2003		**17.8**	**155**	49.5	**115**	**15.9**	**234**	**698**
SLVG-09	Mine Drainage Channel	9/3/2003		**30.4**	**242**	75.2	**119**	**11.4**	**238**	**621**

Vegetation										
Sample ID	**Sample Location**	**Sample Date**	**Composite Sample Type**	**Cadmium dissolved**	**Chromium total recoverable**	**Copper dissolved**	**Nickel dissolved**	**Selenium total recoverable**	**Vanadium dissolved**	**Zinc dissolved**
	RMP Action Level			**4.2**	**30.6**	**88**	**35.5**	**5**	**55.9**	**615**
SLVG-02	North Waste Dump	9/3/2003	Yarrow	**19.7**	13.3	14.8	13.3	4.5	8.9	53.5

Vegetation										
Sample ID	**Sample Location**	**Sample Date**	**Composite Sample Type**	**Cadmium dissolved**	**Chromium total recoverable**	**Copper dissolved**	**Nickel dissolved**	**Selenium total recoverable**	**Vanadium dissolved**	**Zinc dissolved**
	RMP Action Level			**4.2**	**30.6**	**88**	**35.5**	**5**	**55.9**	**615**
SLVG-02	North Waste Dump	9/3/2003	Macaranthera sp.	**6.3**	6.5	10.1	6.9	1	5.3	72.2
SLVG-03	South Waste Dump	9/3/2003	Forage	**4.7**	11.1	7.3	7.1	**11.4**	14.5	87.2
SLVG-04	South Waste Dump	9/3/2003	Grass	3.5	16.1	6.8	6.8	**173**	20.9	61.4
SLVG-04	South Waste Dump	9/3/2003	Forage	**4.7**	18.1	8.2	8.7	**150**	24.1	73.5
SLVG-04	South Waste Dump	9/3/2003	Redstem Filaree	2.1	7.4	7.1	7.5	**84.2**	9.6	44.7
SLVG-04	South Waste Dump	9/3/2003	Yarrow	**9.7**	**41.2**	19.3	19.4	**99.5**	32.5	106
SLVG-05	South Waste Dump	9/3/2003	Forage	2.5	6.3	3.5	4.4	**44.2**	3.7	51

These wells have the potential of be influenced by Lanes Creek Mine as well as other mines in the area.

One public water system well is located within 4 miles of the mine. The public water system is associated with the Rasmussen Ridge Mine and is located on the western limb of the Snowdrift Anticline and on the opposite side of Rasmussen Ridge from the Lanes Creek mine. The public water system is not likely to be impacted by the Lanes Creek Mine.

4.3.1 Potential Receptors

Potential receptors include local residents, hunters, cattlemen, trail riders (motorized and non-motorized), campers, and rarely, tourists. Cattle are present at the site and graze on the south waste dump and drink from the sediment catchments when water is present. Evidence of wildlife usage of the site was also noted. Residents, outdoor enthusiasts, cattle, and wildlife are the likeliest potential receptors as they reside nearby or use surrounding land for recreational activities, forage, breeding, or bedding areas.

The land within a two (2) mile radius of the mine is owned by the Caribou National Forest, the BLM and privately.

4.3.2 Schools, Day-Care Facilities, Private Residences

There are no schools, day-care facilities, or private residences within 200 feet of the site, but BLM, Forest Service and ranch employees, in addition to the outdoor recreation enthusiasts, may occasionally be within 200 feet of the site.

4.3.3 Species of Concern

Plant and animal species listed as a species of concern within Idaho and are located within a 4-mile radius of the site include the Idaho Sedge, Great Gray Owl, and Long-billed Curlew.

4.3.4 Soil Sample Concentrations

Relative to the Area Wide Action Levels soil exposure at the mine is expected to be elevated for avian and terrestrial receptors through incidental ingestion, due to the metals concentrations measured in the soil samples.

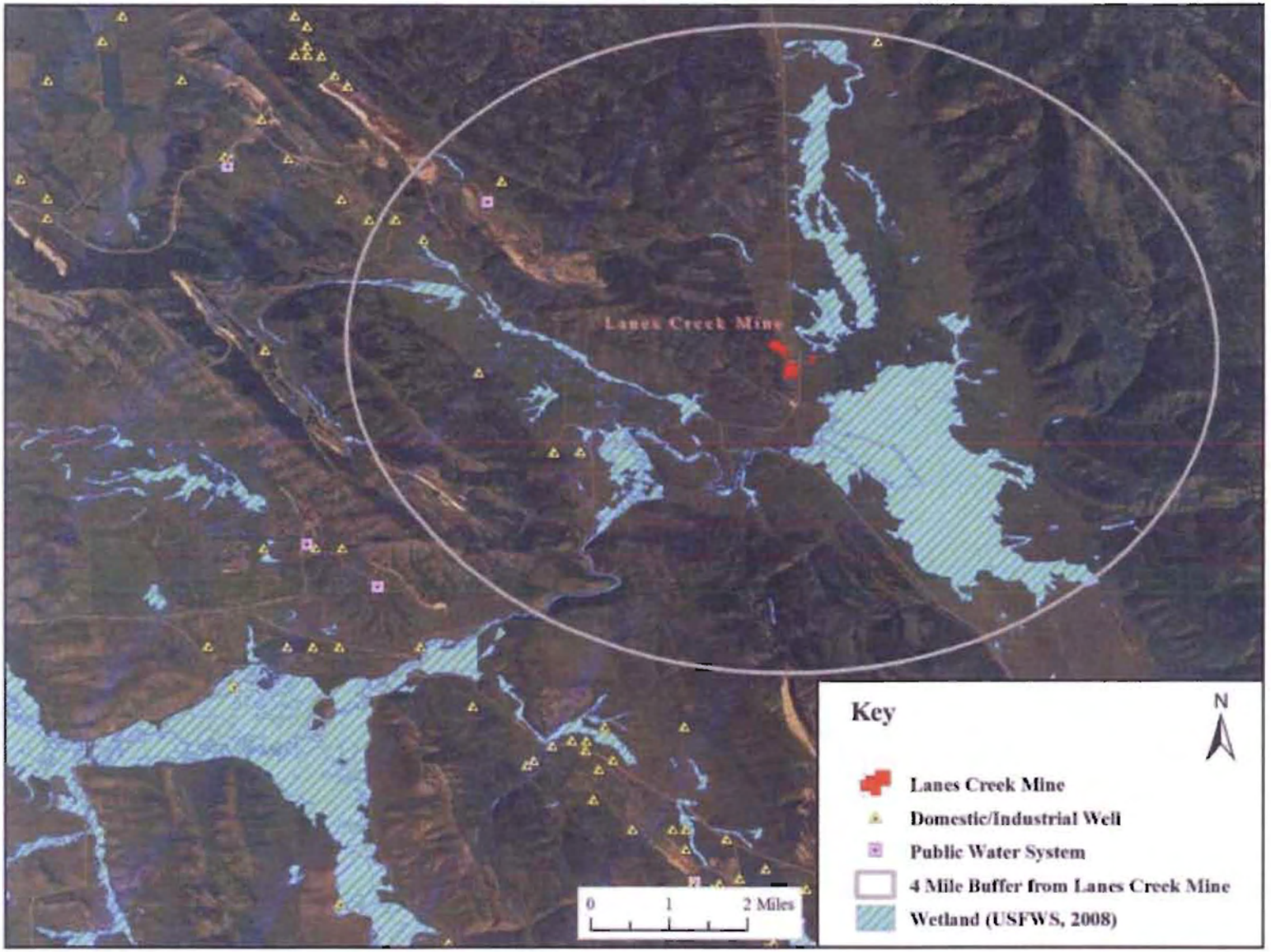

Figure 4. Domestic and Public Water System wells located within a four-miles of the Lanes Creek Mine.

Section 5. Conclusions and Recommendations

The recommendations contained herein address localized release pathways and associated ecological risks and not any public safety concerns regarding the presence of open pits, adits, portals, or mine shafts. The Lanes Creek Mine is recommended for early remedial action consisting of site investigations, erosion control, control of site run-off, and reclamation improvements.

5.1 Presence of Wetlands

Based on official wetland (USFWS, 2008) surveys of the area and the outflow from the east sediment catchment, there is a high potential for wetlands to be impacted by past mining activities, continued erosion of the waste dumps, and ground water seepage through the dumps and discharging into the wetlands.

5.2 Impacts on Water Quality

Surface water impacts related to the mine appear to be high in the spring due to snow melt run-off. The mine site is generally dry during the summer and early fall months with the exception of the east sediment catchment and its outfall. Surface water samples exceeding the RMP removal action levels for cadmium, chromium, copper, selenium, vanadium, and zinc were detected at the site during the spring of 2003 and 2004. Table 2 contains surface water sampling results that exceeded the RMP removal action levels.

Ground water impacts are unknown. However, Lanes Creek, the Blackfoot River, and domestic wells are all located within 4 miles down hydraulic gradient of the mine. Based on the distance to surface water sources and domestic wells completed in valley sediments containing shallow groundwater, there is a moderate to high potential for the Lanes Creek Mine to impacted local water systems. As surface water, with concentrations of selenium (0.019 mg/L) above the RMP (0.005 mg/L) have been found in the east sediment catchment effluent just prior to entering Lanes Creek.

5.3 Potential Exposure for Wildlife, Livestock, and Vegetation

The waste rock dumps and mine pit with or without vegetation present potential exposure pathways for wildlife and cattle. Native plant species may bio-accumulate high concentrations of metals that can be consumed by wildlife and livestock. Analytical results from grass composite samples of the waste dumps had up to 173 mg/kg of selenium. The RMP selenium removal action criterion is 5.0 mg/kg for vegetation. Wind blown soils may also be inhaled or incidentally consumed. Wildlife, such as deer and elk, and livestock exposed to elevated concentrations of metals (via water, soil, or vegetation) may be harvested and consumed by humans.

5.4 Potential Exposure for Humans

The public has limited access to the mine via the roads. The site is fenced and the gates are locked.

Commercial or subsistence fishing does not occur within the 15-mile downstream distance, but sport fishing on the Blackfoot River is common. According to the Idaho Department of Fish and Game database, a number of desirable game fish are native or are stocked in the Blackfoot River (IDFG, 2002).

Human activity around the mine site is believed to be limited to ranch employees caring for cattle grazing at the site. Hikers, hunters, off-road four wheeling enthusiasts, and various other outdoor recreation enthusiasts may occasional trespass onto the site as the fence is designed to keep cattle in and not people out.

Fugitive dust and direct contact with the waste piles are the two main mechanisms through which humans could be exposed to the metal concentrations at the site. These sources do not appear to present any immediate threat. Although the waste dumps and pit floor have been shown to have elevated metal concentrations, exposure for humans to elevated metal concentrations is moderate due to the location of the site.

5.5 Recommendations

Overall, the analysis of the water, soil and vegetation samples from the site indicates elevated metal concentrations with respect to the RMP action criteria. Based on analytical results and the site visit, DEQ recommends early remedial action at the Lanes Creek Mine.

Recommendations for an early action based on DEQ's current evaluation of the data include the following:

- Cap the south waste dump to prevent meteoric water from eroding the selenium rich overburden and seeping into the local ground water.
- Re-vegetate those waste dumps where natural vegetation has not established itself, and, if necessary, place clean soils on the dumps to stimulate growth.
- Capture and channel all surface water run-off from the mine pit and south waste dump to a sediment catchment on the west side of Lanes Creek Road, to prevent this potential source of contamination from entering Lanes Creek and the local wetlands.

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Report Index

Attachment A

2003 – 2004 Lanes Creek Environmental Monitoring Report

NEWFIELDS

TRANSMITTAL

TO: Kim Gower– J. R. Simplot Company

CC: Steve Werner– NewFields

FROM: Robbert-Paul Smit– NewFields Boulder, LLC

DATE: April 25, 2008

SUBJECT: Lanes Creek Mine Project Summary

As requested, included is a summary of the Lanes Creek Mine Project findings to date.

The Lanes Creek Mine is located within the Western Phosphate Field, approximately 20 miles northeast of Soda Springs, in Caribou County, Idaho (Figure 1). Simplot's lease covers approximately 336 acres at the southern tip of Rasmussen Ridge (Figure 2). Although the fee lease covers 336 acres, the historic mining activities were confined to a much smaller area of 32 acres.

Simplot has voluntarily conducted environmental monitoring activities to characterize the Site and identify areas of potential concern. Surface water conditions were monitored at 14 locations (Table 1 and Figure 3) in May 2003, October 2003, and May 2004. Sediment conditions were evaluated at 3 locations (Table 2 and Figure 3) in September 2003. In addition, soil and vegetation samples were collected from 13 locations (Table 4 and Figure 4) in September 2003. The findings of these activities are discussed below.

Surface Water Conditions - Water is generally only present around the mine panel and overburden disposal area during springtime conditions. Runoff from the overburden disposal area has the greatest selenium concentrations at the site. Selenium concentrations in North Creek, South Creek, and Lanes Creek were generally non-detect. Selenium concentrations only exceeded 5 parts per billion (ppb) in the Sediment Catch Pond, the Small Pond, and runoff from the overburden; and range from 19 ppb at the small catch pond to 1,180 ppb in runoff from overburden just upstream of the road (Table 4). Measurable selenium concentrations are present in surface waters around the mine and along the drainage pathway to Lanes Creek. Selenium concentrations were

less than detection (1 ppb) in the mine panel ponds, and selenium concentrations in Lanes Creek and North Creek were less than detection (1 ppb).
Sediment Conditions - Selenium concentrations in sediment collected from the mine drainage channel upstream and downstream of the catch pond were 15.9 parts per million (ppm) and 11.4 ppm, respectively (Table 5).

Soil/Vegetation Conditions – Selenium concentrations in soils around the mine and overburden disposal area ranged from 0.2 ppm to 33.4 ppm (Table 6); whereas, concentrations in the native pasture east of Lanes Creek Road ranged from 0.15 ppm to 0.56 ppm. Selenium concentrations in vegetation from the over burden disposal area ranged from 0.3 ppm to (forage composite) to 173 ppm (grass composite) (Table 7). Selenium concentrations in vegetation from the native area ranged from 0.2 ppm to (forage composite) to 1.5 ppm (yarrow composite). Aster plants were the only hyper-accumulator species found in the area; however, these plants were not found in the overburden area and were only observed in the native pasture to the east.

TABLE 1

Lanes Creek Mine Surface Water Monitoring Locations

Station Name	Initial Date	Final Date	Description	UTM Coordinates (m)	
				Northing	Easting
North Creek					
NC-2	May-03	May-04	North Creek just upstream of Lanes Creek Road	4,744,182	473,939
NC-1	May-03	May-04	North Creek at mouth just upstream of Lanes Creek	4,743,377	474,604
South Creek					
SC-3	May-03	May-04	South Creek ponded water upstream of Lanes Creek Mine	4,743,177	473,900
SC-2	May-03	May-04	South Creek diversion downstream of Lanes Creek Mine and upstream of Road	4,743,220	474,048
SC-1	May-03	May-04	South Creek at the mouth just upstream of North Creek	4,743,438	474,413
Lanes Creek					
LC-3	May-03	May-04	Lanes Creek upstream of North Creek	4,743,449	474,622
LC-2	May-03	May-04	Lanes Creek downstream of North Creek and upstream of Lanes Creek Mine drainage channel	4,743,284	474,618
LC-1	May-03	May-04	Lanes Creek downstream of Simplot Lease boundary and upstream of Bacon Creek	4,742,616	474,743
Lanes Creek Mine Area					
LCM-1	May-01	May-04	Pond at downstream end of Mine upstream of large rocks	4,743,270	473,899
LCM-2	May-03	May-04	Pond at upper end of mine at the toe of the north mine wall	4,743,446	473,779
LCM-3	May-03	May-04	Pond at eastern toe of the reclaimed pile and west of Lanes Creek Road	4,742,951	474,094
LCM-4	May-03	May-04	Lanes Creek Mine drainage channel just upstream of Lanes Creek Road	4,743,103	474,127
CP-1	May-03	May-04	Small catch pond just upstream of Lanes Creek	4,743,233	474,622
CP-2	May-03	May-04	Largest catch pond located downstream of Lanes Creek Road	4,743,179	474,503

Note:

1. UTM coordinates have a NAD83 datum and are approximate.

TABLE 1

Lanes Creek Mine Sediment Monitoring Locations

Station Name	Initial Date	Final Date	Description	UTM Coordinates (m)	
				Northing	Easting
South Creek					
SLVG-13	Sep-03	-	North of topsoil stock pile and south of North Creek	4,743,332	474,279
Mine Drainage Channel					
SLVG-08	Sep-03	-	Mine Drainage Channel just upstream of the sediment catch pond	4,743,126	474,412
SLVG-09	Sep-03	-	Mine Drainage Channel just downstream of the sediment catch pond	4,743,202	474,588

Note:

1. UTM coordinates have a NAD83 datum and are approximate.

TABLE 3

Lanes Creek Mine Soil and Vegetation Monitoring Locations

Station Name	Initial Date	Final Date	Number of Samples		Description	UTM Coordinates (m)	
			Soil	Vegetation		Northing	Easting
Lanes Creek Mine Disturbed Area							
SLVG-01	Sep-03	-	1	1	Northern portion of reworked and reclaimed area just east and directly above mined area	4,743,443	473,826
SLVG-02	Sep-03	-	1	1	Southern portion of reworked and reclaimed area just east and directly above mined area	4,743,345	473,910
SLVG-03	Sep-03	-	1	1	South of mine drainage channel in northern portion of reclaimed overburden disposal area	4,743,110	474,000
SLVG-04	Sep-03	-	1	1	Northern portion of reclaimed overburden disposal area	4,743,032	474,017
SLVG-05	Sep-03	-	1	1	Southern portion of reclaimed overburden disposal area	4,742,835	473,994
SLVG-10	Sep-03	-	1	1	Western portion of reclaimed overburden disposal area	4,742,910	473,902
Top Soil Stockpile							
SLVG-07	Sep-03	-	1	1	West side of the topsoil stock pile	4,743,152	474,275
Pasture Area							
SLVG-06	Sep-03	-	1	1	Native material south of the main reclaimed overburden area	4,742,750	473,993
SLVG-11	Sep-03	-	1	1	West of Lanes Creek Road and north of South Creek	4,743,490	474,103
SLVG-12	Sep-03	-	1	1	North of top soil stockpile and north of South Creek	4,743,373	474,226
SLVG-14	Sep-03	-	1	1	North of top soil stockpile and south of South Creek	4,743,316	474,273
SLVG-15	Sep-03	-	1	1	North of top soil stockpile	4,743,232	474,347
SLVG-16	Sep-03	-	1	1	South of mine drainage channel and catch pond	4,743,086	474,494

Note:

1. UTM coordinates have a NAD83 datum and are approximate.

TABLE 4

Lanes Creek Mine May 2003, October 2003, and May 2004 Surface Water Sample Results

Parameter	Units	North Creek						South Creek						Lanes Creek				
		NC-2			NC-1			SC-3	SC-1 and SC-2	SC-1 thru SC-3	SC-3	SC-2	SC-1	LC-3			LC-2	
		05/03/03	10/21/03	05/11/04	05/04/03	10/21/03	05/11/04	05/03/03	05/03/03	10/21/03	05/11/04	05/11/04	05/11/04	05/04/03	10/21/03	05/11/04	05/04/03	10/21/03
		17:15	9:00	7:30	9:05	10:45	9:30	18:10	-	-	8:30	9:00	9:45	9:35	11:15	10:00	12.30	11:05
Field Parameters																		
Flow	cfs	0.713	0.270	0.42	0.8	0.254	0.47	0.003	DRY	DRY	Ponded	Dry	0.01	78.6	5.75	38.97	68.1	4.52
pH	S.U.	8.49 -	6.36 -	6.86 -	7.97 -	7.74 -	7.59 -	8.91 -	-	-	8.66 -	-	7.7 -	7.75 -	8.19 -	8.21 -	8.44 -	8.09 -
Specific Conductance	µS	266 -	287 -	233 -	263 -	286 -	236 -	161.3 -	-	-	203 -	-	68 -	293 -	265 -	220 -	290 -	265 -
Temperature	C	9.1 -	5.5 -	7.42 -	6.8 -	7.2 -	5.99 -	6.6 -	-	-	5.25 -	-	4.91 -	6.5 -	7.8 -	7.02 -	8.1 -	7.9 -
Dissolved Oxygen	mg/L	7.14 -	8.18 -	7.44 -	6.36 -	7.89 -	7.59 -	7.39 -	-	-	6.7 -	-	8.01 -	7.66 -	8.48 -	8.02 -	7.11 -	8.43 -
Turbidity	NTU	3.95 -	1.03 -	1.62 -	4 -	1.59 -	3.91 -	52 -	-	-	21.3 -	-	16.9 -	13 -	3.4 -	10 -	14 -	2.86 -
Metals																		
Aluminum, dissolved	mg/L	0.15 B	0.0097 U	- -	0.07 B	0.0097 U	- -	0.41 -	-	-	- -	-	- -	0.04 B	0.0097 U	- -	0.06 B	0.0097 U
Aluminum, total recoverable	mg/L	0.35 -	0.0153 B	- -	0.29 -	0.0457 -	- -	1.75 -	-	-	- -	-	- -	0.79 -	0.07 -	- -	0.79 -	0.0699 -
Arsenic, dissolved	mg/L	0.0005 U	0.0006 U	- -	0.0005 B	0.0006 U	- -	0.0028 B	-	-	- -	-	- -	0.0006 B	0.0006 U	- -	0.0006 B	0.0006 U
Arsenic, total recoverable	mg/L	0.0011 B	0.0006 U	- -	0.0007 B	0.0006 U	- -	0.0041 -	-	-	- -	-	- -	0.0008 B	0.0006 U	- -	0.0012 B	0.0006 U
Barium, dissolved	mg/L	0.027 -	0.031 -	- -	0.024 -	0.0368 -	- -	0.024 -	-	-	- -	-	- -	0.093 -	0.0723 -	- -	0.091 -	0.0719 -
Barium, total recoverable	mg/L	0.029 -	0.0316 -	- -	0.031 -	0.0366 -	- -	0.033 -	-	-	- -	-	- -	0.112 -	0.0734 -	- -	0.105 -	0.0718 -
Cadmium, dissolved	mg/L	0.0001 U	0.00006 U	0.0001 U	0.0001 U	0.00006 U	0.0001 U	0.001 -	-	-	0.00067 -	-	0.0005 U	0.0001 U	0.00006 U	0.0001 U	0.0001 U	0.00006 U
Cadmium, total recoverable	mg/L	0.0001 B	0.00006 U	- -	0.0001 U	0.00006 U	- -	0.0035 -	-	-	- -	-	- -	0.0001 U	0.00006 U	- -	0.0001 U	0.00006 U
Chromium, dissolved	mg/L	0.0009 -	0.0003 U	0.0003 U	0.0006 -	0.0003 U	0.0003 U	0.0068 -	-	-	0.0089 -	-	0.00078 -	0.0003 B	0.0003 U	0.0003 U	0.0005 -	0.0003 U
Chromium, total recoverable	mg/L	0.0012 -	0.0003 U	- -	0.0011 -	0.0003 U	- -	0.0358 -	-	-	- -	-	B -	0.0011 -	0.0003 U	- -	0.0009 -	0.0003 U
Copper, dissolved	mg/L	0.0009 B	0.0026 U	0.0021 U	0.0009 B	0.0026 U	0.0021 U	0.0071 -	-	-	0.0194 -	-	0.0038 -	0.001 B	0.0026 U	0.0021 U	0.0007 B	0.0026 U
Copper, total recoverable	mg/L	0.0016 B	0.0026 U	- -	0.0015 B	0.0026 U	- -	0.012 -	-	-	- -	-	- -	0.0017 B	0.0026 U	- -	0.0016 B	0.0026 U
Iron, dissolved	mg/L	0.08 -	0.0045 U	- -	0.04 B	0.0085 B	- -	0.23 -	-	-	- -	-	- -	0.04 B	0.0105 B	- -	0.04 B	0.0097 B
Iron, total recoverable	mg/L	0.24 -	0.0124 B	- -	0.27 -	0.0432 -	- -	1.57 -	-	-	- -	-	- -	0.88 -	0.136 -	- -	0.66 -	0.135 -
Lead, dissolved	mg/L	0.0001 U	0.0004 U	- -	0.0001 U	0.0004 U	- -	0.0002 B	-	-	- -	-	- -	0.0001 U	0.0004 U	- -	0.0001 U	0.0004 U
Lead, total recoverable	mg/L	0.0003 B	0.0004 U	- -	0.0002 B	0.0004 U	- -	0.0012 -	-	-	- -	-	- -	0.0006 -	0.0004 U	- -	0.0005 B	0.00059 B
Manganese, dissolved	mg/L	0.007 B	0.0011 B	- -	0.021 B	0.0039 -	- -	0.041 -	-	-	- -	-	- -	0.043 -	0.0435 -	- -	0.051 -	0.0419 -
Manganese, total recoverable	mg/L	0.005 U	0.00089 B	- -	0.019 B	0.0044 -	- -	0.02 B	-	-	- -	-	- -	0.063 -	0.0452 -	- -	0.053 -	0.0422 -
Nickel, dissolved	mg/L	0.0016 -	0.001 U	0.0065 B	0.0018 -	0.001 U	0.0055 B	0.0126 -	-	-	0.0202 -	-	0.0082 B	0.0015 -	0.001 U	0.006 B	0.002 -	0.001 U
Nickel, total recoverable	mg/L	0.0017 -	0.001 U	- -	0.0021 -	0.001 U	- -	0.0397 -	-	-	- -	-	- -	0.0018 -	0.001 U	- -	0.0017 -	0.001 U
Selenium, dissolved	mg/L	0.001 U	0.0002 U	0.0003 U	0.001 U	0.0002 U	0.0003 U	0.001 U	-	-	0.0003 U	-	0.0003 U	0.001 ** B	0.0002 U	0.00042 B	0.001 U	0.00024 B
Selenium, total recoverable	mg/L	0.001 U	0.0002 U	0.0007 B	0.001 U	0.0002 U	0.0003 U	0.001 U	-	-	0.00077 B	-	0.0003 U	0.001 U	0.00026 B	0.00064 B	0.001 U	0.0002 U
Silver, dissolved	mg/L	0.00005 U	0.0001 U	- -	0.00005 U	0.0001 U	- -	0.00005 U	-	-	- -	-	- -	0.00005 U	0.0001 U	- -	0.00005 U	0.0001 U
Silver, total recoverable	mg/L	0.00005 U	0.0001 U	- -	0.00005 U	0.0001 U	- -	0.00018 B	-	-	- -	-	- -	0.00005 U	0.0001 U	- -	0.00005 U	0.0001 U
Vanadium, dissolved	mg/L	0.005 U	0.0002 U	0.00044 B	0.01 U	0.00037 B	0.00052 B	0.036 -	-	-	0.0579 -	-	0.0015 B	0.005 U	0.00032 B	0.00078 B	0.005 U	0.0004 B
Vanadium, total recoverable	mg/L	0.005 U	0.0002 U	- -	0.005 U	0.00034 B	- -	0.083 -	-	-	- -	-	- -	0.005 U	0.00048 B	- -	0.005 U	0.00051 B
Zinc, dissolved	mg/L	0.01 B	0.0018 U	0.0011 B	0.01 B	0.0018 U	0.0002 U	0.04 B	-	-	0.0048 B	-	0.0068 -	0.01 B	0.0018 U	0.00026 B	0.01 B	0.0018 U
Zinc, total recoverable	mg/L	0.01 U	0.0018 U	- -	0.01 U	0.0018 U	- -	0.24 -	-	-	- -	-	- -	0.01 U	0.0018 U	- -	0.01 U	0.0018 U
Major Ions																		
Calcium, dissolved	mg/L	38.9 -	57.6 -	48.8 -	41.1 -	59.5 -	49.3 -	16.6 -	-	-	34 -	-	13.5 -	48.8 -	57.1 -	50.9 -	48.4 -	57.5 -
Magnesium, dissolved	mg/L	8.1 -	12.5 -	10.7 -	7.9 -	12.9 -	10.7 -	5.6 -	-	-	12.1 -	-	3.76 -	7.6 -	12.2 -	8.72 -	7.6 -	12.3 -
Potassium, dissolved	mg/L	0.7 B	0.592 B	- -	0.5 B	1.1 -	- -	4.3 -	-	-	- -	-	- -	1.1 -	0.832 B	- -	1 B	0.868 B
Sodium, dissolved	mg/L	5.3 -	7.31 -	- -	5 -	7.49 -	- -	2.5 -	-	-	- -	-	- -	4.5 -	4.78 -	- -	4.5 -	4.95 -
Chloride	mg/L	2 B	2.52 -	- -	2 B	2.87 -	- -	4 B	-	-	- -	-	- -	2 B	2.68 -	- -	2 B	2.72 -
Fluoride	mg/L	0.1 B	0.109 -	- -	0.1 B	0.1 U	- -	0.2 B	-	-	- -	-	- -	0.1 B	0.27 -	- -	0.1 B	0.149 -
Sulfate	mg/L	10 U	8.99 -	5.75 -	10 U	6.92 -	5.03 -	10 U	-	-	8.17 -	-	0.32 -	10 U	23.5 -	8.02 -	10 U	10.8 -
Nutrients and Other Parameters																		
Nitrate/Nitrite as N	mg/L	0.02 U	0.02 U	- -	0.03 B	0.02 U	- -	0.04 B	-	-	- -	-	- -	0.04 B	0.02 U	- -	0.02 U	0.02 U
Nitrogen, ammonia	mg/L	0.1 U	0.01 U	- -	0.1 U	0.01 U	- -	0.1 U	-	-	- -	-	- -	0.1 U	0.01 U	- -	0.1 U	0.01 U
Phosphorus, total	mg/L	0.08 -	0.017 -	- -	0.11 -	0.026 -	- -	0.6 -	-	-	- -	-	- -	0.1 -	0.028 -	- -	0.07 -	0.028 -
Carbon, total organic (TOC)	mg/L	6 -	5.7 -	- -	7 -	2.7 -	- -	7 -	-	-	- -	-	- -	6 -	2.3 -	- -	6 -	2 -
Total Alkalinity	mg/L	137 -	197 -	- -	137 -	206 -	- -	62 -	-	-	- -	-	- -	152 -	180 -	- -	152 -	190 -
Bicarbonate as CaCO3	mg/L	137 -	197 -	- -	137 -	206 -	- -	62 -	-	-	- -	-	- -	152 -	180 -	- -	152 -	190 -
Carbonate as CaCO3	mg/L	2 U	1 U	- -	2 U	1 U	- -	2 U	-	-	- -	-	- -	2 U	1 U	- -	2 U	1 U
Hydroxide as CaCO3	mg/L	2 U	1 U	- -	2 U	1 U	- -	2 U	-	-	- -	-	- -	2 U	1 U	- -	2 U	1 U
Hardness as CaCO3	mg/L	131 -	144 -	166 -	135 -	149 -	167 -	65 -	-	-	135 -	-	49.2 -	153 -	143 -	163 -	152 -	144 -
Total Dissolved Solids (TDS)	mg/L	160 -	196 -	- -	170 -	203 -	- -	110 -	-	-	- -	-	- -	160 -	199 -	- -	180 -	190 -
Total Suspended Solids (TSS)	mg/L	5 U	5 U	5 U	6 B	5 U	5 U	10 B	-	-	12 -	-	12 -	8 B	11 -	9 -	12 B	5 U

Note: 1 ** The selenium concentrations were reanalyzed because the initial dissolved concentration was reported to be 0.011 mg/L, but the total recoverable was less than detection. 2. Samples analyzed by ACZ Laboratories in Steamboat Springs, Colorado.

TABLE 4

Lanes Creek Mine May 2003, October 2003, and May 2004 Surface Water Sample Results

Parameter	Units	LC-1				Sediment Catch Pond CP-2			Small Pond CP-1			Lanes Creek Mine Area LCM-1	LCM-2	LCM-3	LCM-4	LC-1 thru 4	
		05/11/04	05/04/03	10/21/03	10/21/03	05/04/03	10/21/03	10/21/03	05/04/03	10/21/03	05/11/04	05/03/03	05/03/03	05/03/03	05/04/03	10/21/03	05/11/04
		11:55	13:15	14:25	14:25	14:45	14:40	14:40	14:35	14:45	10:35	18:20	10:30	18:50	16:00	-	8:15
Field Parameters																	
Flow	cfs	41.6	67.2	4.07	39.1	0.022	No Flow	No Flow	0.022	DRY	No Flow	0.004	Pond	Pond	0.175	DRY	DRY
pH	S.U.	8.27 -	8.46 -	8.32 -	8.35 -	8.23 -	7.64 -	8.24 -	7.76 -	-	7.73 -	8.88 -	9.25 -	9.73 -	8.32 -	-	-
Specific Conductance	µS	221 -	288 -	260 -	218 -	153 -	217 -	106 -	190 -	-	178 -	142.8 -	113.2 -	307 -	142 -	-	-
Temperature	C	7.18 -	6.9 -	11.1 -	7.97 -	6.2 -	16.1 -	11.56 -	6 -	-	7.84 -	4.7 -	6.1 -	8.5 -	2.9 -	-	-
Dissolved Oxygen	mg/L	8.27 -	7.62 -	8.61 -	8.03 -	5.84 -	4.56 -	5.57 -	6.25 -	-	3.7 -	7.3 -	6.66 -	8.16 -	8.33 -	-	-
Turbidity	NTU	10.5 -	16 -	5.46 -	10.4 -	44 -	166 -	9.16 -	13 -	-	19.4 -	284 -	534 -	9.03 -	> 1,000 -	-	-
Metals																	
Aluminum, dissolved	mg/L	- -	0.03 U	0.0097 U	- -	0.17 B	0.0097 U	- -	0.04 B	-	- -	0.47 -	0.95 -	0.03 U	0.37 -	-	-
Aluminum, total recoverable	mg/L	- -	0.85 -	0.103 -	- -	0.69 -	4.44 -	- -	0.2 B	-	- -	5.96 -	14.2 -	0.6 -	44.4 -	-	-
Arsenic, dissolved	mg/L	- -	0.0006 B	0.0006 U	- -	0.0034 -	0.0057 -	- -	0.0042 -	-	- -	0.0025 B	0.0021 B	0.0163 -	0.0031 -	-	-
Arsenic, total recoverable	mg/L	- -	0.0009 B	0.0006 U	- -	0.0069 -	0.0077 -	- -	0.0042 -	-	- -	0.0086 -	0.023 -	0.0298 -	0.046 -	-	-
Barium, dissolved	mg/L	- -	0.093 -	0.0728 -	- -	0.019 -	0.0659 -	- -	0.023 -	-	- -	0.009 B	0.011 -	0.018 -	0.014 -	-	-
Barium, total recoverable	mg/L	- -	0.109 -	0.0755 -	- -	0.027 -	0.0916 -	- -	0.028 -	-	- -	0.04 -	0.064 -	0.024 -	0.229 -	-	-
Cadmium, dissolved	mg/L	0.0001 U	0.0001 U	0.00006 U	0.0001 U	0.0004 B	0.00027 -	0.00021 -	0.0005 -	-	0.00017	0.0017 -	0.0027 -	0.0002 B	0.0011 -	-	-
Cadmium, total recoverable	mg/L	- -	0.0001 U	0.00006 U	- -	0.0018 -	0.0051 -	- -	0.0009 -	-	- -	0.0144 -	0.0416 -	0.0012 -	0.0602 -	-	-
Chromium, dissolved	mg/L	0.0003 U	0.0002 B	0.0003 U	0.0003 U	0.0062 -	0.00053 B	0.00068 B	0.0021 -	-	0.0018	B 0.0145 -	0.0231 -	0.0169 -	0.0174 -	-	-
Chromium, total recoverable	mg/L	- -	0.0011 -	0.0003 U	- -	0.035 -	0.0785 -	- -	0.0049 -	-	- -	0.177 -	0.689 -	0.0371 -	0.61 -	-	-
Copper, dissolved	mg/L	0.0021 U	0.0009 B	0.0026 U	0.0021 U	0.0041 -	0.0033 -	0.0047 -	0.0042 -	-	0.0052	0.0027 -	B 0.0031	0.0059 -	0.0073 -	-	-
Copper, total recoverable	mg/L	- -	0.0017 B	0.0026 U	- -	0.0083 -	0.0164 -	- -	0.0053 -	-	- -	0.0326 -	0.068 -	0.0099 -	0.161 -	-	-
Iron, dissolved	mg/L	- -	0.03 B	0.0076 B	- -	0.15 -	0.0183 B	- -	0.11 -	-	- -	0.15 -	0.37 -	0.01 U	0.17 -	-	-
Iron, total recoverable	mg/L	- -	0.69 -	0.169 -	- -	0.91 -	4.23 -	- -	0.43 -	-	- -	7.59 -	16 -	0.69 -	45.4 -	-	-
Lead, dissolved	mg/L	- -	0.0001 U	0.0004 U	- -	0.0001 B	0.00059 B	- -	0.0001 U	-	- -	0.0001 -	B 0.0002	B 0.0001	U 0.0002	B -	-
Lead, total recoverable	mg/L	- -	0.0005 B	0.00059 B	- -	0.0007 -	0.0025 -	- -	0.0002 B	-	- -	0.004 -	0.0082 -	0.0005	B 0.0227	-	-
Manganese, dissolved	mg/L	- -	0.035 -	0.0371 -	- -	0.034 -	0.54 -	- -	0.029 B	-	- -	0.005 -	B 0.013	B 0.005	B 0.01	B -	-
Manganese, total recoverable	mg/L	- -	0.058 -	0.0386 -	- -	0.064 -	0.591 -	- -	0.052 -	-	- -	0.053 -	0.206 -	0.007	B 0.395	-	-
Nickel, dissolved	mg/L	0.0053 B	0.0013 -	0.001 U	0.0054 B	0.0097 -	0.034 -	0.0163 -	0.0159 -	-	0.0263	0.007 -	0.0104 -	0.0063 -	0.0103 -	-	-
Nickel, total recoverable	mg/L	- -	0.0017 -	0.001 U	- -	0.0186 -	0.0687 -	- -	0.0164 -	-	- -	0.14 -	0.435 -	0.0136 -	0.366 -	-	-
Selenium, dissolved	mg/L	0.00034 B	0.002 B	0.0002 U	0.0003 U	0.09 -	0.00048 B	0.0652 -	0.019 -	-	0.0087	0.003 -	B 0.001	U 1.27	0.218 -	-	-
Selenium, total recoverable	mg/L	0.00082 B	0.001 U	0.0002 U	0.00046 B	0.092 -	0.0022 -	0.0898 -	0.019 -	-	0.0149	0.001 -	U 0.001	U 1.18	0.204 -	-	-
Silver, dissolved	mg/L	- -	0.00005 U	0.0001 U	- -	0.00006 B	0.00048 B	- -	0.00005 U	-	- -	0.00005 U	0.00006 B	0.00005 U	0.00011 B	-	-
Silver, total recoverable	mg/L	- -	0.00005 U	0.0001 U	- -	0.00024 B	0.00039 B	- -	0.00011 B	-	- -	0.00075 -	0.0014 -	0.00024 B	0.00717 -	-	-
Vanadium, dissolved	mg/L	0.00081 B	0.005 U	0.00041 B	0.00076 B	0.014 B	0.0042 B	0.01 -	0.005 U	-	0.0116	0.051 -	0.076 -	0.034 -	0.032 -	-	-
Vanadium, total recoverable	mg/L	- -	0.005 U	0.00071 B	- -	0.033 -	0.0987 -	- -	0.014 B	-	- -	0.408 -	1.36 -	0.057 -	1.05 -	-	-
Zinc, dissolved	mg/L	0.00059 B	0.01 U	0.0018 U	0.00074 B	0.02 B	0.0135 -	0.0102 -	0.03 B	-	0.0108	0.06 -	0.1 -	0.01 U	0.03 B	-	-
Zinc, total recoverable	mg/L	- -	0.01 B	0.0018 U	- -	0.06 -	0.261 -	- -	0.04 B	-	- -	1.23 -	3.44 -	0.04 B	2.16 -	-	-
Major Ions																	
Calcium, dissolved	mg/L	51 -	48.4 -	56.1 -	51 -	15.5 -	33.7 -	18.8 -	23.8 -	-	32	16.1 -	13.7 -	41.1 -	14.4 -	-	-
Magnesium, dissolved	mg/L	8.7 -	7.5 -	12.2 -	8.77 -	4.3 -	11.7 -	5.54 -	7 -	-	10.4	6.2 -	3.5 -	9.8 -	4 -	-	-
Potassium, dissolved	mg/L	- -	1 B	0.925 B	- -	3 -	12.8 -	- -	2.9 -	-	- -	0.7 B	1 -	3.3 -	2.4 -	-	-
Sodium, dissolved	mg/L	- -	4.5 -	4.98 -	- -	2.1 -	6.97 -	- -	4.4 -	-	- -	1.5 -	1 -	5.6 -	2.1 -	-	-
Chloride	mg/L	- -	2 B	2.7 -	- -	2 B	10.5 -	- -	3 B	-	- -	1 U	1 U	2 B	1 B	-	-
Fluoride	mg/L	- -	0.1 B	0.1 U	- -	0.2 B	0.677 -	- -	0.2 B	-	- -	0.3 B	0.4 B	0.5 B	0.3 B	-	-
Sulfate	mg/L	8.18 -	10 U	8.19 -	7.96 -	10 U	4.35 -	5.7 -	10 U	-	1.66	10 U	10 U	60 -	20 -	-	-
Nutrients and Other Parameters																	
Nitrate/Nitrite as N	mg/L	- -	0.02 U	0.02 U	- -	0.02 U	0.02 U	- -	0.02 U	-	- -	0.39 -	0.05 -	B 0.02	B 0.02	U -	-
Nitrogen, ammonia	mg/L	- -	0.1 U	0.01 U	- -	0.1 U	0.29 -	- -	0.1 U	-	- -	0.1 U	0.1 U	0.1 U	0.1 U	-	-
Phosphorus, total	mg/L	- -	0.07 -	0.032 -	- -	0.9 -	2.976 -	- -	0.29 -	-	- -	2.7 -	6 -	0.77 -	36 -	-	-
Carbon, total organic (TOC)	mg/L	- -	6 -	10.2 -	- -	6 -	23.3 -	- -	11 -	-	- -	4 B	6 -	9 -	7 -	-	-
Total Alkalinity	mg/L	- -	151 -	189 -	- -	57 -	138 -	- -	94 -	-	- -	64 -	56 -	70 -	40 -	-	-
Bicarbonate as CaCO3	mg/L	- -	151 -	189 -	- -	57 -	138 -	- -	94 -	-	- -	64 -	56 -	34 -	40 -	-	-
Carbonate as CaCO3	mg/L	- -	2 U	1 U	- -	2 U	1 U	- -	2 U	-	- -	2 U	2 U	36 -	2 U	-	-
Hydroxide as CaCO3	mg/L	- -	2 U	1 U	- -	2 U	1 U	- -	2 U	-	- -	2 U	2 U	2 U	2 U	-	-
Hardness as CaCO3	mg/L	163 -	152 -	140 -	163 -	56 -	84.1 -	69.6 -	88 -	-	123	66 -	49 -	143 -	52 -	-	-
Total Dissolved Solids (TDS)	mg/L	- -	190 -	191 -	- -	90 -	191 -	- -	130 -	-	- -	80 -	80 -	230 -	100 -	-	-
Total Suspended Solids (TSS)	mg/L	9 -	16 B	7 -	8 -	10 B	86 -	5 U	5 U	-	6	46 -	52 -	16 B	776 -	-	-

Note: 1. ** The selenium concentrations w

TABLE 5

Lanes Creek Mine Sediment Data

Station Name	Date Monitored	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)
South Creek								
SLVG-13	Sep-03	15.8	128 N	40.7	85.2	7.4	201	541
Mine Drainage Channel								
SLVG-08	Sep-03	17.8	155 N	49.5	115	15.9	234 N	698
SLVG-09	Sep-03	30.4	242 N	75.2	119	11.4	238 N	621

Note:

N- indicates chromium and vanadium are flagged on Forms 1 and 5A by the lab because the % difference is outside the control limits of 75-125

TABLE 6

Lanes Creek Mine Soil Data

Station Name	Location Type	Date	Soil Depth (in)	Munsell Color (moist)	Gravel (%)	Texture	Percent Solids (%)	Total Carbon (%)	Nitrogen-TKN (mg/kg)	Nitrate/ Nitrite as N (mg/kg)	Paste pH	Total Organic Matter (%)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)
Lanes Creek Mine Disturbed Area																			
SLVG-01	Overburden	Sep-03	0 to 2	10YR 5/8	25	Clay	93.2	0.5	1120	0.83	6	1	46.2	424	57.8	121	15.1	289	665
		Sep-03	2 to 12										36 6	401	58 6	117	7 6	277	732
SLVG-02	Overburden	Sep-03	0 to 2	10YR 5/4	10	Clay	92.6	0.31	741	1.6	6 44	1.04	22.9	309	61.3	86.6	8.9	170	394
		Sep-03	2 to 12										24.7	394	65.1	90.1	19.3	192	380
SLVG-03	Overburden	Sep-03	0 to 2	10YR 3/3	25	Sandy clay loam	95.1	0.68	409	0.69	7.85	1 12	37.8	254	54.2	105	7.9	357	698
		Sep-03	2 to 12										28.2	168	37.1	99.3	4.9	291	658
SLVG-04	Overburden	Sep-03	0 to 2	10YR 4/3	10	Clay loam	95 5	1 34	730	2.22	7.32	2.21	65 6	565	106	141	25	704	832
		Sep-03	2 to 12										78.9	607	102	160	13.9	889	1010
SLVG-05	Overburden	Sep-03	0 to 2	10YR 4/3	10	Clay loam	95.4	0 99	918	0.9	6.33	2.69	24.8	485	97.4	140	33.4	206	547
		Sep-03	2 to 12										29.7	597	110	154	38.1	238	618
SLVG-10	Overburden	Sep-03	0 to 2	10YR 4/2	25	Sandy clay loam	96.8	0.75	795	0.39	5.89	2.37	0.48	14.4	8.1	11.7	0.2	23.5	37
		Sep-03	2 to 12										0.48	14.1	7.8	11.5	0.16	23.2	37.5
Top Soil Stockpile																			
SLVG-07	Top Soil Stockpile	Sep-03	0 to 2	10YR 4/6	<10	Clay	94.4	2.35	1480	4.99	6 3	3.25	1.5	23.4	12.5	15.7	0.27	32.7	77.9
		Sep-03	2 to 12										0.94	23.6	12.4	14.8	0.22	32.3	70.7
Pasture Area																			
SLVG-06	Native	Sep-03	0 to 2	10YR 4/1	50	Silt loam	96.0	2 15	1540	18.2	5.78	6.78	1.4	20 5	12.1	16.9	0.21	34.2	65.6
		Sep-03	2 to 12										1.2	19.6	11.4	16.6	0.27	33.5	62
SLVG-11	Native	Sep-03	0 to 2	10YR 3/2	10	Silt loam	93.3	2.58	2090	1.06	7 29	5.69	1.4	23 3	11.5	12.6	0.2	31.5	73 9
		Sep-03	2 to 12										1.3	23.7	11.1	12.8	0.16	33.6	70
SLVG-12	Native	Sep-03	0 to 2	10YR 4/2	10	Silty clay loam	93.4	2.59	2900	8.56	6.36	5.13	3.8	40.4	17.8	22.3	0.56	44.3	129
		Sep-03	2 to 12										2.4	36.3	15	19	0.37	38.2	111
SLVG-14	Native	Sep-03	0 to 2	10YR 3/3	10	Silty clay loam	93	3.62	2880	8.71	6 26	7.66	2 6	30.6	16.5	19.4	0.24	34	119
		Sep-03	2 to 12										2.3	27.3	15.6	17.4	0.24	30.8	111
SLVG-15	Native	Sep-03	0 to 2	10YR 3/3	0	Silty clay loam	95 1	2.71	2120	4.7	6.51	6.82	1 5	18 9	12 7	13 9	0 17	28 8	74
		Sep-03	2 to 12										1 1	18.2	12.4	12.9	0.14	27.8	68.4
SLVG-16	Native	Sep-03	0 to 2	10YR 3/4	0	Silty clay loam	95.9	2.37	1960	4.97	6.68	6.17	1.4	17.2	13.1	11.9	0.15	25.9	73.6
		Sep-03	2 to 12										1.2	16.5	12.3	11.8	0.12	24.8	65.6

Note
Concentrations reported on a dry weight basis
J refers to values qualified as estimated

TABLE 7

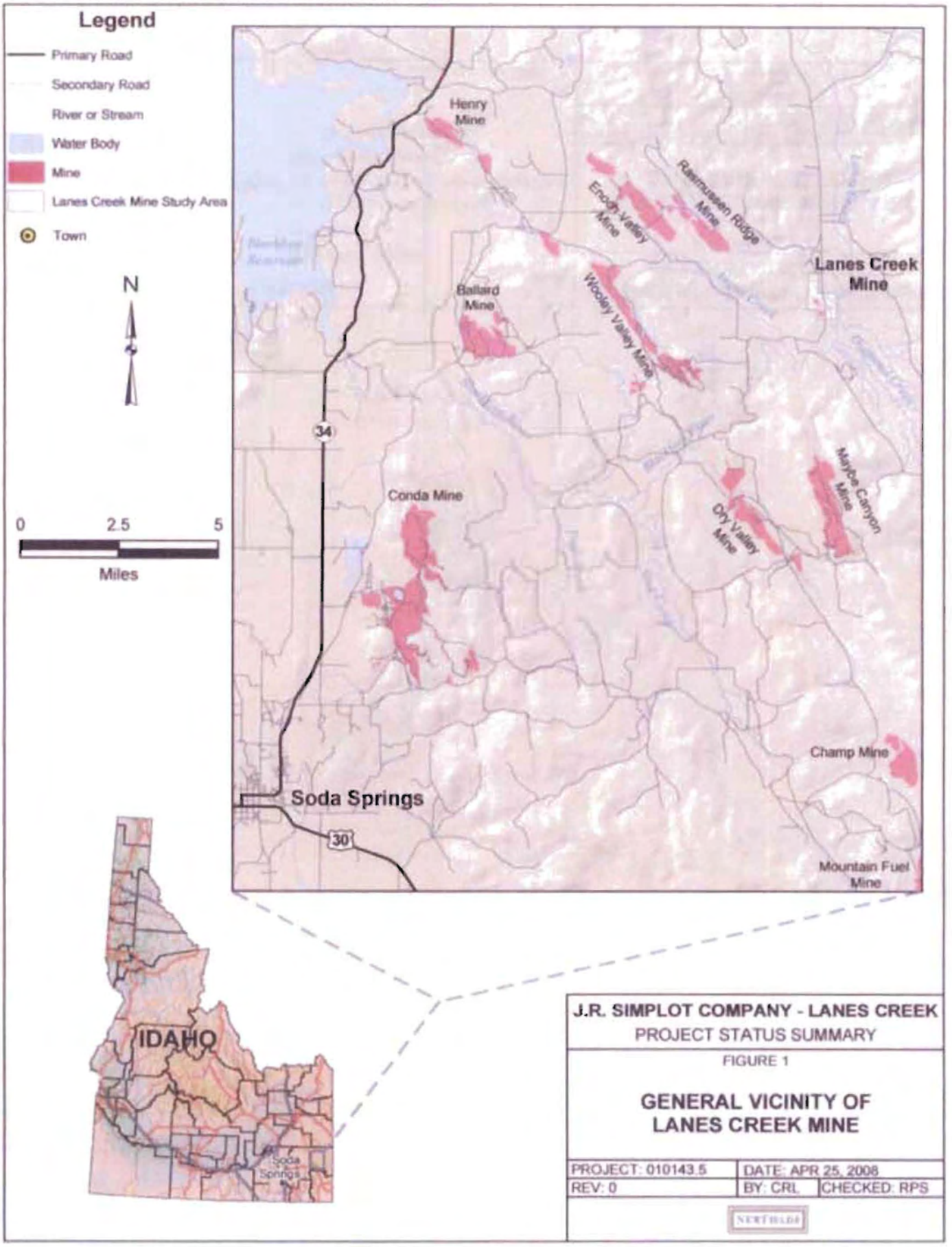
Lanes Creek Mine Vegetation Data

Station Name	Area Type	Sample Type	Vegetation Species	Percent Moisture (%)	Biomass (g/m^2)	Litter Mass (g/m^2)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)
Lanes Creek Mine Disturbed Area													
SLVG-01	Overburden	Forage Composite	timothy, thickspike wheatgrass, Poa sp., orchard grass	23.1	10.33	0	3.6	3.5	2 8	3.1	0.48	2.4	34
SLVG-02	Overburden	Forage Composite	thickspike wheatgrass, western wheatgrass, Poa sp., timothy	23.8	10 98	0	0.96	4 7	3.6	2.8	0.89	3.3	25.3
		Grass Composite	thickspike wheatgrass[1], western wheatgrass, Poa sp., timothy	13.4			1.8	9.5	5.6	6.2	0.8	6.2	33.9
		Yarrow Composite	yarrow	16.5			19.7	13.3	14.8	13.3	4.5	8.9	53.5
		Macaranthera sp Composite	Macaranthera sp	27.6			6.3	6.5	10.1	6.9	1	5.3	72.2
SLVG-03	Overburden	Forage Composite	orchard grass, timothy, thickspike wheatgrass	25.9	90.53	2.15	4.7	11.1	7.3	7.1	11.4	14.5	87.2
SLVG-04	Overburden	Grass Composite	thickspike wheatgrass[1], western wheatgrass, orchard grass., timothy	19.3	158.34	0.65	3.5	16.1	6.8	6.8	173	20.9	61.4
		Forage Composite	thickspike wheatgrass, western wheatgrass, orchard grass., timothy	16.5			4.7	18.1	8.2	8.7	150	24.1	73.5
		Redstem Filaree Composite	redstem filaree	24.3			2.1	7.4	7.1	7.5	84.2	9.6	44.7
		Yarrow Composite	yarrow	11.3			9.7	41.2	19.3	19.4	99.5	32.5	106
SLVG-05	Overburden	Forage Composite	white clover, timothy, thickspike wheatgrass, orchard grass	20.2	8.72	0	2.5	6.3	3.5	4.4	44.2	3.7	51
SLVG-10	Overburden	Forage Composite	western wheatgrass, timothy, thickspike wheatgrass, orchard grass	15.3	188.80	4.20	0.11 B	0.24 B	2 4	0.11 U	0.28	0 17 B	14.1
Top Soil Stockpile													
SLVG-07	Top Soil Stockpile	Forage Composite	smooth brome, Poa sp., thickspike wheatgrass	17.5	297.09	34.34	0.41	0.73 B	3	0.36 B	2.7	0.68	29.2
Pasture Area													
SLVG-06	Native	Forage Composite	Poa sp., bluebunch wheatgrass, western wheatgrass, Idaho fescue	11.6	110.01	46 18	0.23	0.61 B	5.2	0 1 U	0.16	0.7	18.9
		Browse Composite	sage	24			0.69	0.33 B	11.3	2.3	0.16	0.35 B	21.6
		Grass Composite	Poa sp.[1], bluebunch wheatgrass, western wheatgrass, Idaho fescue	18.4			0.18 B	0.61 B	3.9	0.41 B	0.2	0.64	16
		Aster Composite	Aster sp.	16.2			1.4	0.49 B	11.4	1.2	0.6	0.51	56.4
		Thistle Composite	thistle	8.1			1.6	0.56 B	8.5	1.6	0.26	0.68	21.1
		Yarrow Composite	yarrow	16.1			1.4	0.6 B	7.8	0.56 B	0.52	0.88	27 1
SLVG-11	Native	Forage Composite	Poa sp., timothy, thickspike wheatgrass	8.4	140.79	35.41	0.2	2	2.7	0.35 B	0.33	1.7	25.4
SLVG-12	Native	Forage Composite	timothy, Idaho fescue, Poa sp., Carex sp.	10.6	190.85	24.33	0.25	0.5 B	1.8	0.1 U	0.15	0.48 B	32
SLVG-14	Native	Forage Composite	Poa sp., timothy, thickspike wheatgrass, Idahao fescue	8.1	232.50	67.60	0.2	0.56 B	2.3	0.1 U	0.16	0.51	20.6
SLVG-15	Native	Forage Composite	timothy, Idaho fescue, Poa sp., thickspike wheatgrass	6.1	176.64	24.11	0.25	1.2	2	0.55 B	0.32	1.4	27.1
SLVG-16	Native	Forage Composite	timothy, Poa sp., thickspike wheatgrass, Idaho fescue	5.3	195.04	37.24	0.16 B	1.1	2.2	0.53 B	0.38	1.1	19.3
		Browse Composite	sage	12.6			0.72	0.44 B	9.8	6.3	0.38	0.44 B	31.9
		Grass Composite	timothy[1], Poa sp., thickspike wheatgrass, Idaho fescue	6.9			0.25	1.4	1.9	0.85 B	0.49	1.5	19.5
		Yarrow Composite	yarrow	5.2			1.4	1.6	5.8	1.2	1.5	1.6	31.9
Unwashed Forage Composite Samples													
SLVG-04	Overburden	Unwashed Forage Composite	thickspike wheatgrass, western wheatgrass, orchard grass., timothy	16.5	158 34	0.65	3	13 2	6.7	6 1	216	16.1	60
SLVG-06	Native	Unwashed Forage Composite	Poa sp., bluebunch wheatgrass, western wheatgrass, Idaho fescue	11.6	110.01	46 18	0.24	0.67 B	5 6	0 1 U	0.34	0.85	19.6
SLVG-10	Overburden	Unwashed Forage Composite	western wheatgrass, timothy, thickspike wheatgrass, orchard grass	15.3	188.80	4.20	0.12 B	0.35 B	3 1	0.1 U	0.34	0.26 B	14.3
SLVG-15	Native	Unwashed Forage Composite	timothy, Idaho fescue, Poa sp., thickspike wheatgrass	6.1	176.64	24.11	0.24	0.95 B	1.7	0.48 B	0.18	1.1	28.9
SLVG-16	Native	Unwashed Forage Composite	timothy, Poa sp., thickspike wheatgrass, Idaho fescue	5.3	195.04	37.24	0.29	1.8	2.7	0.86 B	0.23	2.1	21.8

Note.

1. Concentrations reported on a dry weight basis.
2. U refers to the method detection limit (MDL) for results less than detection and B refers to a value between the MDL and the Practical Quantification Limit.
3. The superscript 1 indicates the dominant (most abundant) species.

S:\GIS\ARCPRJ\010143\PLT\PROJECTSUMMARY\FIGURE 1.MXD



J.R. SIMPLOT COMPANY - LANES CREEK

PROJECT STATUS SUMMARY

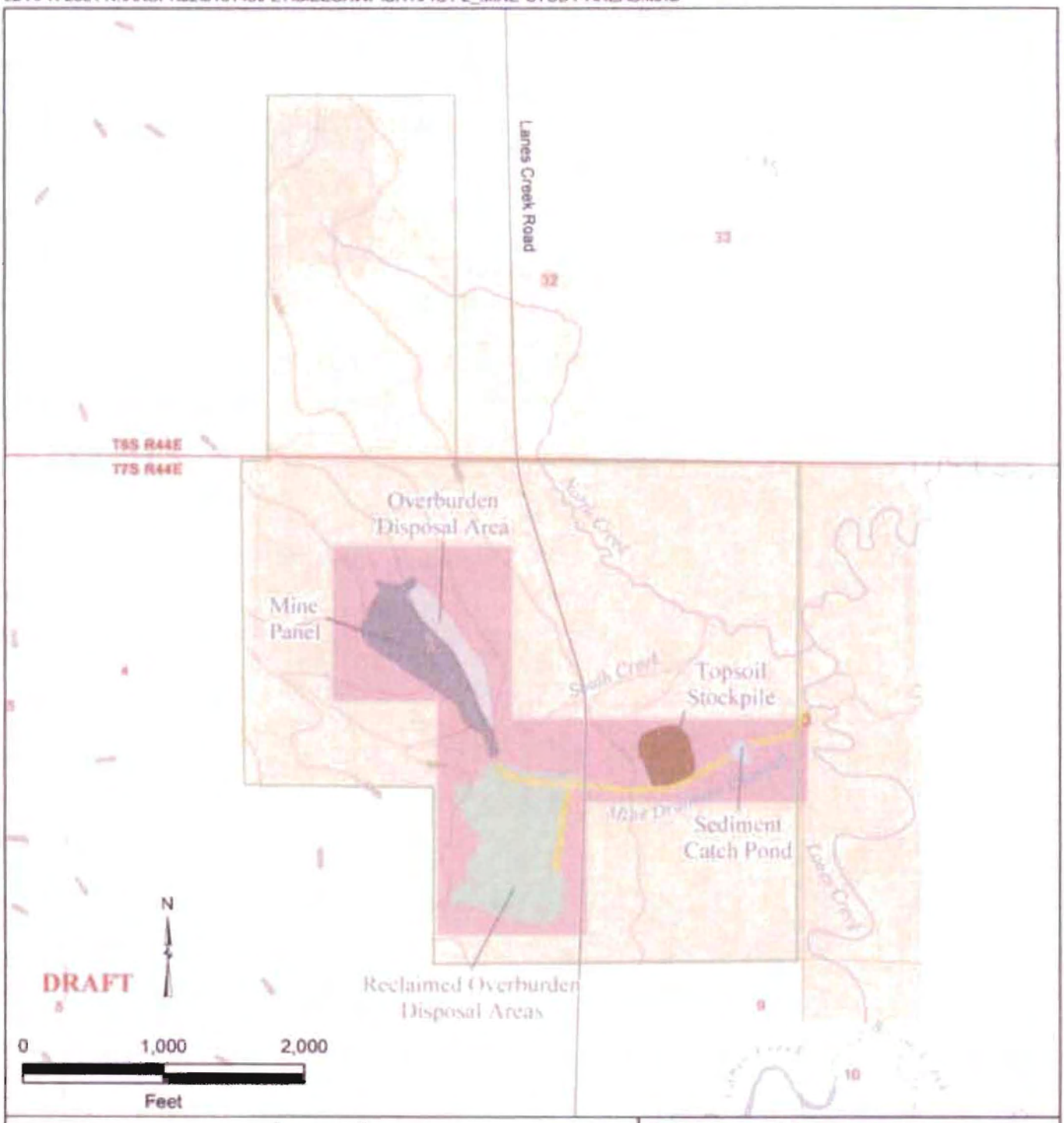
FIGURE 1

GENERAL VICINITY OF LANES CREEK MINE

PROJECT: 010143.5	DATE: APR 25, 2008	
REV: 0	BY: CRL	CHECKED: RPS

NORTHSTAR

22-APR-2004 N:\ARCPRJ2\010143\PLT\SIEECAWP\CH1\FIG1-2_MINE-STUDY-AREAS.MXD



Legend

Hydrology
- Perennial Stream
- Intermittent Stream
- Constucted Mine Drainage Channel
- Open Water

Mine Features
- Mine Area
- Study Area
- Mine Fee Lease Boundary

Mine Disturbance
- Mine Panel
- Overburden Disposal Area
- Reclaimed Overburden Disposal Area
- Topsoil Stockpile
- Sediment Catch Pond

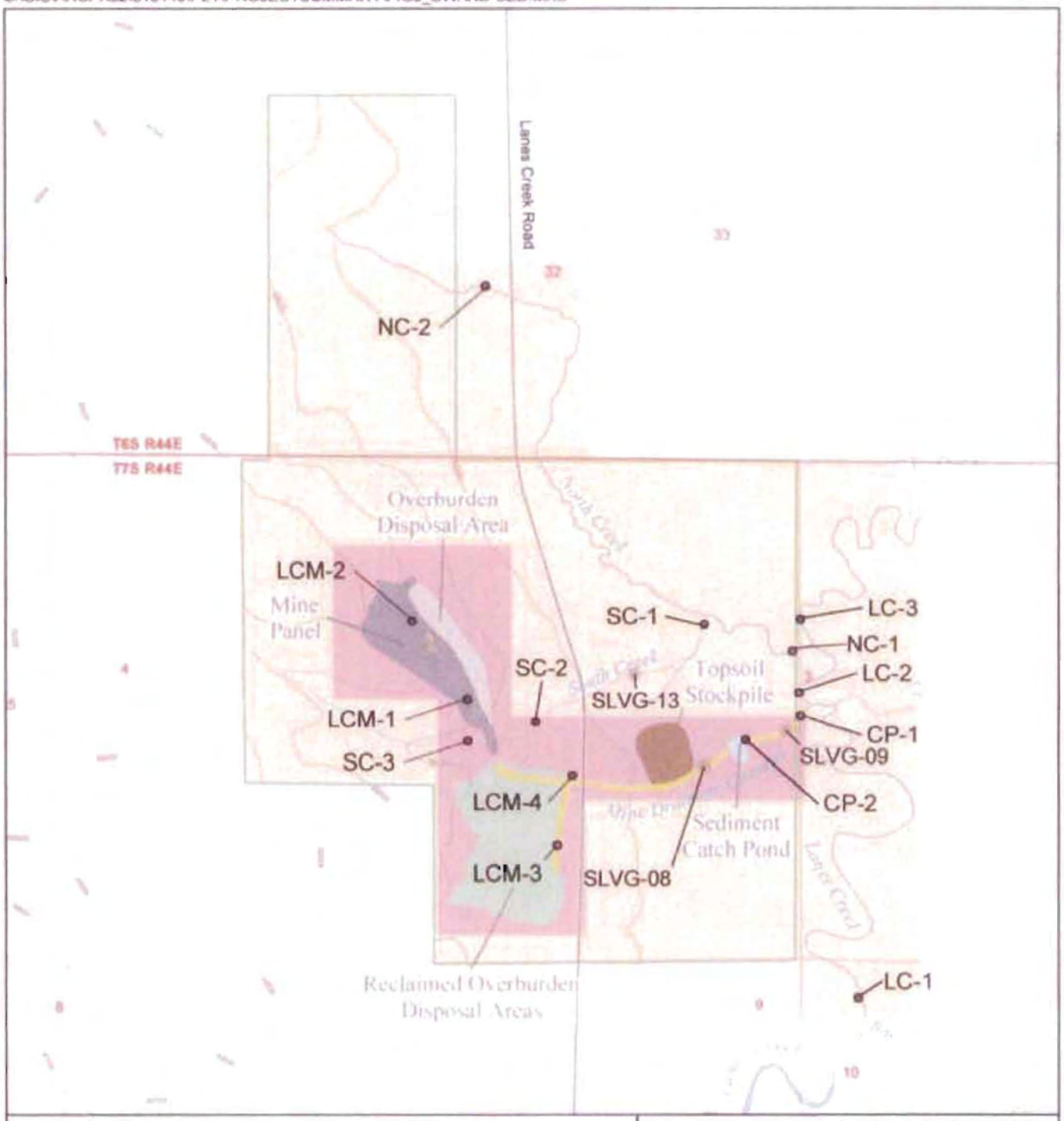
J.R. SIMPLOT COMPANY - LANES CREEK
PROJECT STATUS SUMMARY

FIGURE 2

FEE LEASE, MINE AREA AND STUDY AREA EXTENTS

PROJECT: 010143.5	DATE: APR 22, 2004	
REV: 0	BY: CRL	CHECKED: RPS

S:\GIS\ARCPRJ2\010143\PLT\PROJECTSUMMARY\FIG3_SWAND SED.MXD



EXPLANATION

Hydrology

- Perennial Stream
- Intermittent Stream
- Open Water

Mine Features

- Mine Area
- Study Area
- Mine Fee Lease Boundary
- Monitoring Station
- MFG, Inc. - Sept. 2003

N

DRAFT

0 1,000 2,000

Feet

J.R. SIMPLOT COMPANY - LANES CREEK

PROJECT STATUS SUMMARY

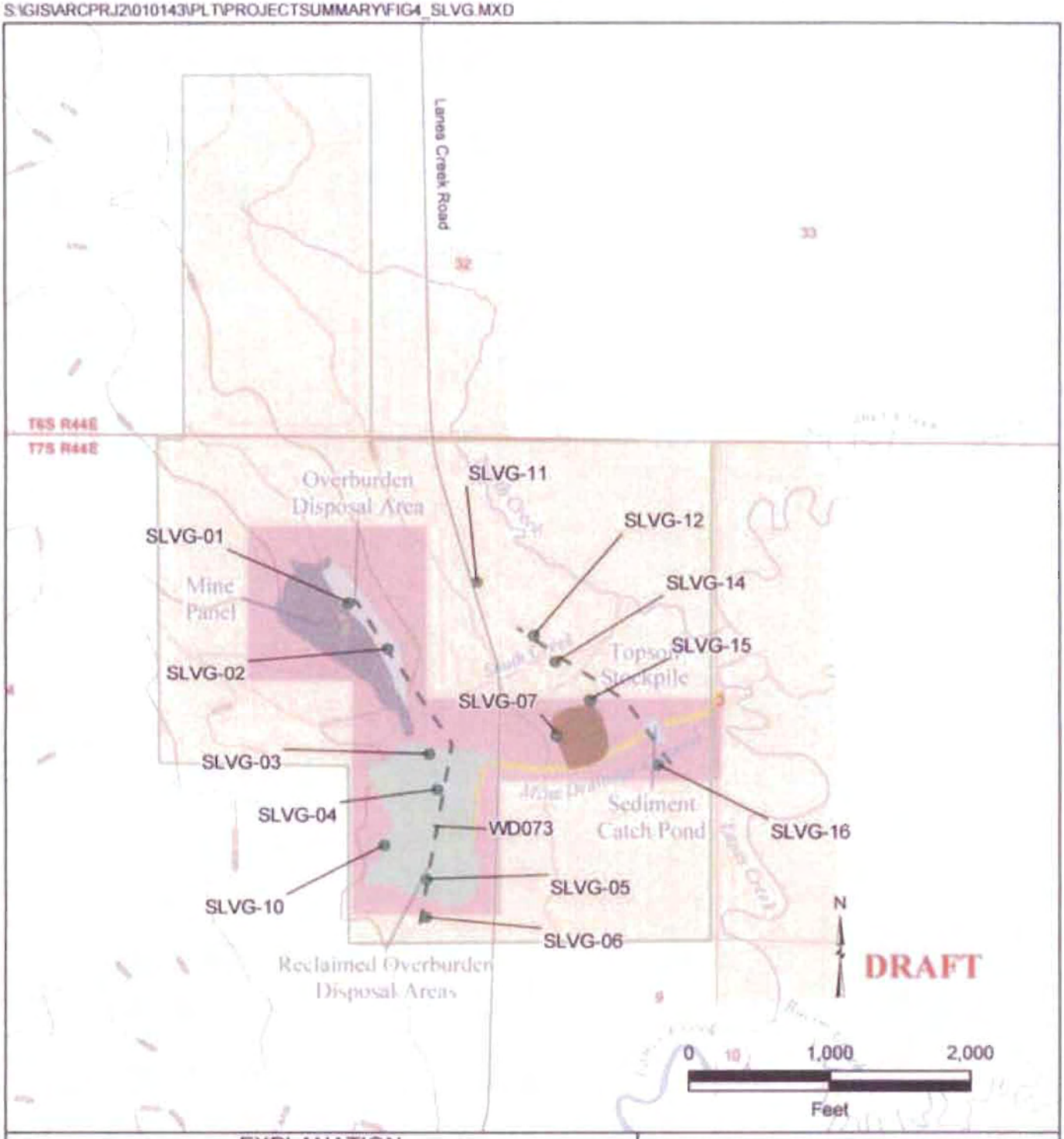
FIGURE 3

SURFACE WATER AND SEDIMENT SAMPLING LOCATIONS

PROJECT: 010143.5	DATE: APR 25, 2008	
REV: 0	BY: CRL	CHECKED: RPS

NewFields

S:\GIS\ARCPRJ2\010143\PLT\PROJECTSUMMARY\FIG4_SLVG.MXD



EXPLANATION

Hydrology

- Perennial Stream
- Intermittent Stream
- Constructed Mine Drainage Channel
- Open Water
- Transect Line

Mine Features

- Mine Area
- Study Area
- Mine Fee Lease Boundary

Mine Disturbance

- Mine Panel
- Overburden Disposal Area
- Reclaimed Overburden Disposal Area
- Topsoil Stockpile
- Sediment Catch Pond
- Vegetation and Soil Sampling Location

J.R. SIMPLOT COMPANY - LANES CREEK

PROJECT STATUS SUMMARY

FIGURE 4

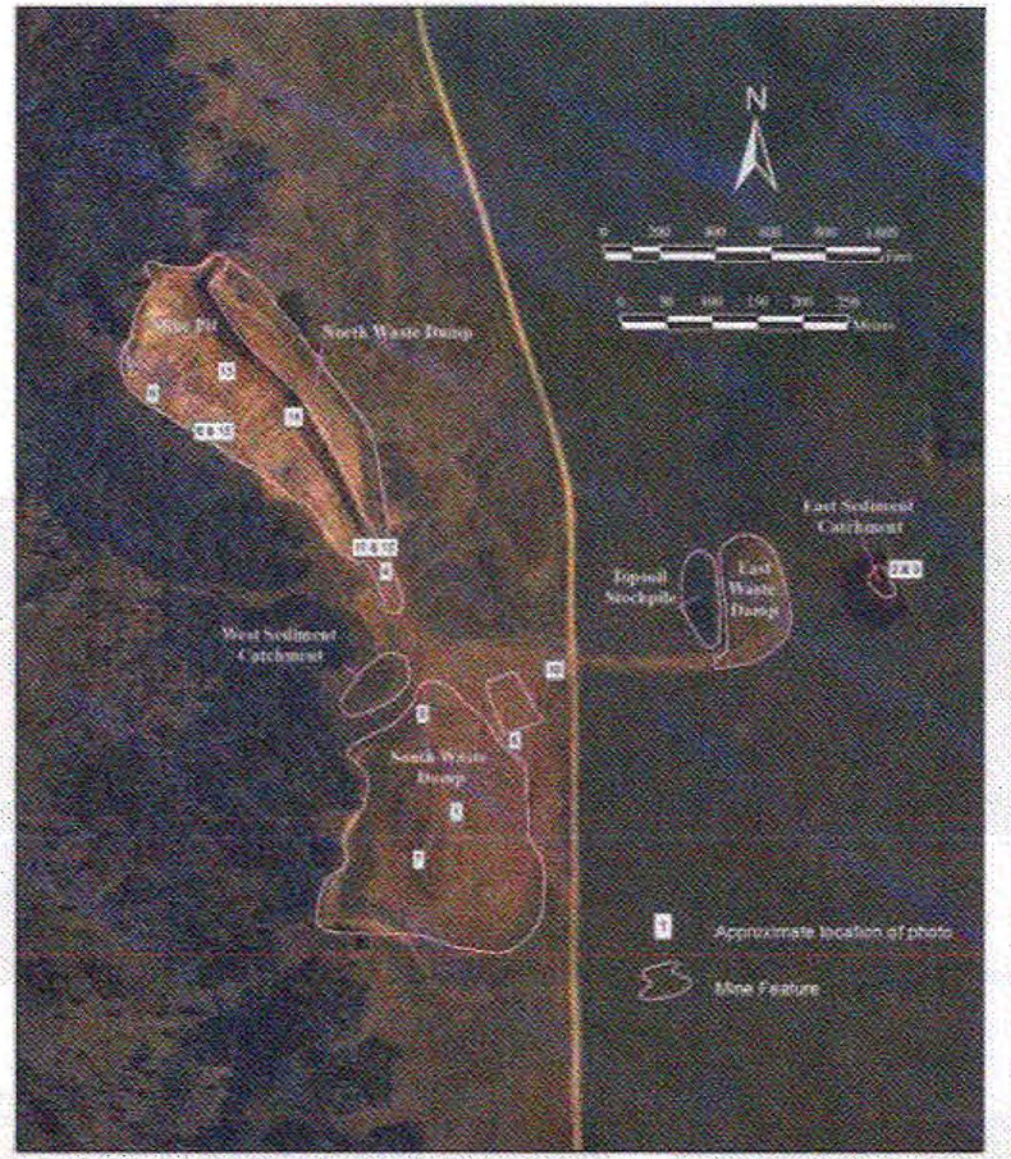
SOIL AND VEGETATION SAMPLING LOCATIONS

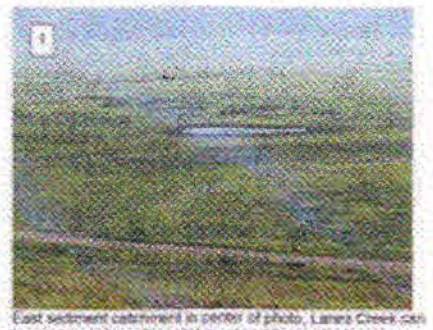
PROJECT: 010143.5	DATE: APR 28, 2004	
REV: 0	BY: CRL	CHECKED: RTD

Attachment B

June 26, 2008 Site Photographs

Lanes Creek Mine June 26, 2008




East sediment catchment in center of photo, Lanes Creek can be seen just above the catchment and the waste dump is below and to the left of the catchment. The photo was taken looking east from the main waste dump.


View of the pit and sediment retention structures, looking north near the pit entrance. Note erosion of footwall of pit


Cattle staging area located west of the south waste dump. Photo taken looking north from the top of the waste dump

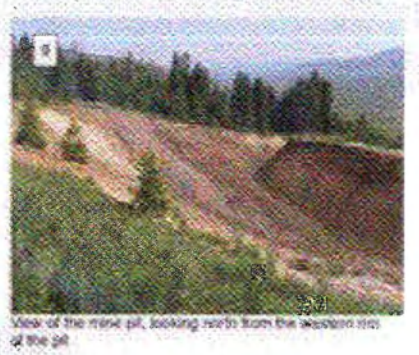

East sediment catchment outflow, draining to Lanes Creek. View from sediment catchment berm, looking east.


West sediment catchment at the mouth of the mine pit, looking north.


View of the mine pit, looking south from near the western rim of the pit.

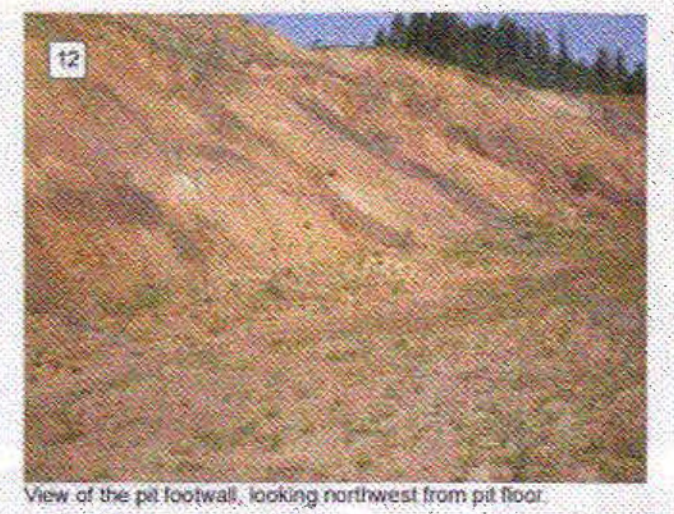

Drain from east sediment catchment to Lanes Creek, looking east


Armored drainage located in saddle of the south waste dump (facing west)

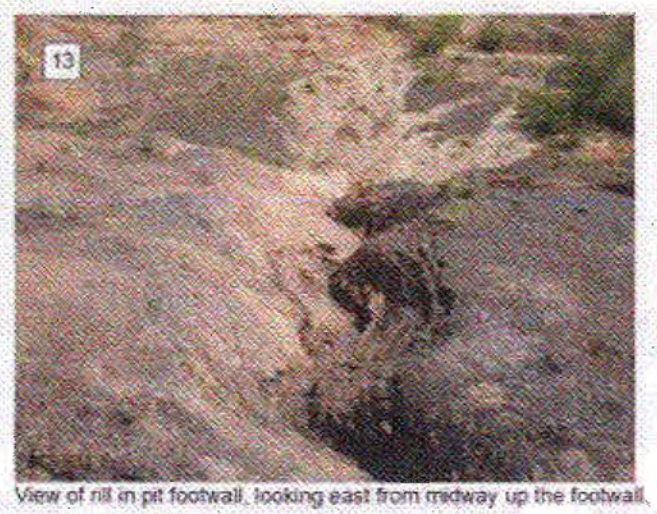

View of the mine pit, looking north from the western rim of the pit


Panoramic view of the Lanes Creek Mine looking west from near the gate at Lanes Creek Road

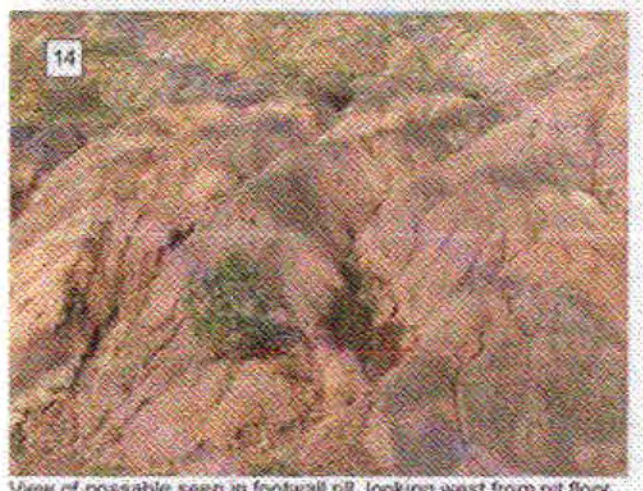
View of a sediment catchment within the mine pit, looking north into the pit. Note wet, trampled soils.



View of the pit footwall, looking northwest from pit floor.



View of rill in pit footwall, looking east from midway up the footwall.



View of possable seep in footwall rill, looking west from pit floor.

View of hanging wall and north waste dump, looking east from the top of the footwall. The East Sediment Catchment can be seen on the right side of the photograph near the center