



January 6, 2005

**\*\*via courier\*\***

Attention: Martin Haefele  
Environmental Assessment Officer  
Mackenzie Valley Environmental Impact Review Board  
5102, 50<sup>th</sup> Avenue  
PO Box 938,  
Yellowknife, NT X1A 2N7

Dear Mr. Haefele:

**Submission of Detailed Project Description: LUP MV2004C0030, MVEIRB File EA 0405-02**

Further to a letter from MVEIRB dated June 22, 2004, Canadian Zinc is pleased to submit 50(fifty) copies of a Detailed Project Description for exploration drilling on mineral leases and claims adjacent to our Prairie Creek mine site, in reference to Land Use Permit application MV2004C0030. Five of these copies contain figures in colour for distribution as you deem appropriate. Also included is a CD with an electronic version of the report in .pdf format for your distribution.

This is a comprehensive document which, based on past experience, addresses all issues and concerns relating to this exploration diamond drill program at the Prairie Creek Project.

If you have any questions please contact us at 604-688-2001

Yours truly,  
CANADIAN ZINC CORPORATION

A handwritten signature in black ink, appearing to read 'for' followed by a stylized flourish.

David P. Harpley, P. Geo.  
Environmental Coordinator

A handwritten signature in black ink, appearing to read 'Alan B. Taylor' followed by a stylized flourish.

Alan B. Taylor  
COO & VP Exploration

Attachments

**DETAILED PROJECT DESCRIPTION**

**PHASE 3 SURFACE DRILLING EXPLORATION PROGRAM**

**PRAIRIE CREEK MINE**

SUBMITTED IN SUPPORT OF:

Type "A" Land Use Permit Application  
Originally as an amendment to **LUP MV2001C0022** Dated March 2, 2001  
Now referred to by **MVLWB** as **LUP MV2004C0030** Dated June 1, 2004  
**MVEIRB file EA 0405-02**

SUBMITTED TO:

Mackenzie Valley Environmental Impact and Review Board  
Box 938, 5102-50<sup>th</sup> Avenue,  
Yellowknife, NT  
X1A 2N7

SUBMITTED BY:

Canadian Zinc Corporation  
Suite 1202 – 700 West Pender Street  
Vancouver, BC, V6C 1G8

December, 2004

## EXECUTIVE SUMMARY

The Prairie Creek property, 100% owned by Canadian Zinc Corporation (CZN), has excellent potential for the discovery of mineral resources additional to those already defined within the Main Zone. Numerous mineralized zones are known to occur throughout the sixteen kilometre long property, and these zones require further diamond drill mineral exploration. A new drill program is proposed which has the potential to add to the already substantial mineral resources.

Extensive infill and underground evaluation of the Main Zone is planned under Land Use Permits already issued. In tandem to this, and the subject of this review, CZN has planned a surface diamond drill mineral exploration to include the remaining areas of the Prairie Creek property defined by its existing Mining Leases and Mineral Claims. A substantial amount of mineral exploration has already occurred throughout the Leases in the form of extensive trenches, diamond drilling, geophysics and underground tunnelling. The proposed exploration program will consist of diamond drilling at up to 60 drill sites, staged from the mine site. These sites will be located within contiguous mineral zones south of the existing mine area (on the south-west side of Prairie Creek), in the Rico Zone north of the mine (near Casket Creek), and in the Gate claims west of the mine (also west of Prairie Creek). The areas where drill holes are proposed represent only a small part of the leases and claims, and are primarily upland areas and away from major creeks.

Access to the zones south and north of the mine will be gained via an existing network of roads. These roads were established in the 1980's and 1990's, and were used several times for exploration programs in those decades. Short spur roads (up to 100 m in length) from the existing network may be needed for some of the new drill sites. Access to the southern zones will include fording Prairie Creek at a previously used crossing location at Galena Creek. The crossing location is cobbly, and has been classified as migration habitat. Nevertheless, heavy machinery will not cross Prairie Creek during freshet and the period of potential Arctic grayling migration and spawning (crossings after June 15 are considered permissible). Heavy equipment will be steam-cleaned prior to crossing Prairie Creek, and manually cleaned prior to return crossings. CZN will adopt the *Environmental Excellence in Exploration (E3) guidelines* prepared for the Prospector's and Developers Association for the drilling program, and standard mitigation techniques will also be employed to minimize any environmental impacts and as recommended by MVEIRB and prescribed by the MVLWB within existing Land Use Permits. Vegetation clearing and new road construction will be minimized, and where it occurs, will be combined with runoff and erosion controls. Disturbed areas will be stabilized after use, and will ultimately be reclaimed.

The southern-most zones and the Gate claims will be drilled using a helicopter-portable rig because for the former, roads are not well developed and the terrain is steep, and for the latter, there are no roads. Helicopter use will be minimized, and restricted to the immediate area of the mine and drill sites.

All drilling will take place within the watershed of Prairie Creek, and in areas subject to previous exploration. An impact assessment has identified potential for adverse impacts associated with creek crossings and vegetation clearance, and the use of a helicopter for drill site access. This

potential will be minimized by adopting appropriate mitigation measures, such as those described above. CZN will also employ an environmental management plan to ensure the effective application of mitigation measures, and adjustment as necessary.

A cumulative effects assessment concluded that such effects are unlikely, because: mine site water management and water quality will be improved independent of the proposed drilling program; any water quality impacts associated with the drilling will be limited in magnitude and extent; and, helicopter use will be a small increment to existing fixed-wing traffic into the mine site and the two landing sites in the Nahanni National Park Reserve, which is approximately 13 km south-west of the mine at its nearest point.



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## 1.0 INTRODUCTION

### 1.1 PROJECT SETTING

The Prairie Creek Mine (Plate 1) is located in the southern Mackenzie Mountains in the south-west corner of the Northwest Territories at 61° 33' North latitude and 124° 48' West longitude (Figure 1). The mine site facilities are situated adjacent to Prairie Creek, about 43 km upstream from its confluence with the South Nahanni River (Figure 2), and 32 km upstream of the point where Prairie Creek crosses the boundary of the Nahanni National Park Reserve (NNPR).

The property is within the area claimed by the Nahanni Butte Dene Band of the Deh Cho First Nations as their Traditional Territory.

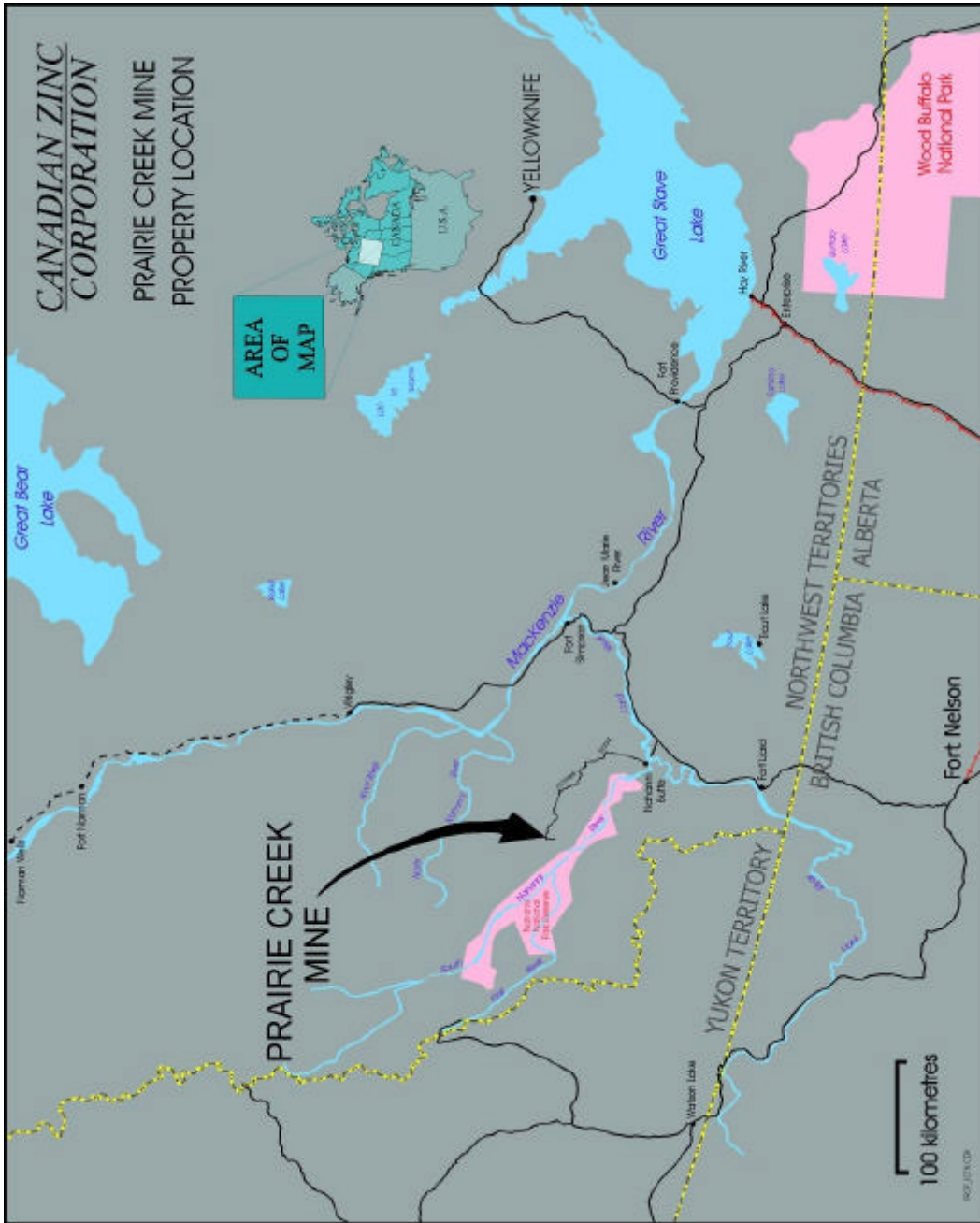
The nearest settled communities are:

- Nahanni Butte, NT - 90 km to the southeast
- Fort Liard, NT - 170 km to the south
- Fort Simpson, NT - 180 km to the east
- Yellowknife, NT - 480 km to the east

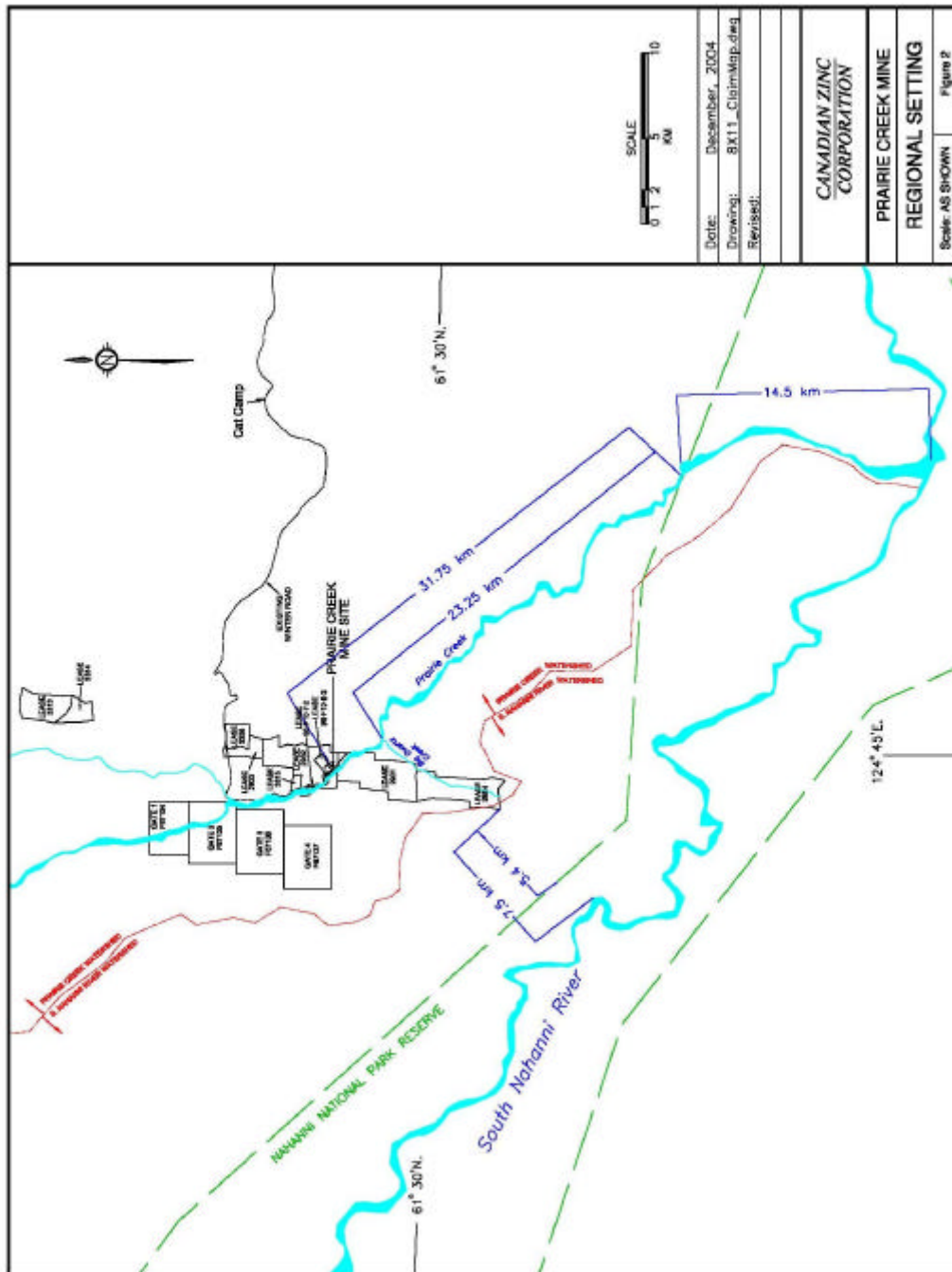
Year round access to the property is by charter aircraft, generally from Fort Simpson, NWT or Fort Nelson, B.C. The mine is serviced by a 1,000 m gravel airstrip that is located adjacent to Prairie Creek approximately 1 km to the north of the mine site.

The mine site is at an elevation of 850 metres above sea level, and is situated in topography characterized by low mountains and narrow valleys with an average relief of 300 metres. Short summers and long winters are typical of the area's sub-arctic climate, where the mean annual temperature is -5°C. Annual precipitation is approximately 40 cm, most of which falls as rain. The mine site, including the area of the proposed drilling program, is located within the Alpine Forest-Tundra section of the Boreal Forest, characterized by stunted fir with limited undergrowth and open areas dominated by lichen.

Canadian Zinc Corporation's (CZN) 100% owned Prairie Creek project includes a near complete mine, mill and supporting infrastructure, with a substantial mineral resource base totalling 11.9 million tonnes grading 161 grams per tonne silver, 12.5% zinc, 10.1% lead and 0.4% copper. The resource contains an estimated, *in situ*, 70 million ounces of silver; approximately 3 billion pounds of zinc and 2 billion pounds of lead. With this open ended resource and the present infrastructure, the Prairie Creek Mine has the potential to become a major national project. The mine site contains a mill complex, administration building, accommodations, shops along with various equipment, and other site facilities. The facilities provide a strategic location from which to further explore the property.



**Figure 1: Project Location Map**



**Figure 2: Regional Setting**

## 1.2 PROGRAM BACKGROUND

Diamond drill exploration is a common practice in the mineral exploration industry for mineral resource definition. It has been an on-going activity at the Prairie Creek property since the 1960's, and with programs in the 70's and 80's prior to CZN's acquisition of the property (by its predecessor company, San Andreas Resources Corporation). Since 1991, CZN has been exploring the property with a view to defining a substantial mineral resource. The same drilling rigs and support equipment have been used for the exploration drill campaigns undertaken. The lands were accessed by utilizing a network of roads constructed before 1991, which were locally modified

From 1980, drilling activity at Prairie Creek was regulated through Land Use Permits issued by DIAND, which include N80F248 (April 14, 1980), N86C537 (February 12, 1986) and N87C668 (January 21, 1987). Following acquisition of the project by San Andreas Resources, two exploration diamond drilling permits were issued while the project was still under the stewardship of DIAND regulations, N92C778 and N95C373. Permit N95C373 allowed for diamond drilling from 1993 to 1995 on the area that is the subject of the present Land Use Permit (LUP) application.

On July 28, 2000, a LUP was applied for (MV2000C0030) consisting of 6-7 hole diamond drilling program (Phase 1) local to the area of the mine site. Following Environmental Assessment, a LUP was issued on June 14, 2001.

On March 5, 2001 a LUP (MV2001C0022) for a 50-60 hole diamond drilling program (Phase 2) was applied for. After Environmental Assessment, a LUP was issued on November 30, 2001. Simultaneously, a LUP for underground development and drilling (MV2001C0023), and a water license for pilot plant testing (MV2001L2-0003), were applied for, both focussing on further detailed study of the main zone of mineralization. After Environmental Assessment of both, a LUP and a water license were issued, commencing on September 10, 2003.

With a permit for underground drilling, CZN did not need an extensive Phase 2 surface drilling program focussed on the main zone. A request to amend the LUP for the Phase 2 program was made to allow further exploration outlying from the main zone. A letter from the Mackenzie Valley Land and Water Board (MVLWB) dated January 7, 2004 (Appendix A) confirmed that under LUP MV2001C0022 CZN could drill anywhere on the Prairie Creek property. Following comments to the MVLWB by third parties, the MVLWB issued a letter dated April 19, 2004 changing their previous letter and restricting drilling to within a 1000 metre radius of the Mill, as contemplated in the original permit. The MVLWB recommended that CZN apply for a formal permit amendment. Consequently, CZN submitted an amendment application to LUP MV2001C0022 on April 20, 2004.

After a preliminary screening and review of correspondence was completed by the MVLWB, the Board referred the amendment application to Environmental Assessment

(letter dated June 1, 2004) citing “public concern regarding potential cumulative effects on the South Nahanni Watershed.” The MVLWB also assigned a new application number, MV2004C0030, to the amendment.

Documents and letters relating to LUP MV2001C0022 and the subsequent amendment application are included in Appendix A of this document. These are included as they contain information relevant to the new application.

Letters from INAC and Environment Canada stated that these agencies found the amendment request to be within the scope of the existing LUP for drilling, and any environmental concerns could be addressed by standard mitigation measures. The MVLWB had a similar conclusion for most of the points raised in the Preliminary Screening. The main points of concern that were expressed in the preliminary screening and letters of correspondence are noted below. CZN’s brief responses are shown in italics:

- 1) The area covered by 2 Mining Leases was withdrawn under the Deh Cho Interim Measures Agreement, and these lands are being considered for park expansion.

*The DCFN IMA, Section 19 states “Land withdrawn from disposal under this Agreement shall be subject to the continuing exercise of existing rights, titles, interests, entitlements, licences, permits, authorizations, reservations, reservations by notation, benefits and privileges”. Section 23 states “The provisions of this Agreement shall not affect access to, or across, withdrawn land”.*

*Furthermore in a letter from the INAC Director General to MVLWB Chair (on the public registry MV2003F0028) with regards to land withdrawals “We wish to point out that even though the lands are withdrawn from disposal, a Land Use Permit is not a disposal. It is a licence for temporary use of the land, and can be issued on lands that are withdrawn from disposal by Order in Council. DIAND cannot dispose of the land by way of lease, or other tenure that would give exclusive possession of the property to another party, however, your Board can issue land use permits on such lands.”*

- 2) Concerns that the development would destroy the pristine nature of the South Nahanni Watershed.

*The South Nahanni Watershed is a large area, and the Prairie Creek catchment is a relatively small part of it. The Prairie Creek project already has an extensive established network of roads, trenches, drill sites and underground workings. CZN will adopt and utilize previous recommendations made by the MVEIRB, in addition to new mitigation measures, to ensure robust controls to protect water quality.*



- 3) More in-depth studies may be needed to determine the cumulative effects of this operation.

*Section 6.0 of this Report discusses cumulative effects.*

- 4) Reviewers have stated concerns that this exploration may lead to mining of the mineral resources.

*The scope of this program is exploration only on existing mineral claims.*

- 5) Bull Trout are on COWSEWIC's High Priority Candidate List.

*Bull Trout are not on this list, neither are they listed on Schedule 1 of the Species at Risk Act. They are currently under assessment by the Committee, with a decision due by 2007. CZN recognizes that project planning must take the presence of bull trout in the watershed, and their habitat, into account. This is addressed in this document.*

- 6) Concern was noted about fuel handling

*CZN's Fuel Spill Contingency Plan, approved by the MVLWB on December 3, 2004 is included as Appendix B.*

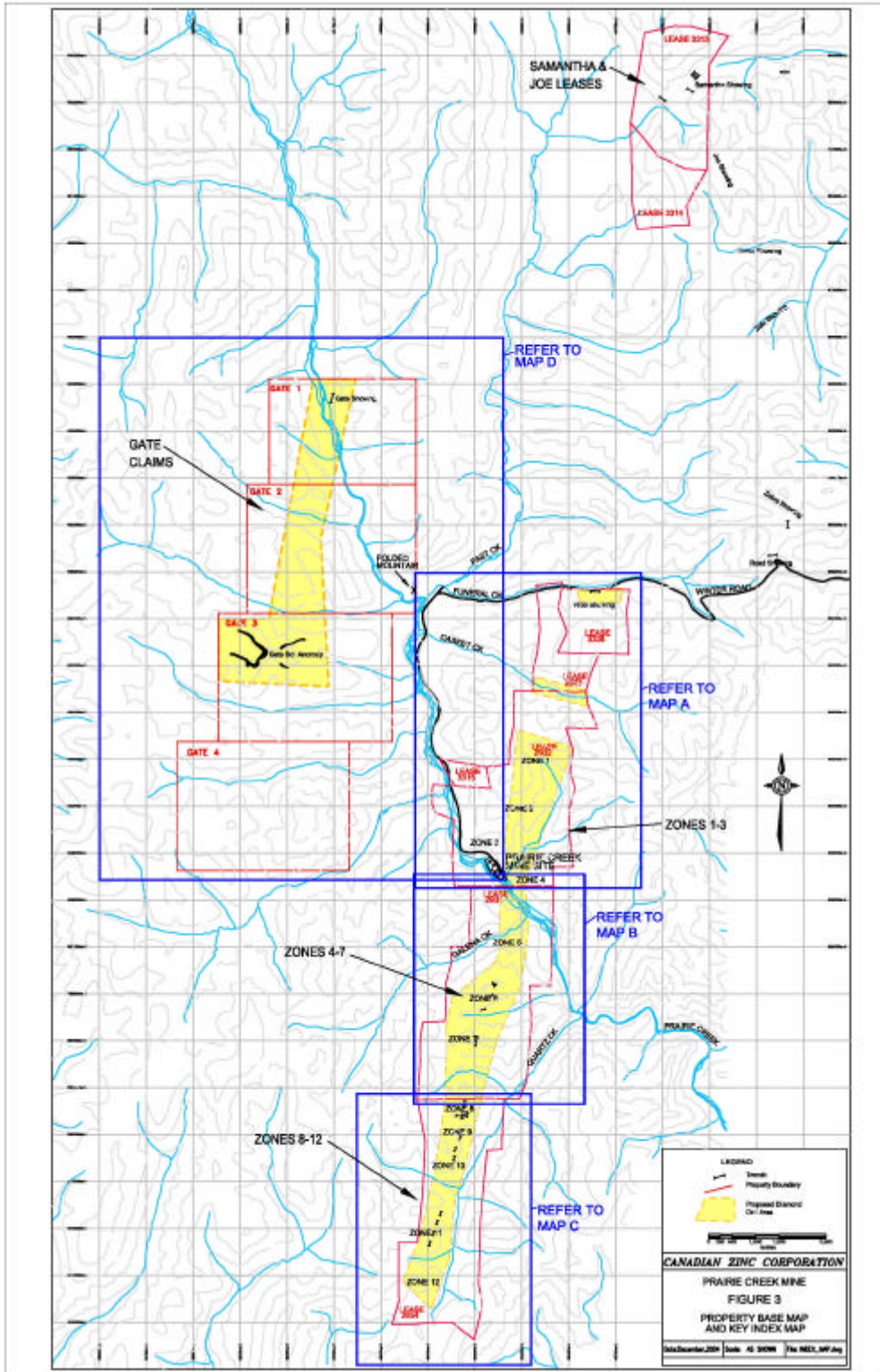
These and other issues are addressed in detail within the body of this Detailed Project Description.

### **1.3 PROGRAM OUTLINE**

The proposed exploration program will consist of diamond drilling at up to 60 drill sites, staged from the Prairie Creek Mine site. These sites will be located in Zones 4 through 12 to the south of the existing mine area (on the south-west side of Prairie Creek) (see Figure 3), in the Rico Zone north of the mine (near Casket Creek), and in the Gate claims west of the mine (also west of Prairie Creek).

Access to Zones 4 through 10 will be gained via an existing network of roads, and will include fording Prairie Creek at a previously used crossing location at Galena Creek.

Zones 11 and 12, and the Gate claims, will be drilled using a helicopter-portable rig because for the former, roads are not well developed and the terrain is steep, and for the latter, there are no existing roads.



## **1.4 DOCUMENT ORGANIZATION**

In the next section, (Section 2), a detailed description of the proposed drilling program is given, along with details of environmental management and mitigation measures that will be employed. The subsequent section, (Section 3), describes CZN's environmental management plan intended to ensure effective environmental protection.

Section 4 describes consultations that have been undertaken in connection with the program and development of this document. This is followed by an assessment of potential environmental impacts associated with the program, and then a cumulative effects assessment.

## **2.0 DETAILED PROGRAM DESCRIPTION**

### **2.1 PROGRAM DETAILS**

#### **2.1.1 Program Objective**

Two relatively recent surface diamond drilling campaigns, Phases 1 and 2 (2001 and 2004, respectively), were undertaken for further definition of the identified mineral resource at the mine site, known as the main zone (Zones 1 to 3). The proposed mineral exploration drilling program, referred to by CZN as Phase 3, consists of a surface diamond drill exploration program over the other leases and claims that comprise the Prairie Creek property. The objective of this program is to explore for additional mineral resources outside of the known mineral resource. Most of these outlying areas have been drilled on before, however, these areas are relatively under-explored. Successful mineral exploration in the outlying areas could result in the location and definition of additional mineral resources to that already established within the main zone.

#### **2.1.2 Program Rationale**

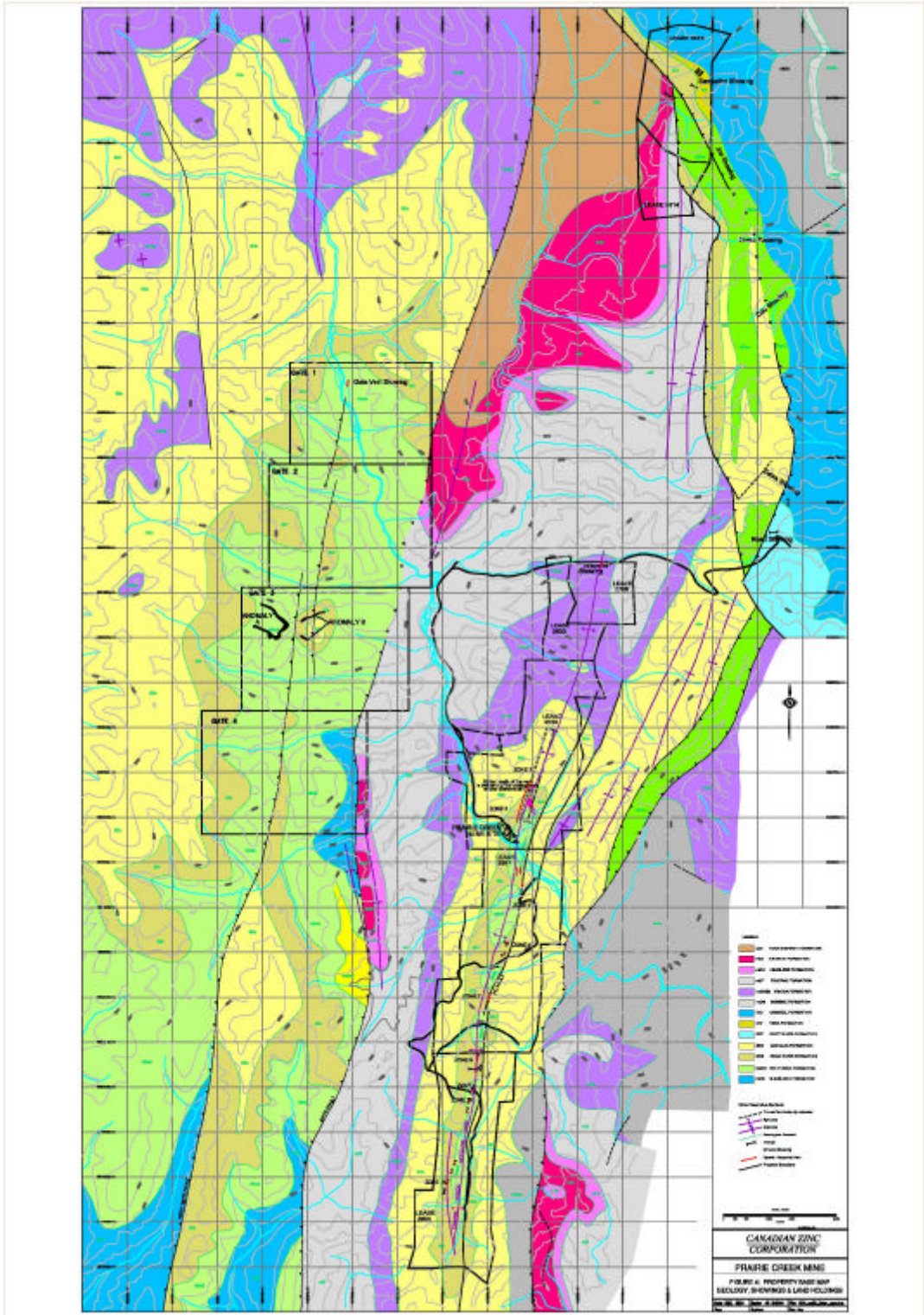
While the Prairie Creek property has a somewhat lengthy history of exploration, the majority of this exploration work has occurred within the main mineral zone (Zones 1, 2 & 3) in the immediate vicinity of the present mine infrastructure. As a result of this intensive exploration at the main zone, a calculated mineral resource is now outlined by both detailed sampling from underground exposures and by wide-spaced surface diamond drilling, which CZN intends to do under the terms of existing Land Use Permits.

CZN proposes to apply the knowledge and expertise it has gained from working within the main zone to explore elsewhere on its mineral leases and claims. Identical rock lithologies, structures and mineralization are known to occur throughout the Prairie Creek property (Figure 4). While only limited exploration has been carried out in the outlying areas (involving trenching, drilling, mapping, soil sampling and geophysics), there were significant mineral discoveries which have yet to be followed up by detailed exploration.

The contiguous Mining Leases of the Prairie Creek property are underlain by similar geological features which contain known *in situ* mineral showings (which have been variably trenched) These leases are referred to as Zones 4 through 12, each about 1 kilometre apart heading south from the mine site. Trenches were exposed mostly by bulldozer excavations, and some trenches were blasted and sampled in detail. Zones 7 and 8 each have an underground adit that was excavated in the 1960's. The underground workings extend north under Zone 7 and south under Zone 8, and the portal entrances are located near Little Quartz Creek. The underground levels returned significant base metal assay values from multiple headings. The portals for the underground workings are variably sloughed in and will need to be rehabilitated to gain access.

The Gate Claims are also underlain by identical type rocks, although in a separate fault block from that of the main zone. An exploration grid was established on the Gate Claims in 1998 from which soil and rock samples were collected, and further prospecting was completed. This resulted in the discovery of a base metal-bearing vein system, and the definition of strong zinc anomalies in soils which warrant follow up by further exploration.





### 2.1.3 Land Tenure and Program Scope

The main land holding comprises eight mining leases and two surface leases. The Company also holds four additional mineral claims, the Gate Claims. Details of the Project tenements are shown in the table below.

#### ***PRAIRIE CREEK PROPERTY***

<b>Property Type</b>	<b>Claim #</b>	<b>Lease/Claim Name</b>	<b>Area Ha</b>	<b>Area Acres</b>
<b><i>Mineral Claims</i></b>				
Claim	F67134	GATE 1	731.59	1,807.75
Claim	F67135	GATE 2	1,003.30	2,479.20
Claim	F67136	GATE 3	1,003.30	2,479.20
Claim	F67137	GATE 4	1,003.30	2,479.20
<b><i>Claims total</i></b>			<b><i>6,449.49</i></b>	<b><i>15,936.95</i></b>
<b><i>Surface Leases</i></b>				
Surface Lease	95F/10-5-3	Minesite	113.60	280.74
Surface Lease	95F/10-7-2	Airstrip	18.20	45.07
<b><i>Surface Lease total</i></b>			<b><i>131.80</i></b>	<b><i>325.81</i></b>
<b><i>Mining Leases</i></b>				
Mining Lease	ML 2854	Zone 8-12	743.00	1,835.99
Mining Lease	ML 2931	Zone 4-7	909.00	2,246.18
Mining Lease	ML 2932	Zone 3	871.00	2,152.28
Mining Lease	ML 2933	Rico West	172.00	425.02
Mining Lease	ML 3313	Samantha	420.05	1,037.96
Mining Lease	ML 3314	West Joe	195.86	483.99
Mining Lease	ML 3315	Miterk	43.70	107.98
Mining Lease	ML 3338	Rico	186.16	460.00
<b><i>Mining Leases total</i></b>			<b><i>3,804.35</i></b>	<b><i>9,401.02</i></b>
<b><i>Grand Total</i></b>			<b><i>7,414.06 Ha</i></b>	<b><i>18,320.56 Acres</i></b>

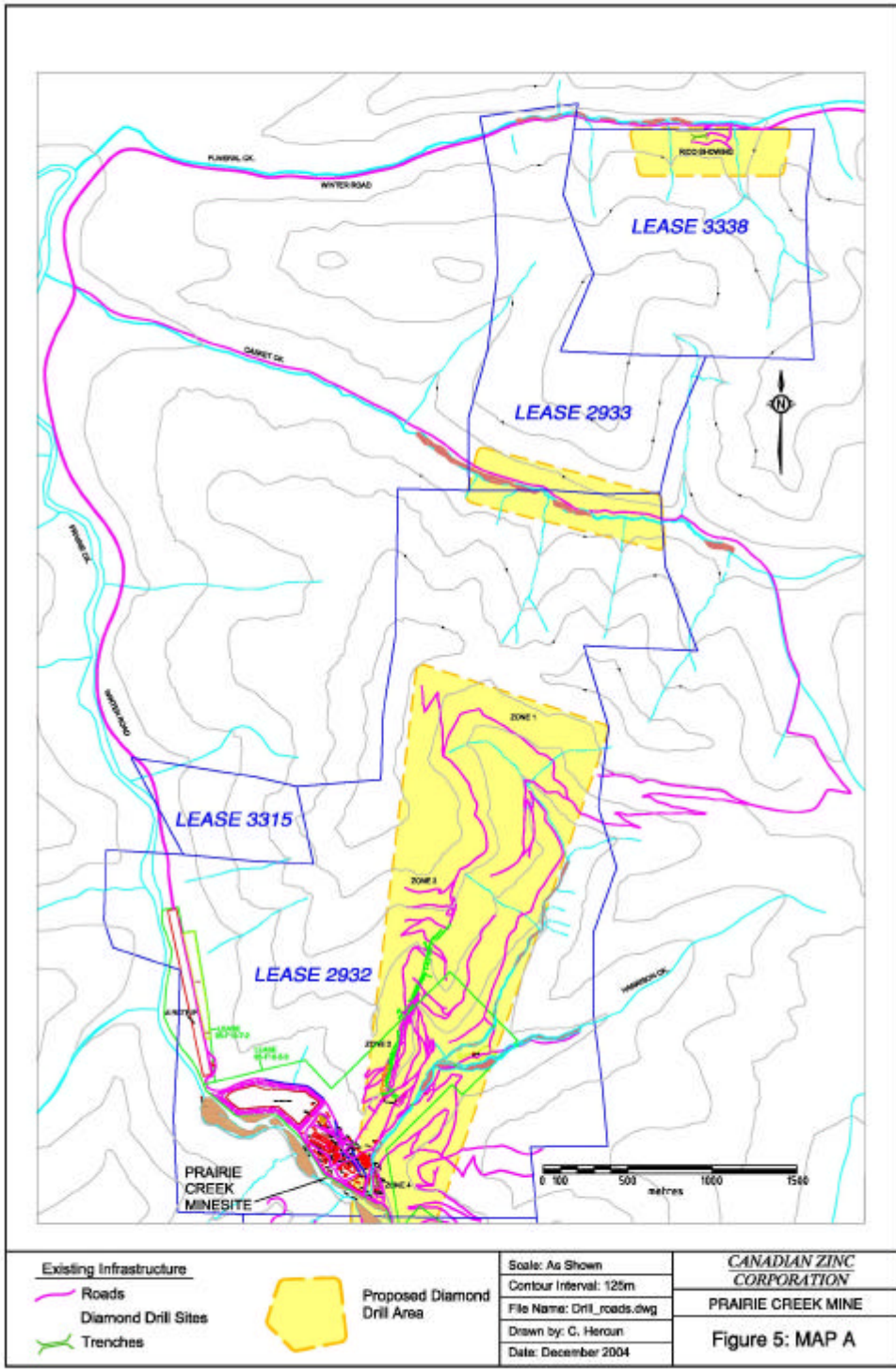
The proposed exploration program will take place within the existing boundaries of the contiguous Southern Mining Leases (six in total, 2854, 2931, 2932, 2933, 3315, 3338) and the Gate mineral claims. Mining Leases Samantha and West Joe (3313 and 3314), located to the north of the mine site, are not, at this time, targeted for any further exploration.

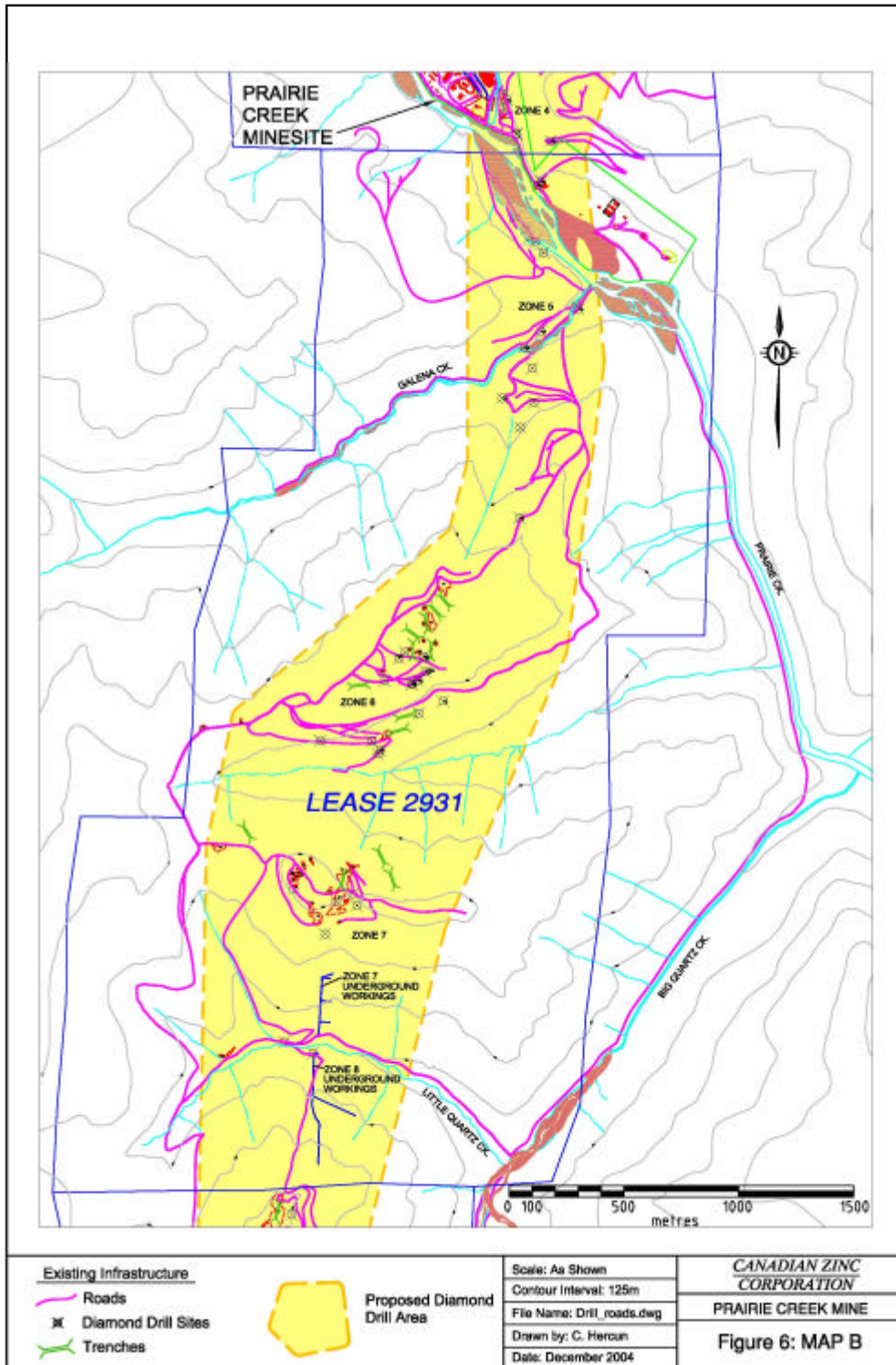
Because of the very nature of mineral exploration, the precise number and locations of drill holes cannot be identified in advance. The exploration process is dynamic, and the decision as to where to drill the next hole is partially based on information gained from

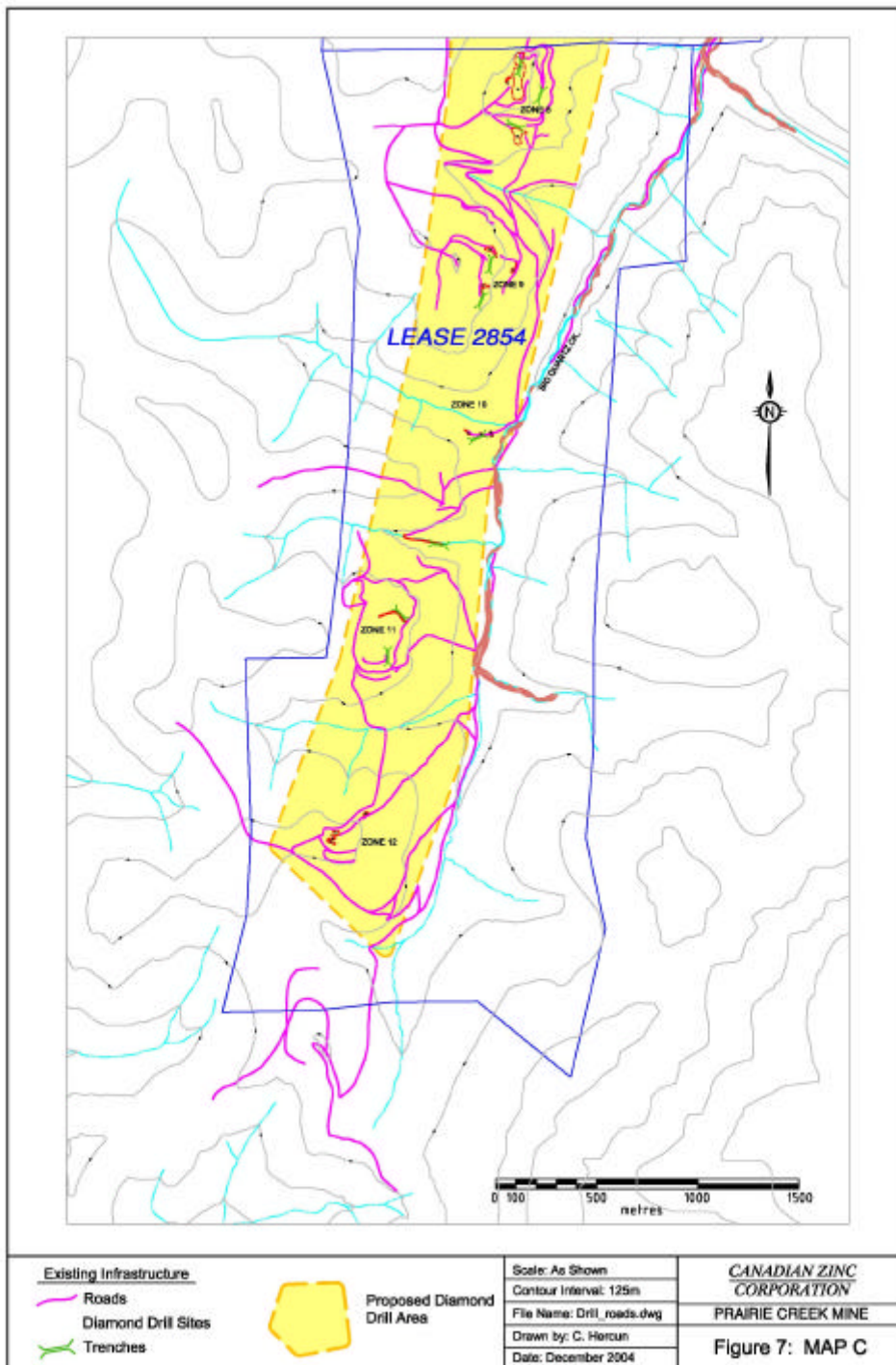
the core retrieved from the hole being drilled. As a result, the locations of individual drill holes can only be generalized at present, but they will follow known geological structures within an area and will be precisely located in the field at the time of drilling. An attempt has been made to identify areas where drilling will take place. These areas are shown on Figures 5, 6 and 7, and are substantially smaller than the lease and claim areas. CZN will endeavour to keep the overall footprint of the drilling area as small as possible, but sometimes it is necessary to locate holes peripheral to the locations of the structures of interest in order to provide optimum hole depths and inclinations of intersections. CZN will submit to the local INAC inspector the proposed drill location details on appropriately scaled maps, prior to the commencement of diamond drilling (as per issued permits, refer to Appendix E).

It is estimated that around 50 drill sites could be utilized during the program, and it is anticipated that the program will be on-going through more than one seasonal year of exploration.

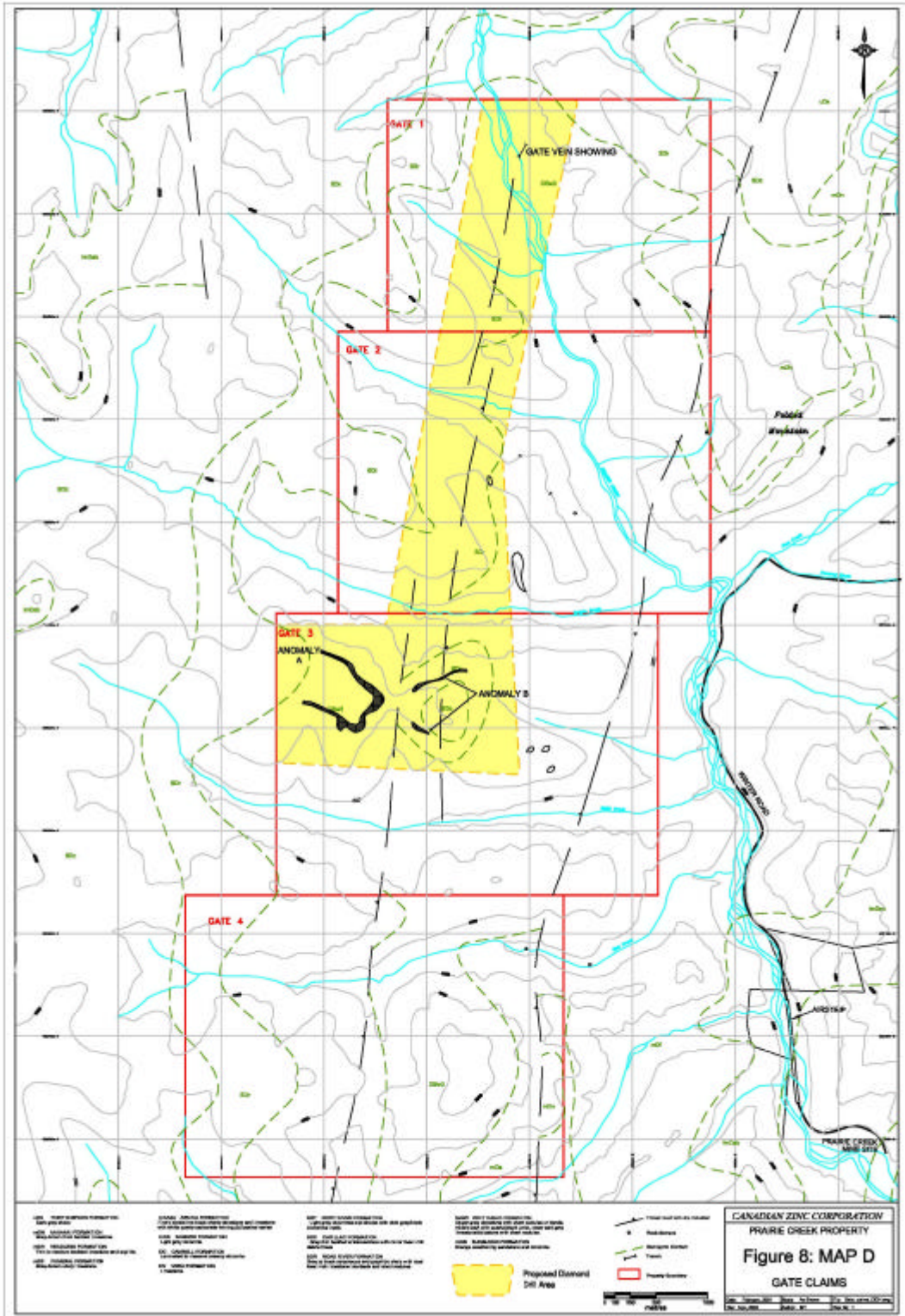












## **2.2 PROGRAM METHODS**

CZN is committed to undertaking the proposed exploration program in a way that maximizes exploration and minimizes the potential or actual impact on the environment. CZN has adopted the new Prospectors and Developers Association of Canada's (PDAC) Environmental Excellence in Exploration (E3) e-manual for drilling, and has incorporated the relevant guidelines in the manual into the planning for the proposed exploration program. The manual has been widely adopted and support by the international mining community. The manual addresses the physical environment and the social aspects of total environmental impact.

### **2.2.1 Equipment and Manpower**

There are two drill rigs already on-site which have been used previously (Plate 2). CZN may operate only one drill at any one time depending on various factors. The drill rigs are Longyear Super 38 diamond drills powered by 350 hp GMC diesel engines, and are capable of recovering either NQ or BQ sized drill core.

Each of the two existing drill rigs is approximately 7 m in length and 4 m in width (22 x 12 feet) and has a 8 m (25 foot) tower that is fully adjustable to accommodate vertical or inclined holes. The drill is mounted on a steel skid unit and is fully contained within a wooden frame shack. The existing drill rigs are well used and, at some time, may need replacing by newer equipment. This newer equipment will be similar in physical size to the present rigs.

Prepared drill pads vary in size depending on the terrain, but must be large enough to manoeuvre the drill into the proper position safely. The rig is moved by D-8 Cat along prepared roads. Drill rods and other equipment are contained in a separate sloop, also on skids.

A helicopter-portable rig (Plate 3) will be flown into site and used for drill sites without proximal road access. The rig will be capable of completing an NQ-size hole to a depth in the order of 300 m (1000 feet). The rig will be able to be broken down into manageable loads (probably less than 500 kg (1100 pounds)) that are capable of being moved around by a small helicopter (Jet Ranger or Hughes 500C) using slings and long line. With ancillary pumps, rods and equipment, it is estimated that approximately 10-15 helicopter trips will be needed to move the drill rig from one location to another.

The program, as set out in the application, would employ two 11-hour shifts of drilling on each drill rig. Each rig would have a driller and a helper. If the two skid-mounted drills and a helicopter drill were all operating, 12 people would be directly employed. Indirect workers would include a drill pad constructor, heavy equipment operator, helicopter pilot, geologist, camp cook and site manager.



**Plate 1:** The Prairie Creek Minesite.



**Plate 2:** CZN's Long Year super 38 drill rig.





**Plate 3:** Typical modular helicopter portable drill rig.



**Plate 4:** View looking north from Zone 7 to Zone 6 showing existing road network.

### **2.2.2 Drill Site Access**

The proposed drill program would take place wholly within the boundaries of existing surface and mineral leases. In most cases, drill hole locations will be in close proximity to the existing network of exploration roads (Plate 4).

For drill site access, there are four particular environmental issues that are discussed below:

- ? Road construction and maintenance;
- ? Proximity to creeks;
- ? Crossing Prairie Creek; and,
- ? Heli-drilling.

#### Road Construction and Maintenance

CZN is not planning to build roads outside of the existing network. Some new road sections will be built in the form of spurs (up to 100 m in length) from existing roads to new drill hole locations. These spurs will only be built where necessary, and their length will be minimized.

Minor new road construction is envisaged on the west side of Prairie Creek where the access road crosses the bed of Galena creek three times. CZN proposes to build a new, short section of road in order to avoid these crossings, and provide a shallower access grade. Further south, some road sections may occur in the beds of small tributary creeks. Consistent with the E3 guidelines for drilling, these sections will be changed so that the roads cross the creeks, and then traverse the land away from the creeks and outside of the immediate riparian zone.

For any new road construction, CZN will ensure that construction is an appropriate distance from creeks, and a buffer strip is kept between roads and creeks, where possible. CZN will endeavour to locate such roads in excess of 30 m from creeks. However, in some cases, the preferred route may be closer than 30 m, and in this case, appropriate runoff control measures will be employed, and approval of the road location will be sought.

Any surface soil will be stockpiled for later use, and any fill from cut zones will be used where road bed is needed. These approaches are again consistent with the E3 guidelines.

Any trees which require clearing will be bucked into 1.5 metre lengths. Trees in excess of 15 cm in diameter will be avoided and not cut unless absolutely necessary.



All existing roads west of Prairie Creek, and running parallel to Casket Creek north of the mine, were built many years ago. Measures to limit erosion and control runoff and drainage may not have been incorporated into these roads, although subsequent vegetation growth may have stabilized these areas. However, where these roads are used for the proposed exploration program, or where any new sections of road are built, CZN will ensure that appropriate runoff and drainage controls are integrated into them. This will include culverts if flows are significant, table drains (a parallel ditch) upslope and/or on the inside of curves, and cross drainage (a ditch or mound perpendicular to the road) to channel water off the road into a vegetated area (as per the E3 guidelines). Silt fences will also be used where possible and necessary to disperse and/or divert flows, trap sediment and limit erosion from runoff.

### *Proximity to Creeks*

CZN will endeavour to locate drill sites and sumps in excess of 100 m of the ordinary high water mark of local creeks. However, this may not always be possible, and where this is the case, additional protection measures will be employed, such as placing a berm between the drill site or sump and creek to divert any drainage, and approval will be requested for the site location.

### *Crossing Prairie Creek*

The existing crossing for Prairie Creek is located near the climate station just south of the mine site, the exit point on the west bank of the creek being just upstream (north) of Galena Creek. The crossing is in an area of moderately compacted river cobbles and gravel. Multiple crossings were made by Cadillac Explorations from the 1960's through 1980, and by CZN in the period 1993-1995. Drills and heavy equipment will only cross occasionally, whereas pick-ups will cross more often. CZN proposes to use the same crossing location for all equipment and vehicles.

Previous fisheries studies (Rescan, 1994; Mochnacz, 2001) have noted the presence of Arctic grayling and Bull trout in the Prairie Creek catchment. Mochnacz noted the presence of Arctic grayling in Prairie Creek near its mouth and confluence with the South Nahanni River. Rescan (1994) reported the presence of Bull trout upstream and downstream of the mine. Mochnacz (2001) caught a Bull trout in Galena Creek near its confluence with Prairie Creek, and upstream of the mine in Funeral Creek. Arctic grayling spawn in the spring, although it appears the species may not utilize Prairie Creek above the mouth. Bull trout spawn in the fall.

CZN will plan its activities to minimize crossings of Prairie Creek in general, and crossings of heavy machinery in particular. In addition, CZN will minimize crossings during periods of potential fish migration for spawning.

There is a potential for heavy machinery to be coated with oily residue which could be partly washed-off in creek water during crossings. In recognition of this, CZN will steam-clean all heavy machinery before crossings to the west bank of Prairie Creek occur. CZN

will erect a steam-cleaning station on the southern end of the Tank Farm, near the Gasoline Station, where there is a concrete apron and sump to collect the relatively small quantity of potentially oily washwater. CZN will acquire an activated carbon vessel, and all washwater will be treated by passing the water through the vessel. Treated water will be discharged to the Tank Farm containment for temporary storage until a water sample can be collected and tested to confirm that the water is acceptable for discharge.

For return crossings of heavy equipment to the mine, the equipment will be inspected and any oily residue that could contact creek water will be manually removed using absorbent cloth/pads. Any mud will similarly be removed to avoid the liberation of suspended sediment in creek water.

The creek will also be crossed by pick-up truck for access to the drill rigs. Trucks will be inspected prior to each crossing of Prairie Creek, and any oily residue or mud will be removed by oil absorbent materials.

### Heli-Drilling

Heli-drilling is proposed, in particular for Zones 11-12 in the south that are not serviced by existing roads, and the Gate claims to the west. These areas are further from the mine site than the other zones, and include higher elevation locations. There is a potential that increased helicopter activity could be disturbing for wildlife in the area, depending on the timing of helicopter support and the location of a specific work area. To minimize the potential for disruption, flights will be kept to a minimum, and flight paths will be restricted to existing areas of activity and/or straight lines between the mine and drill locations.

### **2.2.3 Drill Sites and Drilling Methods**

Drill pads will be prepared only large enough to accommodate and position the drill rig safely. If clearing is required, surface soil will be removed and stockpiled for later use in pad reclamation.

The drilling process involves driving a fast-rotating annular bit attached to rods through the ground to collect a solid core sample. Initial penetration from surface through overburden is usually achieved using a tricone bit until bedrock is reached. Drill casing is then set into the bedrock through the use of a “shoe” on the casing. Once the shoe and casing are set, the formal coring of the drill hole commences by inserting the drill rods with a cutting bit into the casing. The drill bits used are generally diamond impregnated (as the name implies), but other cutting materials may be used, such as tungsten. Water is generally used as a circulating fluid, supplied through the annulus of the drill string. Drill cuttings (ground rock particles) may be washed up the hole between the rods and hole wall. Continuous core samples are collected at the bottom of the hole in a core barrel which is periodically raised to surface for core retrieval.

#### **2.2.4 Drill Cuttings and Fluids**

At each drill hole location, a sump is used to provide water to the drill, and to allow mixing of an additive if wall instability problems are encountered in the drill hole. The sump is usually a steel tank. In addition, a pit is dug in overburden material. Excess water is sent to this pit, along with small quantities of drill water and cuttings that periodically emanate from the hole. However, drill circulation water is usually lost in the formation being drilled. Water in the pit generally dissipates through a combination of exfiltration and evaporation. The pit is subsequently backfilled with the stockpiled overburden upon completion of drilling at that location. If the local area around the drill surface is rock, the pit is created nearby.

The addition of additives to the drilling fluid is kept at a minimum, and used only if required to stabilize the walls of the drill hole. Standard additives are inert drilling muds (550X Polymer, Linseed soap) which may be mixed with water in the sump at the drill rig before pumping down the hole. If poor down-hole conditions persist, G-Stop and/or a quick set concrete may be used to restore circulation. A small amount of standard rod grease (Big Bear anti-friction) is smeared on the threads of rods to facilitate coupling and uncoupling.

#### **2.2.5 Water Supply**

Water for drilling will be obtained from a local source, usually a creek, and will be pumped to the drill site by a small diesel-powered pump. A screen will be maintained on the water intake to prevent the entrainment of fish.

To establish the water supply, a sump is first dug in proximity to the water source. The sump is lined with a geosynthetic liner, and a high capacity Bean pump and a 45 gallon diesel drum which feeds the pump are placed in the sump. The capacity of the sump is at least 110% of the diesel drum. A 1.5 inch flexible hose connects the water source to the pump, and from there to the drill rig. If a local water source is not available, or the elevation difference between the water source and the drill rig is great, an intermediate pumping station may be required. In this case, a pump and diesel drum are again placed in a lined sump, and a second, clean drum is used to accept water from the lower pump and act as the water source for the second pump.

As in the past, CZN will try to develop pump sumps in excess of 30 m distance from local creeks. However, steep grades and/or the abundance of small creeks in some areas means this is sometimes not always practical or possible. When this is the case, approval will be requested from the local INAC inspector, for a specific location. Disturbance of riparian vegetation adjacent to creeks is avoided as much as possible, and this approach will be maintained in the proposed program.

The diesel drums supplying the pumps are refuelled from a 130 gallon tidy tank carried on the back of a pick-up truck, or in the case of a heli-drill, from other 45 gallon drums slung-in by the helicopter. Fuel is pumped from drum to drum using a hand-pump

Personnel constructing the water supply sumps and fuelling the supply drums will be familiar with the *Prairie Creek Fuel Spill Contingency Plan*, and will likely be members of the fuel spill response team.

### 2.2.6 Drill Rig Fuel Supply and Storage

Each of the existing drill rigs has a 300 gallon diesel supply tank located on the rig, which is supplied by hand pump from a 130 gallon tidy tank located on a pick-up truck. Fuel spill kits will be available at each drill rig, on board the pick up trucks and in the main camp. All drill rig personnel will be instructed on the *Prairie Creek Fuel Spill Contingency Plan*, and the location of spill clean-up materials.

Fuel for the heli-drill is transported on an as needed basis in 45 gallon drums, and hand pumped into a small tank on the drill. These drums are removed when empty. The heli-drill will have a small tank to store enough diesel fuel to enable it to run for an entire shift.

### 2.2.7 Accidents and Malfunctions

The probability, risk and potential magnitude of an accident or malfunction associated with the proposed development are deemed to be low. Principal possible failure mechanisms, with associated risk assessment factors, are as follows:

Failure Mode	Initiating Event	Probability	Magnitude	Consequence
Diesel Spill	Drill Fuel Tank Rupture	Low	Small Max. 300 gals	Low – Medium Relatively small volume; Spill likely contained in soils at drill site; Worst case loss of portion to a local, small creek
Diesel Spill	Spill during Transfer	Low	Small Max 130 gals.	Low – Medium As above
Diesel spill Air emissions	Fire	Low	Small	Low Relatively small combustible volumes
Drill water Discharge	Sump Failure	Low	Small Max. 50 gals.	Low Very small volumes; water & suspended solids unlikely to migrate much beyond drill pad, and are chemically inert anyway

CZN's *Fuel Spill Contingency Plan* has been filed with the MVLWB and Indian and Northern Affairs Canada.

### 2.2.8 Health and Safety

A registered standard first aid attendant will be present on each drill rig at all times of operation, and each drill rig will have a first aid kit. A qualified person carrying a valid

Level 3 First Aid Certificate will be based in camp at all times. The rigs will have direct radio communications with the minesite and helicopter.

Drill crews will be made aware of CZN's *Health and Safety Plan* for Prairie Creek (see Appendix D). The plan includes, amongst other things, guidance for dealing with bear encounters.

### **2.2.9 Core Management**

Drill core retrieved from each hole is placed in wooden boxes at the drill site. The boxes are sealed and transferred to the core shack at the main mine site by truck, or by helicopter from the heli-drill. At the camp, the core is logged and then stored in core boxes on core racks. The mineralized sections of core will be cut in half with a diamond saw. Half the core will be sent off-site by air for assay. The remaining half will be placed in a core box and in organized core racks located in the north-east section of the main yard at the mine site.

### **2.2.10 Infrastructure**

Employees and contractors will stay in camp at the Prairie Creek Mine site where full accommodations are available. Existing mine site facilities that have been used to support similar levels of on-site activity in the past, include:

- ? Fully serviced bunkhouse, kitchen, office and washroom facilities
- ? Electricity supplied from an on-site diesel powered generator
- ? Potable water supplied from a well and pump house, located approximately 35 m N of the main office and service building (the well draws water from a depth of about 15 m (50 feet) in the Prairie Creek floodplain aquifer, and the water is potable without treatment)
- ? Sewage disposal by discharge to, and exfiltration from, an excavated and covered septic sump constructed in floodplain sands and gravels adjacent to and SW of the main office and service building (the sewage disposal location is hydraulically down gradient from the water well at a distance of approximately 45 m)
- ? Oil-fired incinerator to burn camp refuse

Communications are via satellite phone/fax, and access is presently by air to the on-site gravel airstrip from either Ft. Nelson or Ft. Simpson.

### **2.2.11 Alternatives**

There are no viable alternatives to the practice of exploration diamond drilling of the type proposed for the purpose of establishing the presence of additional mineral resources at the Prairie Creek property.

The process of diamond drilling represents standard industry practice, and continues to be used commonly throughout the Northwest Territories, Canada and the World for this

purpose. At Prairie Creek, the first diamond drill holes were drilled in 1966. Since that time a total of some 281 holes have been drilled throughout the property.

While various other geophysical, geochemical and biogeochemical techniques exist for locating mineralized zones on a broader scale, and for further enhancing our understanding of geologic processes, none are considered practical alternatives to *in-situ* diamond drilling and the subsequent assay of recovered drill core.

National Policies issued by Canadian Securities Commissions have established rules and regulations which apply to all public mining companies, and set rigorous standards for release of information pertaining to mineral resource and reserve estimates. These typically require strict adherence to quality assurance standards in the drilling, recovery and assaying of drill core, and the subsequent interpretation of data by a qualified individual.

The only alternative available to CZN is the type of drill rig to be used. Where access to drill sites is available using the existing road network, or short spurs from these roads, CZN proposes to use the existing skid-mounted rigs. Drill sites in the southern claims (Zones 11 to 12) and Gate claims are not easily accessible by roads, and CZN proposes to use a heli-rig for these claims. This will result in some limitations on work in these areas because the heli-rig is smaller and less powerful, and consequently, drilling is slower and cannot attain the depths of the larger rigs.

### **2.2.12 Reclamation**

Upon completion of a hole, the drill rig will be moved off. As per E3 guidelines, the pad will be fully stabilized and cleaned up. If the site is deemed not to require further drilling and clearing was required, stockpiled surface soil will be replaced and a native seed mix applied. All pads will be inspected regularly after restoration to ensure they remain stable and that successful revegetation is occurring.

When all drilling for the proposed campaign has been completed, all access roads will be stabilized to minimize erosion. Cut banks will be re-contoured to conform to the local topography, and stockpiled surficial materials will be back bladed over the disturbed areas. Total reclamation will be undertaken when CZN is confident that no further exploration will take place in a particular area. If final reclamation is undertaken in some areas, drainage features (ditches and mounds) will be removed, surface soil applied where available, and a native seed mix added. The progress of reclamation and revegetation will be monitored.

## **3.0 ENVIRONMENTAL MANAGEMENT PLAN**

### **3.1 OBJECTIVES**

The objectives of the Environmental Management Plan are to guide the operational procedures and management practices during and after drilling activity to ensure the effective implementation of environmental mitigation measures.

Operating procedures will be planned and scheduled in advance to minimize environmental impacts, as well as to comply with all government regulations and permits.

Environmental performance will be measured based on the degree of adherence to applicable permit conditions and regulations, as well as on the use and performance of mitigation measures and general operating practice, including the functioning of equipment and drainage management control structures such as sumps, water bars, ditching, etc.

### **3.2 SCHEDULE**

Environmental management considerations will be built into the operational planning for the drill program and carried through to the completion of the program, including seasonal clean-up or final reclamation of drill sites, access roads and other areas used for the operation.

Based on the current schedule, it is planned to commence Phase 3 drilling in May 2005. The 2005 program will end with the shutting down and winterizing of the camp by the end of October 2005. A multi-year exploration drilling program is envisaged.

The environmental management plan will be implemented in conjunction with, and carried on throughout all stages of, active drilling.

### **3.3 ASPECTS TO BE MONITORED**

All aspects of the drilling operation having the capacity to result in a significant, adverse impact on the environment, and for which mitigation measures have been proposed, will be monitored. These will include, but will not necessarily be limited to, the following:

- ? Prairie Creek crossings
- ? Drill rig and support vehicle cleanliness
- ? Helicopter flight frequency and routing
- ? Drill rig operation
- ? Water pumps and distribution systems
- ? Drill Sumps

- ? Drill pad terrain stability
- ? Exploration Roads
- ? Drainage management structures
- ? Fuel transfer operations

*Frequency, duration and geographic extent of monitoring:*

Operational planning sessions will be held at the beginning of each day to review operating practices and procedures.

Monitoring will be conducted at active drill sites and supporting operational areas throughout the duration of active drilling. Operating crews will monitor performance of equipment and control structures on a continual basis during operations. As well, each operating drill site will be inspected daily by the project manager.

*Approaches and Methods for analysis:*

The proposed development will be conducted under the direct supervision of the Project Exploration Manager or, in his absence, his appointed designate. The results of daily inspections and ongoing operational monitoring will be reviewed at daily planning sessions. The condition of mitigation measures will be reviewed daily to determine effectiveness of performance.

*Reporting and response mechanisms for adjusting the project design or implementing mitigation/remedial measures, if necessary, based on monitoring results:*

Daily reports will be completed detailing the results of each day's activities. Such reports will note deficiencies in performance of equipment and mitigation measures.

Daily reports, as well as the results of daily inspections by the Project Manager, will be reviewed at the daily operational meetings. Decisions on the need for changes to operational plans, modifications to existing mitigation measures or implementation of new mitigation measures, will be made at these meetings.

An *Emergency Response Plan* and a *Fuel Spill Contingency Plan* were prepared previously to address emergency situations. The types of potential emergencies and the response to them are defined in these plans. A copy of CZN's current *Fuel Spill Contingency Plan* is included as Appendix B of this document.

Staff will be trained to handle emergency situations with appropriate procedures, as set out in the Emergency Response Plan. The Plan will be posted at the mine camp, and all personnel and crews will be briefed on its contents, including lines of communication and responsibility, and the locations where response materials are stored. Responsibilities are defined.

*Follow-up Monitoring*



Upon completion of drilling, drill pads and access roads will be inspected to confirm adequacy of seasonal or permanent reclamation measures designed to stabilize these features. Such stabilized and reclaimed sites will be inspected again the following summer season to ensure the durability and effectiveness of mitigation measures. Follow-up inspections will occur in conjunction with routine care and maintenance activity at the site.

### **3.4 IMPACT AVOIDANCE AND MITIGATION MEASURES TO PROTECT FISH HABITAT**

All field personnel involved in the drilling program will be instructed on the methods available to prevent harmful alteration, disruption, or destruction (HADD) of fish habitat. Vehicle drivers, drill operators, site preparation crews and assistants will be advised of the most appropriate environmental protection measures to apply in each circumstance. Adherence to these guidelines will be mandatory, such that field personnel are responsible for ensuring that perimeter ditches, silt fencing, stockpile covers, stream buffer zones and bank protection are managed on a day-to-day basis to function properly. The Project Manager will ensure that the guidelines are translated to field staff and contractors, and monitor compliance with the standards and procedures. For the proposed drilling program, the wet crossing of Prairie Creek and possibly a few flowing tributaries are the key concern, as most watercourses in the drilling zones will be dry (in summer). Storm events in summer will be the critical times for strict environmental management, especially for sediment control.

The proper application of appropriate measures to each of the stream crossings along the proposed access routes, and near watercourses, will assist in minimizing any significant impact to the aquatic and riparian habitat, and fish stocks in the Prairie Creek system.

Prior to the construction of road access improvements, drilling pads and related facilities, the following planning and implementation measures would be initiated:

- ? environmental specifications for each stream crossing in terms of location and approach; and,
- ? definition of site-specific mitigation measures at each stream crossing or habitat encroachment site, and implementation monitoring, especially at Prairie Creek, Galena Creek and Quartz Creek.

#### General Mitigation Measures

CZN will employ the following measures:

- (a) Erect silt fencing between disturbed upland areas and any watercourses downslope. Maintain the silt fencing throughout the construction and immediate post-

construction period when the ground is most unstable and subject to erosion and surface transport of solids.

- (b) When fording streams with heavy equipment: limit the number of crossings to the minimum required; cross when flows are not high; wash oil/grease off undercarriages, tracks and tires before crossing; move slowly to limit disturbance (noise, gravels, banks); and, use the same/existing crossing sites rather than new ones wherever possible.
- (c) If necessary, cover any surface soil stockpiles with polyethylene sheeting to avoid erosion from precipitation.
- (d) Stop work wherever uncontrolled sediment loads begin to increase. Leave shrub and groundcover vegetation as much as possible (i.e. drive over it rather than clear and grade roadway if possible so roots remain and continue to grow).
- (e) Stabilize and/or revegetate disturbed ground as soon as possible after those areas are no longer required for project access or other purposes. As noted above, leave groundcover vegetation in place.

## 4.0 CONSULTATION

### 4.1 GENERAL CONSULTATIONS

Numerous consultations, meetings and discussions with local communities were completed with regards to exploration diamond drilling LUP MV2000C0030, LUP MV2001C022 and the related Environmental Assessments. Refer to the MVLWB public registry for each of these applications.

In September 2003, CZN appointed Mr. Dan O'Rourke as Community and Northern Affairs Advocate. Since this appointment CZN has maintained and continues an on-going dialogue with the local community representatives, government agencies and government officials regarding the Prairie Creek Project. Mr. O'Rourke may be contacted by telephone at 613-825-4074.

July to-date

- ? CZN opened an information office in Fort Simpson and appointed Ms. Rita Cli as Community Liason Officer. Ms. Cli maintains an open door policy with the area communities and provides information relating to the Prairie Creek Project to any interested party. Ms. Cli may be reached at the Ft. Simpson Office; Suite #4, 9606-100th St., PO Box 500, Fort Simpson NT X0E 0N0, telephone 867-695-3963.

CZN was served a Notice of Application October 10, 2003 of a Judicial Review in Federal Court, relating to a Water License (MV2001L2-0003) issued by the Mackenzie Valley Land and Water Board September 10, 2003, by the Applicants Nahanni Butte Dene Band, Pehdzeh Ki First Nation and Deh Cho First Nations. The filing of this Judicial Review has impeded CZN from freely briefing the local communities on minesite programs (refer to the letters included in Appendix C). This Judicial Review remains to be heard before the courts.

Despite the foregoing, CZN held a number of informal information meetings in 2004. These information meetings discussed all aspects of the mine site, including exploration diamond drilling on the property. The meetings were as follows:

February 24, 2004

- ? Meeting with Beaver Enterprises in Ft. Liard to discuss the exploration program and economic opportunities

February 24, 2004

- ? Meeting with Nogha Enterprises in Ft. Simpson to discuss the exploration program and economic opportunities.

May 10, 2004

- ? Meeting in LKFN Office in Fort Simpson discussing project status. In attendance were representatives from LKFN, ADK (Ft. Liard), Beaver Enterprises (Ft. Liard).

July 12, 2004

- ? Mayor of Fort Simpson (Raymond Michaud) and two representatives from Fort Simpson visited the mine site.

July 15, 2004

- ? CZN held an Open House at their Information Office in Fort Simpson in order to provide local communities free access to an information source. All aspects of the planned site activities were discussed at this well attended event.

July 16, 2004

- ? Charter flight into Prairie Creek Mine site with representatives from Ft. Simpson LKFN, Ft. Liard ADK, Ft. Liard Beaver Enterprises to discuss site activities

August 24, 2004

- ? Charter flight into Prairie Creek Mine site with 14 representatives from NBDB for an update and briefing on minesite activities and future programs.

October 5, 2004

- ? Charter flight into Prairie Creek Mine with Deh Cho Land Use Planning Committee Staff.

CZN is also in the process of creating a video film of the Prairie Creek project. During the filming of this, CZN conducted a number of interviews in August and September 2004 with local people from Ft. Liard, Ft. Simpson and Nahanni Butte.

## **4.2 FISHERIES AND AQUATIC HABITAT CONSULTATIONS**

For the fisheries and aquatic ecological impact assessment provided herein, several federal and territorial government fisheries biologists and water quality specialists were consulted by emails and/or telephone, including especially those with first-hand field experience at the subject site.

In addition to the public and private meetings that have taken place over the years with other stakeholders, the consultations and reference review for this assessment and permit application represents a considerable database of relevant information when combined with the existing field data.

The agency and other stakeholder personnel consulted for this assessment include the following:

- ? Doug Halliwell, Ecosystem Health Assessment Section, Ecological Science Division, Environmental Conservation Branch, Environment Canada (Prairie & Northern Region), Yellowknife, NT
- ? Neil Mochnacz, Natural Resources Institute, University of Manitoba, Winnipeg, Manitoba
- ? Ernie Watson, Habitat Biologist, Fisheries & Oceans Canada, Yellowknife, NT
- ? Julie Dahl, Area Chief Habitat Biologist, Fisheries & Oceans Canada, Yellowknife, NT
- ? Steve Catto, Park Establishment Officer, Nahanni National Park Reserve, Parks Canada, Ft. Simpson, NT
- ? Dave Tyson, Area Habitat Biologist, Fisheries & Oceans Canada, Yellowknife, NT
- ? Anne Wilson, Environmental Protection Branch, Environment Canada, Yellowknife, NT
- ? Shane Hayes, Resource Management Officer, Indian & Northern Affairs Canada, Fort Simpson, NT
- ? Doug Watkinson, Research Biologist, Freshwater Institute, DFO, Winnipeg

### **4.3 WILDLIFE AND TERRESTRIAL HABITAT CONSULTATIONS**

As part of obtaining and reviewing background information, and reviewing the wildlife and habitat aspects of this application, the following key persons were contacted:

- ? Steve Catto, Park Establishment Officer, Nahanni National Park Reserve, Parks Canada, Ft. Simpson, NT;
- ? Doug Tate, Ph.D., Regional De Cho Biologist, Government of the Northwest Territories;
- ? John Weaver, Ph.D., Wildlife Conservation Society, Montana, USA.

Each of these individuals has first hand experience with the region that the Prairie Creek mine site is located in, and with the sensitivities of wildlife associated with land use in the region.

## **5.0 BASELINE ENVIRONMENTAL AND SOCIO-ECONOMIC DATA AND IMPACT ASSESSMENT**

Detailed baseline studies describing the existing environment in the vicinity of the Prairie Creek mine were undertaken in 1980-81. These studies were a component of environmental assessments conducted in support of operating permits and licences that were subsequently issued at that time. Additional studies were undertaken in 1994 in support of further permitting efforts. The studies included field assessments and descriptions of fisheries and aquatic resources, as well as wildlife populations and wildlife habitat. These studies, together with more recent ones undertaken in the region, have been used as the basis for impact assessment for the proposed drilling program in the following sections.

### **5.1 Air Quality and Climate**

The existing drill rigs have diesel engines which emit hydrocarbon combustion products. These are typical of similar diesel engines operated in highway trucks, graders, front end loaders, backhoes and other heavy equipment, as well as in generators for supplying electricity in remote communities, such as Fort Simpson and Nahanni Butte. Any other rigs used will have comparable, or smaller, diesel engines. Routine preventive maintenance will be employed to ensure drill rig engines operate efficiently to minimize fuel consumption and emissions.

The drilling process itself produces little in the way of particulate emissions. Water used as a lubricant in the drilling process assists in this regard.

Other potential sources of air contaminants are restricted to hydrocarbon combustion products from gasoline and diesel engines in support vehicles. Again, routine preventive maintenance will be employed to minimize contaminants resulting from inefficient operation of such equipment.

Road dust from vehicle traffic should be minimal due to the low traffic volumes, low speeds and general absence of fine particles in road beds. If dust becomes a problem, abatement measures will be employed.

As in previous years, routine care and maintenance and other on-going exploration activities are planned for the Prairie Creek property for 2005 onwards. These will entail operation of the site power generator, vehicle operation and aircraft support. From an air quality perspective, the proposed drilling program would be similar to typical seasonal operations at the site. Consequently, impacts of the proposed drilling program on air quality are expected to be negligible, and no residual impacts are expected to result from the operation.

## **5.2 Terrain**

Use of the existing network of roads will avoid additional terrain disturbance. The number and length of new road spurs will be minimized; they will represent a marginal increase in the existing terrain disturbance.

As new drill pads will be prepared only large enough to accommodate and position the drill rigs, and multiple drill holes may be drilled from one drill pad, drill pad development and surface disturbance will be minimized.

Ultimately, if no further drilling is contemplated at a particular drill site, the drill pads and spur and access roads will be completely reclaimed, so any impacts on terrain will be limited and temporary.

Permafrost occurs sporadically throughout the property. If encountered, appropriate measures will be taken to preserve its integrity, such as avoidance or insulation with fill.

The surficial terrain impacts associated with the proposed drill program will be a small increment to those which have already occurred in conjunction with previous exploration, construction and development at the site. Residual impacts are expected to be negligible following complete and final reclamation.

## **5.3 Vegetation and Plant Communities**

The Phase 3 exploration program ranges from the Spruce-Lichen zone in the valley bottom, through the Sub-alpine Shrub zone (dwarf birch and willow with scattered, stunted black spruce). As is typical of this region, the sparse tree and shrub cover is associated with the lower valley slopes, due to cold air drainage within valley bottoms, which limits growth of trees.

As an existing exploration road network will be used, with limited spur road expansion, the total additional surface area for roads is expected to be less than several hectares. This would primarily be for re-location of roads from streams and other sensitive habitats, or where slope stability is an issue along existing roads.

Drill pads required for the type and size of drill rigs to be used are relatively small (7 m by 4 m) and, based on 60 drill pads, the total area (0.15 ha) is limited in extent. Further, the use of helicopter-assisted drilling at some locations will minimize the disturbance footprint. Disturbance of vegetation can be minimized at most drill locations, to the extent feasible while still operating safely and efficiently.

## **5.4 Water Quality and Quantity**

The drilling program will be carried out entirely in the drainage basin of Prairie Creek. The more significant tributary creek basins where drilling will be undertaken include Harrison, Casket and Funeral on the north-east side of Prairie Creek, and Galena and

Quartz on the south-west side (see Figure 2). The catchment areas of these creeks are approximately 7.5 km<sup>2</sup>, 14.6 km<sup>2</sup>, 13.4 km<sup>2</sup>, 12.4 km<sup>2</sup> and 25.6 km<sup>2</sup>, respectively, totalling 73.5 km<sup>2</sup>. By comparison, the catchment area of Prairie Creek above the mine site is 495 km<sup>2</sup>. The average annual flow of Prairie Creek at the mine is approximately 6 m<sup>3</sup>/s.

The diamond drilling program will utilize relatively small quantities of water. Only a small portion of the water pumped to the drill by the supply pump is actually used in the drilling process. The majority of pumped water by-passes the mixing tank and is discharged since it is only needed periodically. Each rig typically uses less than 200 m<sup>3</sup>/day, or <0.003 m<sup>3</sup>/s. If 3 rigs are in operation simultaneously, the aggregate water use would be <0.007 m<sup>3</sup>/s. Clearly, the volume of water use is very small compared to flows in Prairie Creek.

A diamond drill discharges very little water. As this water is discharged to a pit where it dissipates through a combination of exfiltration and evaporation, there is little potential for impact on water quality.

The main potential for impacts on water quality are associated with erosion of roads, and stream crossings by equipment and vehicles, both of which have the potential to cause increased suspended sediment loads in local creeks. CZN intends to employ road stabilization and runoff controls, such as drainage ditches and silt fences, to minimize the potential for road erosion and the transport of fine particles to creeks.

The main creek to be crossed is Prairie Creek. The stream bed at the crossing location is composed of gravel and cobbles. Heavy equipment crossings would only occur outside of the period of peak spring flows. Therefore, the quantity of sediment liberated into suspension by crossings should be minor.

Suitable crossing locations will be used where other creeks have to be crossed i.e. rocky or cobbly beds. Such creek crossings will be perpendicular to the flow to minimize disturbance of the creek bed (as per the E3 guideline). These approaches should limit the availability of sediment for suspension. A number of streams such as Casket, Funeral and Little Quartz Creek have been known to dry up during local summer droughts and exploration activity would be targeted, if possible, during such times. Drilling equipment and support vehicles will also be inspected and cleaned prior to significant creek crossings to avoid dissolution of hydrocarbons into creek water. As a result of these actions, the exploration drilling program is expected to result in only minor, limited and short-term impacts to surface water quality.



## **5.5 Aquatic Habitat**

### **5.5.1 Fisheries Studies**

Several studies have been conducted in the Prairie Creek system north of the Nahanni National Park Reserve (NNPR) since 1980, including Ker Priestman (July, 1980), Beak (March, April, May, September 1981), Rescan (May-June, September 1994) and Mochnacz (August 2001). The dates and key findings of these studies are summarized in Table 1 in chronological order.

By the end of the most recent fieldwork (2001), it was known that both bull trout (*Salvelinus confluentus*) and mountain whitefish (*Prosopium williamsoni*) spawn in relatively large numbers

**TABLE 1  
FIELD DATES AND KEY FINDINGS FOR FISHERIES WORK IN THE**

<b>FIELD DATES</b>	<b>RESEARCHER</b>	<b>KEY FINDINGS</b>
July 21-25 1980	Ker Priestman	Dry braided channels indicating flooding and high energy system; no barriers in main stem; Harrison Creek steep, no pools, subsurface in summer; low metals in fish tissue; mitigation table
March 13-27 1981	Beak	Winter survey; tributaries frozen; ice bridge survey (before/after break-up); metals low in fish tissue; benthic invertebrate density very low
April 8 1981	Beak	Helicopter survey of winter road crossings before break-up; photographs
May 21-25 1981	Beak	High water levels after break-up; benthos low densities; arctic grayling not above park; metals low
September 22-26 1981	Beak	Bull trout and mountain whitefish spawning in hundreds upstream of mine; BT may be resident; catch numbers showed MW>CC>BT; increased metal load in fish from July 1980 indicates variable levels
May 30-June 1 1994	Rescan	Prairie Creek flows: 18 cms at 1.4 m/s on 31 May [likely too fast to ford]
September 12-16 1994	Rescan	Bull trout in Galena and Quartz creeks near mouths; Harrison almost dry/subsurface; Prairie Creek upstream of mine looks good for fish spawning; metal levels low in fish; about 40 good holding/overwintering pools in main stem creek from park to headwaters; only slimy sculpin found upstream
August 13-14	Mochnacz	Bull trout in Funeral Creek; arctic grayling in Prairie Creek below mine; sedimentation is main concern re bull trout

**PRAIRIE CREEK SYSTEM**

**TABLE 2  
LEASES, ZONES AND STREAMS IN THE PROJECT AREA**

<b>LEASES</b>	<b>ZONES</b>	<b>STREAMS</b>	<b>COMMENTS</b>
3338		Funeral Creek	Creek on north side; "Rico Showing"
2933		Casket Creek	Creek divides 2933/2932; intermittant
2932	1-4	Harrison Creek	Typically frozen in winter & dry in summer
2931	5	Galena Creek	Fish near mouth
	6	Little Quartz Creek	Existing road network; intermittant
	7	Tribs to LQC	Ephemeral streams/water runs
2854	8-9	Water runs	Ephemeral streams; no fish
	10-12	Water runs	Few ephemeral water runs
Gates 1-4		Various creeks	Gates 1&2 straddle Prairie Creek; other named and unnamed intermittant creeks in area

in Prairie Creek upstream of the mine site. Arctic grayling (*Thymallus arcticus*) are known to inhabit lower Prairie Creek. Each of these species is a salmonid, the first two are fall spawners and the last spawns in spring. Slimy sculpin (*Cottus cognatus*), a forage species, inhabits the main stem creek and some tributaries above and below the mine. Other key findings of past studies are discussed below in relation to fish, aquatic habitat, potential impacts and mitigation plans.

### 5.5.2 Stream Systems

The named and other streams in the Lease areas and Zones are summarized in Table 2. In the proposed southern drilling area (Zones 5-12), the primary creeks include Prairie Creek, which is by far the largest stream involved, as well as several west-side tributaries, including Galena Creek, Little Quartz Creek and Big Quartz Creek. There are also numerous smaller tributaries; many of these small watercourses are ephemeral (dry in summer, frozen in winter) and run mainly during storm events and in spring melt and runoff.

The existing road network is extensive on the leases/zones at the site, except for the Gate claims which have no roads. Most of the work areas (zones), particularly the drill pads themselves, were/are in upland areas well removed from surface drainages, including the ephemeral water runs and named streams. Some road sections cross and/or closely parallel streams, especially Big Quartz Creek and Harrison Creek, the latter being largely ephemeral. Relatively few roads exist in the northern leases.

At the proposed crossing site for Prairie Creek, the main stem is in one channel (not braided). The crossing site has a substrate of relatively large cobbles, not suitable for fish spawning, and considered by past researchers to be migration habitat for fish moving up and downstream.

Almost all of the tributary streams where the drilling program is proposed are ephemeral in nature, showing little or no surface flow in mid-summer, and freezing solid in winter.

### 5.5.3 Fish populations

As noted above, Prairie Creek is known to contain bull trout, mountain whitefish and slimy sculpin, both above and below the mine site. It was speculated by Mochnacz (2001) that bull trout may reside in Prairie Creek, based on the data showing multiple age classes of this char species in the main creek, as well as in/at the mouth of Big Quartz Creek, Galena Creek and Funeral Creek (see Table 1 for credits). Mochnacz (2001) also suggested that the bull trout in Funeral Creek may be a resident population as the creek has multi-aged char and pools in winter.

Other species known to utilize the lower reach of Prairie Creek within the NNPR and near the confluence with the South Nahanni River include: Arctic grayling, round whitefish (*Prosopium cylindraceum*), northern pike (*Esox lucius*), burbot (*Lota lota*),

white sucker (*Catostomus catostomus*) and lake chub (*Couesius plumbeus*). None of these species has been found north of the NNPR boundary; however, grayling may move farther upstream, based on the findings of past studies in the Flat River, NWT, and Finlayson River, Yukon, where grayling spawning runs are sudden and short-lived events for which sampling must be extensive over several seasons to detect. It is conceivable that arctic grayling move up Prairie Creek in spring to spawn, just as bull trout and whitefish do in the fall.

Fish in Prairie Creek do not move far up the tributary streams, as they are relatively steep, often ephemeral in flow (dry in summer, frozen in winter) and have very low primary and secondary production (algae and benthic invertebrates).

Regarding the status of bull trout in terms of the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) under Canada's Species at Risk Act (SARA), bull trout are currently under assessment for status designation, the report on that assessment to be completed by May, 2007. Currently, bull trout are not listed as endangered or locally threatened. The "*NWT Species at Risk Fact Sheets*" showing the animals considered to be endangered, threatened, of special concern, and other categories do not include bull trout. They would be listed as "data deficient", based on the on-going assessment. It should also be noted that, for bull trout to be listed by COSEWIC as threatened or endangered, detailed field data with agency corroboration would be required. It is known that bull trout are wide-spread in the NWT and occur in the headwaters of the Mackenzie River system. As there are no migration barriers and a very large river/lake system downstream, they likely occupy many parts of the system. They can also hybridize with dolly varden char (*Salvelinus malma*), and have both freshwater and anadromous forms. Dolly varden char are very widespread in the Mackenzie and many other river systems in NWT, and other parts of Canada.

With respect to arctic grayling and their use of Prairie Creek, the past studies found no grayling upstream of the NNPR and the Prairie Creek Mine site. However, the past studies had few sampling or survey days in the April-May period when grayling are known to spawn. Other studies of grayling spawning (e.g. Sigma et al., 1977 & 1978) have shown that they can move quite suddenly to spawning grounds with few, or no, individuals to be found along the migration route in the days before and after the event. They may also move largely at night, with whole stocks/populations of spawning adults moving together, and the process is over in a few days. Fence-trapping, which was not attempted in past studies, is perhaps the best way to monitor a spawning run as it fishes 24/7. It is conceivable that arctic grayling do migrate upstream beyond the park boundary, and even past the mine site, as do bull trout and mountain and/or round whitefish. DFO have concurred that there is potential for grayling to use the upper reaches of Prairie Creek for spawning purposes (Watkinson pers. comm.).

#### 5.5.4 Aquatic Habitat

Each of the past studies assessed aquatic habitat from aerial, ground and in-stream fieldwork. The Prairie Creek system is characterized by long, cold winters, when most

tributaries are frozen solid and the main stem has ice cover (often open in lower reaches), high dissolved oxygen content and good over-wintering pools for fish in the main stem. The creek valley is steep-sided (including tributaries) and flat-bottomed, with extensive braiding in the main stem creek, especially upstream of the mine site where riffle:pool habitat provides excellent salmonid spawning capacity. This is used by at least two of the three salmonids species in the system.

The aquatic habitat in Prairie Creek below the mine was described by Beak (1981) as follows: "Prairie Creek in this section exhibited a trellis drainage pattern, a deep U-shaped valley with steep mountains paralleling the creek on both sides. In several areas, the creek occupied the whole valley flat. The creek gradient was steep, causing fast-flowing character with numerous white rapids in its course and very little pool development. Substrates on the banks and creek bed were composed mainly of boulders, cobbles and pebbles with very little gravel." The reaches below the mine were categorized as migration habitat, while spawning beds were found mainly upstream of the mine.

Few of the named tributary streams support fish all year, while the smaller, lower order tributaries are typically ephemeral water runs that are dry in summer, flow in the fall and freeze solid in winter.

#### 5.5.5 Potential Impacts of Phase 3 Drilling Program

The primary concerns of regulatory agencies in their review of previous permit applications include: effects of wet (forded) stream crossings; fuel tanks and handling; runoff and sediment control; water use and discharge; location of drill pads; placement of drill spoils; use of explosives; treatment of buffer zones/leave strips; and, the potential cumulative impacts of the drilling program and other activities in the area. Each of these is discussed briefly below; cumulative impacts are assessed separately in Section 6.

Measures to avoid or mitigate any potentially adverse effects on fish and fish habitat have been detailed in Section 3 - Environmental Management Plan.

#### *Stream Fording*

The primary activity in the proposed drilling program that would affect watercourses would be the proposed wet crossings [fording] of creeks to access drill sites. The very short-term disturbance to (wetted, flooded) streambeds during vehicular crossings could disturb any aquatic life in the crossing area and stir up sediment. Hydrocarbon residues from vehicles and machinery could also enter an active stream and be carried downstream to more fish-bearing waters. CZN is aware of the potential for disturbance to streambeds; however, the use of fording, especially for very low-flowing, or dry, streams with cobble substrates would produce less habitat destruction than construction of permanent, or semi-permanent, crossing structures, such as culverts or bridges.

The crossing sites for each clearly defined creek would be marked to limit the number of crossings and avoid new/unnecessary crossings. Equipment and vehicle cleaning has been described above, particularly for the crossing of main stem Prairie Creek. All crossing sites where disturbance has occurred would be reclaimed and rehabilitated after final use leaving no long-term effects on habitat quality. With careful management and conscientious personnel on site, no significant impact on fishery resources would occur from the proposed fording method of access to drill sites.

### *Fuel Handling*

With any industrial activity in remote areas, there is the potential for fuel spills or leaks from vehicles, barrels or larger storage tanks. Any introduction of hydrocarbons to waterways could harm aquatic life downstream. CZN will, as noted in the project description, contain and manage all fuel supplies and use to ensure that no such substances enter the creek systems.

### *Runoff and Sediment Control*

The potential for, and possible effects of, sedimentation have been identified as the primary aquatic environmental concern related to the bull trout population (most sensitive) in the Prairie Creek system (Mochnac, 2001), and we concur with that assessment. Although the natural flow volumes and sediment levels in the creek system vary considerably by season, any additional input of sediment into the system is to be avoided, with a near-zero tolerance for anthropogenic increases in total suspended solids concentrations below mine-related works. For that reason, and as described in Section 3, Environmental Management Plan (EMP), avoidance of sediment-producing activities near water courses and management of surface runoff will be of paramount importance in the environmental protection program.

With proper sediment control measures, no significant effects from the proposed drilling program would occur to fish habitat due to sediment loads. As noted by Environment Canada (Wilson 2004), "the proposed drilling remains within the scope of the land use permit and can be addressed by standard mitigation measures." Indian and Northern Affairs Canada (Hayes 2004) also noted that "any potential adverse environmental effects caused by the proposed activity are mitigable with conditions set out in the Land Use Permit"; he also specified that "the Permittee shall ensure that any piece of heavy equipment crossing a watercourse is clean and free of visible hydrocarbon residue." CZN is proposing to adopt the environmental protection measures outlined in the permit(s), as well as in this document, to ensure that sediment or hydrocarbon additions to the Prairie Creek system do not occur during the proposed drilling program.

### *Location of Drill Pads*

Although it is not possible at this time to precisely locate the future drill pads in the Prairie Creek valley, it is clear that, in past drilling programs, most of the pads were positioned on upland formations away from watercourses, and this would continue to be

the case in the proposed Phase 3 program. The relatively high ground provides better sites and working conditions than the lower areas, such that few, if any, pads would be located adjacent to stream channels.

Perimeter ditching, silt fencing or other runoff control measures that will be employed will minimize the potential for sediment dispersal to watercourse(s) from drill pads and roads.

#### *Water Use and Discharge*

Relatively small quantities of water would be pumped from local creeks for drill string lubrication and cooling. Intake pipes in streams would be screened wherever fish presence is possible. Discharge water and any 'mud' from drill holes will be directed to a local pit for disposal, away from watercourses. Therefore, the potential for significant impact is small.

#### *Use of Explosives*

It is not anticipated that explosives will be required for the proposed drilling program. However, if/when explosives are required, the standard DFO guidelines on the use of explosives near watercourses would be applied. No underwater, or near-water, detonations are anticipated.

#### *Placement of Drill Spoils*

As noted above, drill cuttings will be buried in a local pit on upland terrain well removed from watercourses.

#### *Riparian Vegetation Clearing*

It is understood that streamside vegetation should be left in place as much as possible for streams, including ephemeral water runs. For that reason, shrub and groundcover vegetation would be left in place on both sides of crossing sites. As many trees would be left as possible (avoided by route alignment location), and shrub/herb layer vegetation and root systems driven over rather than stripped, grubbed and graded. Most of the plants would survive with intact and growing root systems to stabilize the soil on stream banks at crossing sites.

#### *Site Abandonment and Reclamation*

In addition to avoiding permanent disruption to riparian vegetation, stream crossing sites, drill pad sites and roadways would be subject to reclamation once work in these areas is complete to ensure habitat rehabilitation. Reclamation would include regrading as needed for stability.

## 5.6 Wildlife and Wildlife Habitat

Potential impacts to wildlife from mineral exploration activities are related to:

- ? Direct effects on habitat, specifically those habitats used for critical life cycle stages (i.e., breeding/natality, spring feeding areas, winter range, winter den sites, mineral licks, etc.);
- ? Direct effects from animal-human encounters, resulting in mortality of animals or disturbance effects that have consequences for the animal's physiological condition;
- ? Indirect effects from disturbance-producing activities (e.g., noise from operating equipment and machinery, aircraft and vehicle traffic).

The amount of habitat to be disturbed by the Phase 3 exploration program will be limited to some additional area for road spurs and drill rig site preparation (see section 5.3). This amount of habitat disturbance is minor (several hectares at most) given the land base of the Prairie Creek drainage basin (estimated at 856 km<sup>2</sup>).

Significant wildlife species in the vicinity of the Prairie Creek mine site include Dall's sheep, grizzly bear and wolverine. Grizzly bears and wolverines are listed as of Special Concern on Schedule 1 of SARA.

Dall's sheep appear to be common in the Prairie Creek area, and often frequent the mine site; several dozen are reported near the air strip (John Weaver, pers. comm.). Sheep natality areas (birthing) are typically located in rugged terrain (steep ridges, cliffs) and such terrain occurs in the proposed Phase 3 exploration area; however, specific natality areas have not been identified in the area, although site observations have noted that sheep commonly utilize the ridges immediately east of the mine. Caution will be required with helicopter use to reduce the risk of affecting ewes on their birthing areas (if any are present).

Grizzly bears occur in the Prairie Creek drainage, and are active from mid-spring (approximately late April) to late fall (October) when they head to their winter dens. There do not appear to be any records of grizzly winter den sites around the mine site. John Weaver (WCS, pers. comm.) suggests that grizzlies may den in caves along river canyons in the area or may move up to headwater streams to den. Grizzlies have been reported infrequently around the mine site, but this represents a small portion of a single bear's home range.

Recent studies of grizzlies in the Prairie Creek drainage by Weaver (2003) brought to light the following important points:

- ? the mine site and air strip are near the center of the Prairie Creek survey grid (system of 16 grids) and are part of the home range of a number of male and female grizzlies;



- ? 10 of the 16 Prairie Creek survey grids had visits by grizzlies (6 males, 4 females);
- ? four bears visited five sites within 10 km of the mine site;
- ? 10 sites visited by grizzlies were within 20 km of the mine site;
- ? grizzlies appear to be drawn to *Hedysarum* as a June food source, a plant associated with valley bottoms and moisture receiving areas on slopes; and
- ? in June, grizzlies in the Prairie Creek basin appeared to occur mostly from the mine site northward, while black bears appeared to occur mostly south of the mine site.

Given grizzlies' propensity for long distance movements in their home range, it is possible that several grizzlies may, at times, move through the proposed Phase 3 exploration area. Mitigation to avoid potential conflicts with grizzlies is recommended, and includes monitoring of bears on a regular basis during exploration, through helicopter observations and a program of recording bear sightings by mine and exploration crews. Monitoring bear activity and posting sightings of bears and bear sign on a map base (at the mine camp) will assist in this effort. A bear awareness orientation program is given to all personnel working at the site, and is also covered in the Health and Safety Plan attached as Appendix D.

Wolverine occur in the Mackenzie Mountains and range widely. Several sightings of wolverine have been recorded in the mine site area, and one or more wolverines may use the proposed Phase 3 area as part of their home range. Given the amount of land base used by an individual wolverine, it is unlikely that the amount of habitat to be affected by the Phase 3 exploration program would impact wolverines. Disturbance from exploration activity is a possibility, though considered to be of limited impact, considering the wide-ranging habit of wolverines.

Other significant wildlife in the region include woodland caribou (boreal population), wood bison and anatum peregrine falcon; all are listed as threatened in Schedule 1 of SARA. The information available suggests that higher quality caribou range is located to the north and east of the mine site, although caribou do occasionally move through the mine site area. The mine site and environs do not represent bison habitat. Peregrine falcons nest in the Mackenzie Mountains; however, there does not appear to be any published record of nesting near the Prairie Creek mine site or proposed Phase 3 exploration area.

New and on-going research in this region on grizzly bears, Dall's sheep and mountain caribou will continue to contribute background information and improve our understanding of these important wildlife resources. Of significance is the grizzly bear research that has been carried out by the Wildlife Conservation Society since 2002, including studies in the Prairie Creek basin. This work has employed sophisticated DNA investigation tools that have helped to identify numbers of grizzly (and black) bears in the region, and their approximate areas of use; this is valuable information that can be used in planning and execution of the exploration program.

## **5.7 Cultural and Heritage Resources**

All areas proposed for use in this application are within the area of traditional mining activity. As such, impacts of the proposed development on cultural and heritage resources are expected to be negligible.

An archaeological database search was conducted on August 18, 2000 through the Canadian Museum of Civilization in support of Land Use Permit Application MV2000C0030. The search area encompassed the mine site area, as well as the entire access road corridor from the Prairie Creek mine to the Liard River. To accomplish this, the search parameters were defined by geographical coordinates to cover a block extending from 61° 00' to 61°45' N. latitude and from 122°45' to 125°00' W. longitude. No archaeological sites were identified within the mine site area proposed for use under this Land Use application. The closest identified sites are south of the South Nahanni River near the mouth of the Meilleur River, 35-40 km south of the mine site.

A second database search was undertaken on December 16, 2004 covering the area of the proposed drilling program. The search parameters were defined by coordinates 61°27' to 61°40' N. latitude and 124°44' to 124°56' W. longitude. There were no known archaeological sites within at least 150 m of the area of interest.

Orientation for workers on-site will include guidance on what to do if any archaeological specimen or site is discovered. They will be instructed not to move or disturb the 'find', or undertake any activity that might cause this. The camp manager is to be alerted, who will then notify the appropriate authorities and seek their direction on a course of action.

## **5.8 Land and Resources Use**

All areas proposed for use in this application are within the area of previous exploration activity at Prairie Creek, and on mineral claims held by CZN. Apart from exploration, the land and resources in this area have not been used for any other activity in recent history.

The Prairie Creek mine is located 90 km from the nearest settled community of Nahanni Butte. There is no road access into the property other than the winter road which dates back to 1982. Access is by air only, to a private airstrip controlled by CZN. There is no other land occupation, or commercial land or water based activities, in the vicinity of the mine. Similarly, no observed traditional use or trapping activity has been observed in the mine site area in recent history.

South Nahanni Outfitters hold the outfitting licence for the area. Hunting activity generally takes place in the fall in areas well removed from the mine, and is highly unlikely to be impacted by the proposed drilling program.

The Prairie Creek mine is located adjacent to Prairie Creek, 32 km upstream of the point where it crosses the boundary of the Nahanni National Park Reserve (NNPR), and 47 km upstream of the point where Prairie Creek joins with the South Nahanni River. The

southern-most creek catchment that will be utilized for the drill program is Quartz Creek. This creek enters Prairie Creek 23 km upstream of the NNPR, and 38 km upstream of the confluence with the South Nahanni (see Figure 2).

The southern-most mineral lease, number 2854, is 5.4 km from the park, and 7.5 km from the South Nahanni River, at its nearest point. The south-west corner of the lease just crosses into a catchment that drains directly into the South Nahanni. However, CZN will not conduct any drilling outside of the Prairie Creek catchment.

The South Nahanni River is 500 km in length, and flows for 402 km prior to reaching its confluence with Prairie Creek, which is 65 km from the downstream boundary of the Park Reserve.

The watershed of the South Nahanni River is 37,000 km<sup>2</sup>, of which 4,766 km<sup>2</sup> are contained within the NNPR. By comparison, the watershed of Prairie Creek above the mine site is 495 km<sup>2</sup>. In accordance with the relative sizes of their respective watersheds, water flow in the South Nahanni averages 75 times that of Prairie Creek, and ranges from 50 to 180 times as much.

The South Nahanni River, regularly used for canoeing trips during the summer months, represents the nearest water use downstream of the Prairie Creek mine. River tours are supported by a number of outfitting companies from as far away as Ontario. Parks Canada reports that between 800-1000 people visit the park annually. Most visitors gain access to the NNPR by flying into two designated landing sites inside the Park Reserve.

The nearest downstream community is Nahanni Butte, located at the confluence of the South Nahanni and Liard Rivers, 146 km downstream of the mine site. The population of Nahanni Butte is approximately 120 people, for which water for domestic purposes is supplied by well. The proposed drilling program is not expected to significantly affect water quantity or quality at the mine site. Therefore, no impact on water quality or quantity is likely within the Park Reserve, or on downstream users.

In 1996, CZN and the Nahanni Butte Dene Band executed the Prairie Creek Development Cooperation Agreement (see Appendix C for a synopsis). In 2003, pursuant to the Interim Measures Agreement, an interim withdrawal was made of land within the South Nahanni River watershed from further mineral staking, industrial development and exploration. The Interim Measures Agreement would remain in effect until superseded by the provisions of the Deh Cho Final Agreement.

## **5.9 Economy**

The proposed development is part of the process of establishing, confirming and enhancing the known mineral resource at the Prairie Creek property, which has been ongoing since mineralization was first discovered in 1928.

The main objective of the proposed drill program is to explore for further mineral resources on the claims held by CZN.

In the short term, the proposed drilling program will create positive economic impacts for local communities in terms of employment opportunities and contracted support and supply services. During the 2004 exploration season at Prairie Creek, CZN employed numerous people from the local communities, along with contracting various local services in support of the exploration activities which included diamond drilling, underground rehabilitation and site maintenance. Personnel from Nahanni Butte, Fort Simpson, Fort Liard, Jean Marie River were hired to fill positions such as Assistant Site Manager, cooks, housekeepers, drill helpers, carpenters, heavy equipment operators, and site maintenance personnel. Air support was provided by Villers Air (Fort Nelson), Wolverine Air (Fort Simpson), Little Red Air (Yellowknife), Air North (Whitehorse), and North Caribou Air (Fort Liard). Local service providers from Fort Simpson, Yellowknife, and Fort Nelson were utilized to further support the activities of the \$2 million exploration program. The Prairie Creek 2004 exploration program provided over 800 man-days of employment for Northern residents.

Similar and expanded opportunities are anticipated in 2005 in support of this and other planned programs. The drilling program is expected to employ about 14 persons, including a cook, caretaker, mechanics, drillers, geologist, First Aid attendant, and labourers. Fixed wing aircraft and helicopter support will provide opportunities for charter companies in Fort Simpson and Fort Liard. Consumables will also be sourced from local suppliers and flown into site. Project management will necessitate travel for head office and other personnel, resulting in positive economic impacts for commercial airlines servicing Yellowknife and Fort Simpson, as well as hotels and restaurants in Yellowknife, Fort Simpson and some other local communities.

## **5.10 Noise**

The principal sources of noise associated with carrying out the exploration program relate to the operation of diesel engines which power the drill rigs, and the use of a helicopter to move heli-rigs and personnel in areas where road access is not sufficiently developed.

Drill rig engines are enclosed within drill shacks which minimize ambient noise. Routine maintenance will be employed to ensure the engines are running efficiently and, therefore, as quietly as possible. In any event, noise from the drill rigs will be localized within the immediate areas of drilling activity.

Noise from helicopter use to transport heli-rigs and personnel to drill sites on the Gate claims west of the mine and Zones 10-12 south of the mine, will be of relatively short duration, and comparable to fixed-wing flights into and out of the site, and flights into and out of the NNPR by visitors.

## **5.11 Visual and Aesthetic Resources**

The Prairie Creek mine site is very remote and visible only by low flying aircraft operating in and around the Prairie Creek Valley. The proposed drill program will take place within the area of traditional exploration activity and the existing mine site facilities, and will therefore not stand out in contrast to undisturbed terrain. Drill sites will be recontoured, after all drilling is complete, to conform to the local topography. Residual impacts will relate to minor alterations in topography on a localized scale associated with development of the drill pads and spur extensions to existing roads.

The use of a helicopter during the drill program may increase the potential for visibility of site activities. However, as stated above, this will be of relatively short duration, and comparable to fixed-wing flights into and out of the site, and flights into and out of the NNPR by visitors.

## **5.12 Traditional Knowledge**

Previous diamond drill programs were presented at a public meeting including representatives of Deh Cho First Nation communities and organizations held in Nahanni Butte on November 22, 2000, at which time CZN reviewed the exploration and other programs planned at that time, with the objective of providing opportunity for the communities to raise concerns with respect to the proposed work on their traditional use and activities in the area. No specific concerns were raised at that time with respect to the mineral exploration program proposed.

A letter was forwarded to local First Nations communities and organizations, including the Nahanni Butte Dene Band, Lidlii Kue First Nation, Acho Dene Koe First Nation and Deh Cho First Nations on January 5, 2001, advising these groups of the Review Boards' request for integration of traditional knowledge into the EA report for the exploration program, and requesting such information to be supplied, if any were available. No information was received, and none has been provided subsequently.

CZN is in receipt of Draft 2 of the Traditional Knowledge Guidelines for Public Consultation, dated November 25, 2004, issued by the MVEIRB. The above approach and content is consistent with these guidelines.

## 6.0 CUMULATIVE IMPACTS

An assessment of potential cumulative impacts was conducted in general conformance with the Interim Guide for Addressing Cumulative Environmental Effects in Environmental Assessments Under the Mackenzie Valley Resource Management Act (September, 2000), and the MVEIRB's Environmental Impacts Assessment Guidelines (March, 2004). The assessment includes:

- ? definition of cumulative impacts;
- ? scoping of the assessment;
- ? analysis of the impacts; and,
- ? identification and incorporation of mitigation.

### 6.1 DEFINITION OF CUMULATIVE IMPACTS

Part 5, Section 117 (2) of the Mackenzie Valley Resource Management Act (MVRMA) specifies that:

*Every environmental assessment and environmental impact review of a proposal for a development shall include a consideration of:*

- a) the impact of the development on the environment, including the impact of malfunctions of accidents that may occur in connection with the development and any cumulative impact that is likely to result from the development in combination with other developments; and*
- b) the significance of any such impacts.*

Canadian Zinc's approach to assessing possible cumulative impacts employed the following basic premises:

- ? An environmental, biophysical, social or cultural impact or potential impact related to the proposed Phase 3 drilling program must exist.
- ? The impact or potential impact must be demonstrated to operate cumulatively, additively or synergistically, either within the context of Canadian Zinc's activities at the Prairie Creek mine, or with impacts from other projects or activities.
- ? The other projects or activities considered exist or are likely to be carried out and are not hypothetical.

## **6.2 SCOPING THE ASSESSMENT**

### **6.2.1 Selection of Components for Assessment**

The detailed project description for the proposed Phase 3 exploration drilling program given in this document provides information on the existing environment and assesses the anticipated impacts of the proposed program on the environmental, socioeconomic and cultural resources of the program area. The components considered include:

- ? Air Quality, Noise and Climate;
- ? Terrain;
- ? Vegetation and Plant Communities;
- ? Water Quality and Quantity;
- ? Aquatic Habitat;
- ? Wildlife and Wildlife Habitat;
- ? Land and Resources Use;
- ? Visual and Aesthetic Resources;
- ? Cultural and Heritage Resources; and
- ? Economy.

The impact assessment above predicts minimal residual impacts associated with the Phase 3 drilling program on biophysical, cultural and heritage, visual, aesthetic and land resources. These results are consistent with the short-term, localized nature of the proposed drilling program, and the fact that all of the activities would occur on existing exploration claims associated with the Prairie Creek Mine.

With crossings of Prairie Creek and other creeks to access drill sites, and the use of a helicopter to gain access to sites not already serviced by roads, there is potential for impacts on water quality and therefore fish, and an increase in ambient noise with associated potential effects on terrestrial wildlife. These issues will be examined further in the following assessment. In previous environmental assessments, the MVEIRB have requested that socio-economic impacts be included in cumulative impact assessment. Therefore, this has also been done below.

### **6.2.2 Time and Spatial Boundaries**

#### ***Time***

Exploration activities in the Prairie Creek area date back to 1928 when mineralization was first discovered. Exploration continued at various times throughout the years to the present, and in 1981 a complete mine was constructed and permitted. However, the mine did not achieve commercial production, was closed, and has remained in a “moth-balled” state.

A permit for underground decline development, and a water license for pilot plant operation, was issued in September 2003. While preparatory work has been initiated for these programs, the actual work has not commenced.

A permit was previously approved for exploration drilling within the Prairie Creek mine site, termed Phase 2. The 5-year permit was issued in November, 2001. However, Phase 2 drilling only commenced in 2004.

If a permit for a Phase 3 drilling program is granted in 2005, the permit would allow exploration throughout the property to continue until at least 2010. Thus, this cumulative effects assessment covers all activities at Prairie Creek from the late 1920s to the year 2010.

### *Space*

The spatial boundaries for the assessment of water quality and noise are essentially the same. For water quality, the Prairie Creek catchment upstream of the Quartz Creek confluence is the area of interest. A helicopter would be based at the mine site and would travel to the outlying areas of the mineral claims that exist in the same catchment.

For socioeconomic assessment purposes, the local region is represented by the boundaries of the Deh Cho First Nation Territory. Economic impacts will be projected as appropriate to include the Northwest Territories and Canada.

### **6.2.3 Other Projects Considered**

For the purposes of this cumulative effects assessment, other projects considered in the analysis include recognized mining activities that have or may take place within the southern Nahanni Watershed, and the NNPR. The mining activities considered are the CanTung tungsten mine and Copper Ridge Explorations' Howards Pass zinc project. Brief Descriptions of these activities follow.

#### *CanTung Tungsten Mine*

The CanTung mine, operated by North American Tungsten Corporation Ltd., is situated in the Mackenzie Mountains about 190 km in a straight line west-northwest of the Prairie Creek Mine (Figure 1). The CanTung property drains into the Flat River, a major tributary of the South Nahanni River. It flows into the South Nahanni within the limits of NNPR, approximately 100 km upstream of where Prairie Creek enters the river.

Exploration activities and mining at CanTung have taken place since the early 1960's. Mining began in 1962 but the mine recently was closed down in 2003 due to poor economic/financial conditions, and the property has been on care and maintenance since then. Currently, North American Tungsten is planning to restart the mine and initiate production in early 2005. The mine has a projected mine-life of two years and will



operate under an existing water licence regulated by the Mackenzie Valley Land and Water Board.

### ***Howards Pass Project***

The Howards Pass zinc prospect is located in the Yukon portion of the Mackenzie Mountains near the upper end of the South Nahanni River Watershed, about 250 km north-east of the Prairie Creek property (Figure 1).

Howards Pass property is currently owned by Placer Dome Limited, was first discovered in 1972 and was actively explored through to 1981. More recently in 2000, an eight-hole core drilling program was completed by Copper Ridge Explorations Inc. The Howards Pass project is estimated to have a calculated resource of 110 million tonnes grading 7.7% combined zinc plus lead, much of which is believed to be amenable to open pit mining (Copper Ridge 2000). However, considerably more drilling will be required outside of the high grade core of the main deposit to upgrade the resource to a mineable reserve and to permit development plans to proceed.

### ***Nahanni National Park Reserve (NNPR)***

The NNPR comprises 4,766 km<sup>2</sup> and encompasses 300 km of the South Nahanni River Valley (Figure 1). The Prairie Creek mine is located outside the Park Reserve boundary adjacent to Prairie Creek, a tributary of the South Nahanni River, around which the NNPR was created. The mine is located 32 km upstream of the point where Prairie Creek crosses into the Park Reserve and 48 km from the confluence of Prairie Creek and the South Nahanni River (Figure 2). At its closest point, the southern boundary of Mining Lease 2854 is 5.4 km straight line distance to the park boundary (Figure 2). The watershed divide between the South Nahanni and Prairie Creek Basin also occurs at this southern-most point of the Prairie Creek Property.

NNPR was set aside as a Park Reserve by Order in Council in 1972 and gazetted as a Park Reserve in 1978. Parks Canada subsequently nominated the Park Reserve for inclusion on the World Heritage List under the UNESCO World Heritage Convention, and that portion of the South Nahanni within the Park Reserve for designation as a Canadian Heritage River under the Canadian Heritage Rivers System. The former was achieved in 1978 and the latter in 1987. Parks Canada is proposing expansion of the Park Reserve into 3 new areas totalling an additional 4,175 km<sup>2</sup>, which would bring the total area of the Park Reserve to 8,925 km<sup>2</sup>. These three specific areas have undergone a Mineral Energy Resource Assessment (MERA) and DCFN and Parks Canada have agreed to withdraw 18,800 sq. km. within the South Nahanni Watershed for a five year period and will conduct a study to identify potential lands for addition to the present NNPR.

The Park Reserve has proven itself to be a popular destination as a river canoeing and kayaking experience. Adventure trips generally range from 7-21 days and cost in the order of \$3,000-\$5,000. Several tour companies based in Ontario, Yellowknife and

Whitehorse operate in the area. According to Parks Canada (April 27, 2004), NNPR contributes \$600,000 to the local economy in wages and benefits for 15 full-time and seasonal staff, approximately half of which are members of the Deh Cho First Nation, and the park's maintenance and operations budget contributes an additional \$450,000. The contribution to the region is estimated at \$1.5 million annually.

## **6.3 ANALYSIS OF POTENTIAL CUMULATIVE IMPACTS**

### **6.3.1 Water Quality and Fish**

Activities that are currently permitted and planned at the site do not require the crossing of Prairie Creek. These activities also have minimal risk in causing elevated suspended sediment loads to Prairie Creek. This is because all site runoff is directed into the Catchment Pond in the mine area, and any suspended matter settles out before water is discharged to Harrison Creek. Further, when underground decline development is initiated in 2005, it will be associated with treatment of mine water, and polishing and settling of the treated water in a new polishing pond to be built near the existing Mill, prior to discharge of the water to the Catchment Pond. Water quality in the site water management system should be better than before. Consequently, any sediment associated with the Phase 3 drilling program, whether it be associated with creek crossings or road runoff, cannot be considered 'cumulative' to other site operations, since those operations do not cause elevated sediment levels in Prairie Creek. The sediment would also not be cumulative to other sources in the South Nahanni catchment since such sediment would tend to settle-out within a short distance from the mine, pre-supposing increased sediment loads occurred at all. Therefore, we conclude there would be no cumulative effect on water quality associated with the proposed Phase 3 drilling program.

The primary human activities in the Prairie Creek valley that had/have any potential to adversely affect fish stocks and aquatic production include exploration roads, drilling programs, construction of the mine site and ancillary facilities, development of the NNPR and past fish sampling programs. No other significant human activity has occurred in the valley that would potentially affect fish populations. Construction of the mine, mill, tailings management area, offices and airstrip, along with numerous drilling access roads, would have temporarily disturbed the ground (soils on the upland and stream substrates in discrete locations at crossings). The potential for sedimentation to streams, including the main stem Prairie Creek, would have been the primary concern from a fisheries perspective.

The data on fish stocks, including metals content in fish tissues, as well as on water and sediment quality, indicate that no apparent, or lasting, adverse effects occurred to the stream systems and fish populations. The data are not extensive, but do show good conditions in terms of water and tissue chemistry, such that no significant impact is apparent from the past mine-related activities in the area, and therefore no significant potential for cumulative effects.

In actual terms, probably the most adverse effect on fish in Prairie Creek from human activity has been past fish catches in sampling programs, and the limited local sports fishery associated mainly with the NNPR. In very small, headwater fish populations, such as those in the Prairie Creek system, even small numbers of adult fish taken from the population can affect these small populations which reach maturity at relatively older age and do not spawn every year, both due to the cold water environment. Whatever sports catches and fish samples are taken from the creek system would reduce the number of spawners in those years and/or the following years. The effects, while real, are not likely to be significant in magnitude, or in terms of sustaining the populations, and therefore a cumulative impact is not indicated.

Within the South Nahanni watershed, the most significant development other than the Prairie Creek mine is the CanTung tungsten mine. The minesite facilities are located adjacent to and on the floodplain of the Flat River, a major tributary of the South Nahanni River. During the extended care and maintenance period, the Class A Water Licence has been kept current and the associated Surveillance Network Program has been carried out. The data collected since 1986 have continued to demonstrate that high standards of water quality have been maintained in the Flat River.

No specific water quality data were reviewed for streams in the vicinity of the Howards Pass zinc prospect. However, an intensive Environmental Water Quality Monitoring and Assessment Program of the South Nahanni River Basin has been undertaken by Environment Canada in association with Parks Canada since 1988. The results of this program have been reported by Environment Canada in *Protecting the Waters of Nahanni National Park Reserve, NWT* (December 1991) and *Protecting the Aquatic Quality of Nahanni National Park Reserve, NWT* (December 1998). Both of these reports confirmed a lack of impacts on water quality within the Park Reserve and on the South Nahanni River associated with the presence and operation of the CanTung mine and the Howards Pass prospect over those 24 years, and concluded that the waters of the South Nahanni River remain pristine.

Based on the foregoing analysis, the potential for cumulative impacts on water quality and fish associated with past and proposed activities at the Prairie Creek mine, combined with those at CanTung Mine, the Howards Pass prospect and the NNPR, is expected to remain very low.

### **6.3.2 Noise and Terrestrial Wildlife**

#### *Wildlife Habitat*

MVEIRB, GNWT Department of Resources, Wildlife and Economic Development (RWED) and the NNPR each expressed some concern in previous environmental assessments related to the potential for incremental or cumulative loss of vegetation and wildlife habitat from past and proposed exploration and development activities in the vicinity of the Prairie Creek Mine.

The proposed Phase 3 drilling program will entail relatively small disturbance or use of terrain or surficial materials. To recap, drill sites will be in relatively close proximity to existing access roads, the drill pads will be relatively small, and drilling will take place from roads or existing drill pads using multiple holes at different hole orientations. Therefore, surface disturbance to terrain and associated vegetation and wildlife habitat will be minimized, and temporary because ultimately, the disturbed areas will be fully reclaimed.

Detailed vegetation analysis and wildlife habitat assessments were conducted by Beak Consultants in 1981 in conjunction with a comprehensive program of baseline studies in support of operational permitting activity at that time. The Prairie Creek mine site is located within the Spruce/Lichen vegetation map unit of the Mackenzie Mountains. The Spruce/Lichen zone was estimated to cover approximately 30,819 ha (308 km<sup>2</sup>) of the study area, largely within the boundaries of the Prairie Creek watershed.

A breakdown of historical disturbance around the Prairie Creek property, within the Prairie Creek watershed and largely within the Spruce/Lichen zone, as a result of exploration and development over the last 40 years is estimated as follows:

? Plantsite	10 ha
? Tailings impoundment	10 ha
? Airstrip	7 ha
? Exploration roads and drill pads	6 ha
? Access road (0 – 17 km)	8.5 ha
? Miscellaneous	2.5 ha
<hr/>	
? <b>Total</b>	<b>44 ha</b>

Total disturbance to date, therefore, represents a physical disturbance of approximately 0.14% of the area of the Spruce/Lichen zone within the Prairie Creek watershed, resulting in available habitat reduction from 30,819 ha to 30,775 ha.

An individual drill pad would result in the disturbance of approximately 200 m<sup>2</sup>, representing approximately 0.00006% of the area of the Spruce/Lichen vegetation zone. A Phase 3 program consisting of 60 holes drilled from new pads would disturb an area of 12,000 m<sup>2</sup> (1.2 ha). This represents a disturbance of 0.004% of the area of the Spruce/Lichen zone. Add to this provision 60 access road spurs of 20 m length by 5m width, would result in an increase in the disturbed area by 6,000 m<sup>2</sup> to 18,000 m<sup>2</sup> (1.8 ha). This would result in a total additional disturbance of 0.0056% of the Spruce/Lichen zone, reducing remaining available habitat from 30,775 ha to 30,773 ha. Compared with the original 30,819 ha that existed before mining activity took place in the Prairie Creek area, this would represent a total cumulative disturbance from all historical and currently proposed exploration drilling of 46 ha. This represents 0.15% of the original pre-disturbance area of the Spruce/Lichen zone within the Prairie Creek watershed. Reclamation to be implemented in the future would be expected to reduce, and eventually eliminate, the limited disturbance which is currently predicted.

The Spruce/Lichen zone in the area of the Prairie Creek mine is classified as fair Dall's sheep range, good caribou winter range, and along the bottom of the Prairie Creek valley, fair moose range. Above the valley bottom, the habitat is classified as insignificant moose habitat.

Wildlife observations in the immediate area of the mine site, including the area of the proposed drill program, have identified Dall's sheep as the predominant species utilizing the area. During summer months, they typically frequent the mine site area, using the adjacent talus slopes as escape terrain. Caribou and moose have only rarely been observed anywhere in the vicinity of the mine or, for that matter, in the Prairie Creek valley generally.

Given the very small area of disturbance relative to the available habitat and the observed limited use of the mine site and surrounding area by wildlife species, impacts, including cumulative impacts, associated with the proposed drill program are predicted to be negligible.

#### Wildlife Disturbance

Disturbance related effects in a cumulative sense would only arise if another industrial activity or land use activity were to be taking place within or in proximity to the proposed Phase 3 exploration area. This does not appear to be the case. Even for wildlife that travels widely, such as grizzly and wolverine, we are not aware of any such activities that will be taking place from 2005 on.

Use of a helicopter for heli-drill and personnel transport will add to airborne traffic in the area, such as fixed-wing flights into and out of the mine, and similar flights into and out of the NNPR. In that sense, those flights could be considered cumulative. In reality, the total number of flights, and disturbance created, will remain relatively small, and in any event, the helicopter noise will not be greatly dissimilar to the heavy equipment used to move the skid-mounted rigs. Therefore, the cumulative effect of helicopter use is considered to be minor.

### **6.3.3 Socio-economic Considerations**

The proposed Phase 3 exploration drilling program is an integral part of the process of enhancing mineral resources at the Prairie Creek property, which has been ongoing since mineralization was first discovered in 1928. The main objective of the program is to expand mineral resources.

In the short term, the proposed drilling program will create positive economic impacts for local communities in terms of employment opportunities and contracted support and supply services, as described in section 5.9.

The existing mineral resource has been established over only about 2.1 km of a mineralized strike length of 16 km, suggesting the potential to define additional mineral resources, and the economic benefits associated therewith, well beyond current projections is excellent.

Although no quantitative information is available on the precise nature of the socio-economic benefits and opportunities that will be generated by these other developments, it is reasonable to assume that the local communities and the Deh Cho Territory are equally well positioned to gain substantial benefits from the combination of exploration/mining projects and Park Reserve-related activities that are expected to take place in the Deh Cho, as well as with oil and gas activity in the Fort Liard area. Assuming that participation in these other opportunities is equally effectively managed by the stakeholders, the anticipated cumulative socio-economic benefits are expected to grow with time.

## **6.4 UNCERTAINTIES IN THE ASSESSMENT**

The main uncertainty associated with this assessment pertains to the likelihood that any or all of the developments discussed will proceed within the temporal scope of the assessment, and hence the cumulative impact issues that have been evaluated will in fact occur. The re-development of the Prairie Creek mine is contingent on a number of factors including:

- ? The results of the proposed underground exploration drilling program.
- ? A subsequent bankable feasibility study demonstrating a positive return on investment.
- ? Availability of future financing to support development.
- ? Acquisition of the necessary regulatory authorization to proceed and operate.

Similar uncertainties need to be addressed and resolved for other prospective developments in the vicinity, such as the CanTung mine and the Howards Pass mineral prospect, each of which are situated further upstream in the South Nahanni River Watershed.

## **6.5 MITIGATION MEASURES**

The mitigation measures to be employed to prevent or minimize impacts to water quality/fish and noise/wildlife were reviewed in earlier sections of this cumulative impact assessment and the detailed project description before that.

In the context of socio-economic issues management, the Development Cooperation Agreement executed by the Nahanni Butte Dene Band and CZN, sets out the various measures and commitments made by both parties to optimize benefits and minimize possible negative effects. CZN remains committed to fulfilling the provisions of this Agreement.

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## **Appendix A**

### **LUP and Amendment Correspondence**

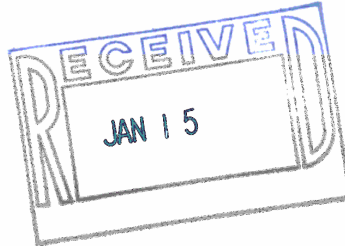
- ? January 7, 2004: letter from CZN to MVLWB;
- ? April 18, 2004: letter from DCFN to MVLWB;
- ? April 19, 2004: letter to CZN from MVLWB;
- ? April 20, 2004: letter and amendment application from CZN to MVLWB
- ? May 10, 2004: letter from West Point First Nation;
- ? May 11, 2004: letter from Department of Fisheries and Oceans;
- ? May 14, 2004: letter from Indian and Northern Affairs;
- ? May 17, 2004: email from Environment Canada;
- ? May 17, 2004: letter from Deh Cho First Nations;
- ? May 18, 2004: letter from Canadian Parks and Wilderness Society;
- ? May 18, 2004: letter from Parks Canada; and,
- ? June 1, 2004: letter, Preliminary Screening Report and Reasons for Decision from the MVLWB.



**Mackenzie Valley Land and Water Board**

7th Floor - 4910 50th Avenue • P.O. Box 2130  
YELLOWKNIFE, NT X1A 2P6  
Phone (867) 669-0506 • FAX (867) 873-6610

January 7, 2004



File: MV2001C0022

**Mr. Alan Taylor**  
Canadian Zinc Corporation  
Suite 1202-700 West Pender Street  
VANCOUVER, BC V6C 1G8

Fax: (604) 688-2043

Dear Mr. Taylor:

Drilling locations permitted under LUP MV2001C0022

This is in reply to your questions regarding the definition of "Prairie Creek Mine Property" as written in the scope of the aforementioned Land Use Permit. The "Prairie Creek Mine Property" is considered to consist of the following leases and claims:

Mineral Claims:

F67134 (Gate 1)  
F67135 (Gate 2)  
F67136 (Gate 3)  
F67137 (Gate 4)

Surface Leases:

95F/10-5-3 (minesite)  
95F/10-7-2 (airstrip)

Mining Leases:

ML2854 (Zone 8-12)  
ML2931 (Zone 4-7)  
ML2932 (Zone 3)  
ML2933 (Rico West)  
ML3313 (Samantha)  
ML3314 (West Joe)  
ML3315 (Miterk)  
ML3338 (Rico)

In accordance with this definition, diamond drilling of up to sixty holes in total is permitted throughout all areas under the above claims and leases. Helicopter supported diamond drilling is permitted and fuel to carry out the exploration program can be transported to the site on an "as-needed" basis and stored at the airstrip.

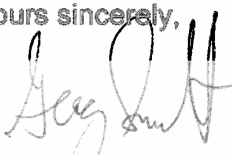
Once plans for the drilling program, which is anticipated to start in the Spring of 2004, are finalized, please submit the following information to the Mackenzie Valley Land and Water Board and the INAC Inspector at least 10 days prior to the start of drilling:

/s/

- Start date of the exploration program,
- Operational timeline until completion of the program, and
- Maps showing drill locations with coordinates (latitude and longitude or UTM).

If you have any questions regarding this letter, contact me at (867) 669-0506 or email [mvlwbpermit@mvlwb.com](mailto:mvlwbpermit@mvlwb.com).

Yours sincerely,



for

Sarah Baines  
Regulatory Officer

**Copied to: Shane Hayes, Fort Simpson Sub-District, DIAND, Fort Simpson**



# DEH CHO FIRST NATIONS

BOX 89, FORT SIMPSON, N.W.T. X0E 0N0  
TEL: (867) 695-2355 FAX: (867) 695-2038



April 15, 2004

Melody McLeod, Chair  
Mackenzie Valley Land and Water Board

**Canadian Zinc Corporation**  
**MV2001C0022 Phase II Mineral Exploration Drilling Program**

**Background: Type A Land Use Permit Application MV2001C0022**

On March 5, 2001, the Canadian Zinc Corporation (CZN) submitted an application to the Mackenzie Valley Land and Water Board (MVLWB) for a Land Use Permit to conduct an exploration drilling program at the CZN Prairie Creek mine site. On April 11, 2001, Nahanni National Park Reserve (NNPR) referred the drilling program to the Mackenzie Valley Environmental Impact Review Board (MVEIRB) for environmental assessment (EA). On April 5, 2001, the Pełakzah Ki First Nation also referred the drilling program to the MVEIRB for EA.

In accordance with Section 19(3)(a), 19(5)(ii), and 21(1) of the *Mackenzie Valley Land Use Regulations*, CZN submitted an application to the MVLWB that included the locations of the drilling program. As described in the CZN Land Use Permit application, *Detailed Project Description, Year 2001, Phase II Mineral Exploration Drilling Program*, CZN proposed to drill "30-60 exploration holes, each up to approximately 500m in length, in an area adjacent to the existing underground workings."<sup>1</sup> Specifically, CZN stated in the application that

"The up to 50-60 hole exploration drilling program as proposed in this application is to be carried out from surface along strike in a southwesterly to northeasterly direction over a distance of about 1000m and parallel to the existing underground workings from about the 875 to 1125 m elevation. . . the entire drill program is proposed to take place within 1000m of the existing mine site facilities. . . within the boundaries of Mining Lease 2932 and Surface Lease 9SF10/10-5-3. . . in all cases, potential drill hole

<sup>1</sup> CZN, 2001, *Detailed Project Description, Year 2001 Phase II: Prairie Creek Mine Mineral Exploration Drilling Program*. Submitted in support of Type A Land Use Permit Application, dated March 2, 2001. Submitted by CZN to the MVLWB on March 5, 2001. Page 2.

locations are in close proximity to the existing network of exploration roads.<sup>2</sup>

While CZN noted that “the very nature of the mineral exploration in question means that precise number and locations of drill holes cannot reasonably be identified beforehand...the locations of individual drill holes are generalized and will be precisely located in the field at the time of drilling,”<sup>3</sup> CZN repeatedly stated throughout the detailed project description that **the entire drilling program will take place within 1000m of the existing minesite facilities**. See Appendix A for a list of CZN commitments in the land use permit application, regarding drilling locations.

### The Environmental Assessment

The MVEIRB conducted the EA for the proposed Phase II drilling program. During the EA, the MVEIRB considered submissions and commitments from CZN and other parties to the EA. Among the documents that the MVEIRB assessed during the EA were the following submissions from CZN which outlined the proposed development:

- ♦ *CZN Detailed Project Description, Phase II, Prairie Creek Mine Mineral Exploration Drilling Program*, March 5, 2001;
- ♦ *CZN Cumulative Impact Assessment for the Phase II Mineral Exploration Program at Prairie Creek Mine, NWT*. Prepared by EBA Engineering Consultants Ltd. June 4, 2001;

All the documents submitted by CZN during the EA clearly stated that the drilling program would take place within 1000m of the existing mine site facility and within the boundaries of Mining Lease 2932 and Surface Lease 95F10/10-5-3.

For example, as part of the EA requirements, the MVEIRB requested detailed information from CZN regarding the potential cumulative effects of the proposed development. In response, CZN submitted the document “*Cumulative Impact Assessment for the Phase II Mineral Exploration Drilling Program at Prairie Creek Mine, NWT*.”<sup>4</sup> In this document, CZN stated:

“The Project Description for the year 2001 Phase II exploration drilling program (Canadian Zinc 2001) provided information on the existing environmental and assessed the anticipated impacts of the proposed drilling program on the environmental, socioeconomic and cultural resources of the development area...

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<sup>2</sup> Ibid. Page 5.

<sup>3</sup> Ibid. Page 5.

<sup>4</sup> CZN. *Cumulative Impact Assessment for the Phase II Mineral Exploration Drilling Program at Prairie Creek Mine, NWT*. Prepared for CZN by EBA Engineering Consultants Ltd. June 4, 2001.

As reported in Canadian Zinc (2001), the proposed 60 hole exploration drilling program is to be carried out from surface along strike in a southwesterly to northwesterly direction over a distance of about 1000m and parallel to the existing underground workings from about the 875 to 1125 m elevation. **The entire drill program is proposed to take place within 1000 m of the existing mine site facilities, within the area of traditional mining activity at Prairie Creek and within the boundaries of Mining Lease 2932 and Surface Lease 95F10/10-5-3. In all cases, potential drill hole locations are in close proximity to the 249 holes drilled on the property in earlier years and the existing network of exploration roads”<sup>5</sup> (emphasis added)**

CZN also referenced the proposed locations of the drilling program to justify the “negligible” environmental impacts of the program:

“The impact assessment provided in Canadian Zinc (2001) predicted that the anticipated residual impacts of the Phase II drilling program on all the biophysical resources, cultural and heritage resources, visual and aesthetic resources and land and resources use were expected to be negligible. **These results are consistent with the short-term, highly localized nature of the proposed drilling program and the fact that all of the activities would occur within the footprint of existing mining activity at the Prairie Creek mine.”<sup>6</sup> (emphasis added)**

Following completion of the EA, the MVEIRB recommended approval of the proposed development, noting that the development is not likely in its opinion to have any significant adverse impact on the environment or be a cause of significant public concern. However, the MVEIRB also stated that “the Review Board has made this decision based on the commitments and undertakings to mitigate environmental impacts made by Canadian Zinc Corporation. If these measures are not implemented, the Review Board’s conclusions about impact significance could be affected.”<sup>7</sup>

### The Land Use Permit

On November 30, 2001, the MVLWB issued Type A Land Use Permit MV2001C0022 to CZN for a period of five years. The permits states “Subject to the *Mackenzie Valley Land Use Regulations* and the terms and conditions in this Permit, authority is hereby granted to Canadian Zinc Corporation to ‘Proceed with

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<sup>5</sup> Ibid. Page 2.

<sup>6</sup> Ibid. Page 3.

<sup>7</sup> Mackenzie Valley Environmental Impact Review Board. October 25, 2001. *Report of Environmental Assessment on the Canadian Zinc Corporation Phase II Mineral Exploration Drilling Program*. Page 2.



the land use permit operation described in application'.<sup>8</sup> The permit also stipulates that "As a condition of this land use permit, Canadian Zinc Corporation is expected to meet all commitments and obligations made by the company in its submissions to the Mackenzie Valley Land and Water Board and in the Environmental Assessment Process."<sup>9</sup>

Furthermore, in Part C, Item 26(1)(a)(1): *Conditions Applying to All Activities*, the permit explicitly states: "The Permittee shall not conduct this land use operation on any lands not designated in the accepted application."<sup>10</sup> This condition is consistent with S. 26(1) of the *Mackenzie Valley Land Use Regulations*, under which the MVLWB sets conditions for the location and area of lands that may be used in a land use operation.

Despite the above terms and conditions stipulated in the permit, the MVLWB staff have recently interpreted Part A, Item 1, *Scope of Permit*: "conduct mineral exploration activity consisting of 50-60 diamond drill holes throughout the Prairie Creek property," as meaning that CZN may conduct the drilling program anywhere within their 10 leases and four claims.

#### Recent Developments

On December 10, 2003, Alan Taylor from CZN faxed a letter to a Regulatory Officer at the MVLWB, requesting clarification on allowable drilling locations within permit MV2001C0022. In this correspondence, CZN stated their intent to "carry out diamond drill operations in a similar manner to that described in the existing license." CZN referenced Part A, Item 1 of the permit as well as listed CZN's ten leases and four claims. CZN also stated that they now intended to use a "helicopter portable diamond drill" in the drilling program.

In response to CZN's inquiry, the MVLWB staff has responded that "CZN can drill anywhere on their lease as long as they are in compliance with the conditions in LUP MV2001C0022."<sup>11</sup> In a subsequent email to Alan Taylor of CZN, the MVLWB staff also stated "I understand that the following are activities that CZN will be undertaking: (1) diamond drilling will be conducted not just within 1000m of the mill facility, but throughout the Prairie Creek Mine property; (2) helicopter portable drill will be used..."<sup>12</sup>

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<sup>8</sup> MVLWB, November 30, 2001. *Issuance of Type "A" Land Use Permit. MV2001C0022. Cover page.*

<sup>9</sup> MVLWB, November 30, 2001. *Issuance of Type "A" Land Use Permit. MV2001C0022. Cover letter signed by Chair, Melody McLeod.*

<sup>10</sup> *Ibid.* Page 2.

<sup>11</sup> Sarah Baines, December 10, 2003. *MVLWB Telephone Log regarding discussion with Alan Taylor, CZN.*

<sup>12</sup> Sarah Baines, December 12, 2003. *Email correspondence to Alan Taylor, CZN.*

In a follow-up letter to CZN, the MVLWB staff defined the 'Prairie Creek Property' as all of CZN's ten leases and four claims, and wrote "In accordance with this definition, diamond drilling of up to sixty holes in total is permitted throughout all areas under the above claims and leases. Helicopter supported diamond drilling is permitted and fuel to carry out the exploration program can be transported to the site on an as-needed basis and stored at the airstrip."<sup>13</sup>

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### The Acts and Regulations

This interpretation of Type A Land Use Permit MV2001C0022 by the MVLWB is wholly inconsistent with the purpose and intention of the *Mackenzie Valley Land Use Regulations*, the purpose of EA, and the function of the Mackenzie Valley Land and Water Board as a permitting authority.

Firstly, the MVLWB statement "CZN can drill anywhere on their lease as long as they are in compliance with the conditions in LUP MV2001C0022" is contradictory. As noted previously, the conditions in permit MV2001C0022 clearly state "The Permittee shall not conduct this land use operation on any lands not designated in the accepted application."<sup>14</sup> This condition of the permit is supported by the opening statement of the permit: "Subject to the *Mackenzie Valley Land Use Regulations* and the terms and conditions in this Permit, authority is hereby granted to Canadian Zinc Corporation to proceed with the land use operation described in application..."

The *Scope of Permit* only describes the overall context of the development. Of course the context of the development is the Prairie Creek property, however the *Conditions* of the permit describe the exact locations of allowable land use activities. This interpretation is consistent with Section 26(1) of the *Mackenzie Valley Land Use Regulations*.

Secondly, the land use permit application did not describe any drilling outside 100m of the existing mill site and outside of Mining Lease 2392 and Surface Lease 95P10/10-5-3. Should CZN now propose to conduct the drilling program outside of the area designated in the application, CZN is required, under Section 26(2) of the *Mackenzie Valley Land Use Regulations* to submit a formal written request to the MVLWB for an amendment to the permit. Section 26(2) of the *Mackenzie Valley Land Use Regulations* states:

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<sup>13</sup> Sarah Beiss. January 7, 2004. Letter to Alan Taylor, CZN.

<sup>14</sup> MVLWB. November 30, 2001. *Summary of Type "A" Land Use Permits. MV2001C0022. Section 26(1)(a)(1). Page 2.*

“Subject to subsections 4 and 5, the Board may amend any of the conditions of a permit on receipt of a written request from the permittee setting out (a) The conditions that the permittee wishes to have amended; (b) the nature of the proposed amendment; (c) the reasons for the proposed amendment.

Subsequently, Section 26(4) of the *Mackenzie Valley Land Use Regulations* states:

“Where a land-use requested in a proposed amendment is not within the scope of the land-use for which the permit was issued, the Board shall treat the request as an application for a new permit in accordance with sections 22 or 23.”

CZN’s letter to the MVLWB was not a written request within the meaning of Section 26(2) of the *Mackenzie Valley Land Use Regulations*. CZN’s written request to the MVLWB only requested clarification on the definition of “Prairie Creek Property”, as defined in the general *Scope of Permit* and a general notice of intention to conduct drilling outside the area designated in the accepted application.

Thirdly, as the land use permit application did not describe any drilling outside of Mining Lease 2392 and Surface Lease 95F10/10-5-3, the EA conducted by the MVEIRB did not assess the impacts of drilling outside the area described in the application.

The Deh Cho First Nations find that the recent correspondence between CZN and the MVLWB is inconsistent with the *Mackenzie Valley Land Use Regulations*, and also inconsistent with Sections 62, 118, and 130(5) of the *Mackenzie Valley Resource Management Act*.

Fourthly, the application did not describe helicopter-supported drilling. Therefore, the MVEIRB and the EA did not examine helicopter-supported drilling. Helicopter-supported drilling may require different drilling equipment, fluids, and support services, than those described in the application. Part C: Item 26(1)(c)(12) of the permit states “The Permittee shall not use any equipment except of the type, size, and number that is listed in the accepted application.”<sup>15</sup> Should CZN now propose to conduct helicopter-supported drilling, detailed information about this proposed amendment will be required, in order to assess if this would trigger a new land use permit application under Section 26(4) of the *Mackenzie Valley Land Use Regulations*.

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<sup>15</sup> MVLWB. November 30, 2001. *Issuance of Type "A" Land Use Permit. MV2001C0022*. Section 26(1c)(12). Page 2.

Finally, while Section 27 of the *Mackenzie Valley Land Use Regulations* provides some flexibility to the MVLWB to allow Board employees to issue, amend, or renew Type B permits, the Board staff does not have the regulatory authority to amend Type A permits, as is the case with the CZN permit in question: Type A Land Use Permit MV2001C0022.

We look forward to hearing from you to resolve these matters,

Sincerely,

A handwritten signature in black ink, appearing to read 'Laura Pitkanen', written over the word 'Sincerely,'.

Laura Pitkanen,

Appendix A: CZN Statements about Drilling Locations in the Land Use Permit Application (Detailed Project Description)

“...50-60 exploration holes, each up to approximately 500m in length, in an area adjacent to the existing underground workings” (CZN. 2001. Page 2).

“The up to 50-60 hole exploration drilling program as proposed in this application is to be carried out from surface along strike in a southwesterly to northeasterly direction over a distance of about 1000m and parallel to the existing underground workings from about the 875 to 1125 m elevation (CZN. 2001. Page 5).

...the entire drill program is proposed to take place within 1000m of the existing minesite facilities...within the boundaries of Mining Lease 2932 and Surface Lease 95F10/10-5-3 (CZN. 2001. Page 5; see Appendix B (i) for the map).

“...in all cases, potential drill hole locations are in close proximity to the existing network of exploration roads” (CZN. 2001. Page 5; also see Appendix B (ii) for the map).

“The exploration drilling program currently proposed is to be carried out from surface along strike in a southwesterly to northeasterly direction over a distance of about 1000m and parallel to the existing underground workings from about the 875 to 1125m elevation. The entire drill program is proposed to take place within 1000m of the existing minesite facilities, wholly within the boundaries of the existing surface and mineral leases and within the area of traditional mining activity at Prairie Creek. In all cases, potential drill hole locations are in close proximity to the existing network of exploration roads. As a result, only minor extensions of existing roads, if any, typically in the order of a few to 10 or 20 metres, will be required to access drill pad sites” (CZN. 2001. Page 8)

“All proposed drill locations are in close proximity to existing exploration tote roads which will minimize disturbance relating to the establishment of roads and drill sites” (CZN. 2001. Page 9)

“The drilling program will be carried out on the northwest side of the Harrison Creek valley approximately 250-1000m upstream of its confluence with Prairie Creek” (CZN. 2001. Page 11)

“... development will take place within 1000m of the existing mill and campsite facilities and within the area of traditional mining activity at Prairie Creek...and the proposed development will occur primarily on or adjacent to existing exploration tote roads” (CZN. 2001. Page 12)

“All areas proposed for use in this application are within 1000 metres of the existing facilities” (CZN. 2001. Page 13)

**“All areas proposed for use in this application are within 1000 metres of the existing facilities” (CZN. 2001. Page 14)**

**“The proposed development will take place within the area of traditional mining activity and within 1000m of the existing minesite facilities and will therefore not stand out in contrast to undisturbed terrain” (CZN. 2001. Page 19)**

**“The area which the Company wishes to secure for the purposes of undertaking the proposed development is shown on the attached drawing as the “Proposed 2001 Surface Drilling Area”” (CZN. 2001. Page 22; See Appendix B (i) and B (ii) for maps).**

**“The area of proposed development is within the area of traditional mining activity and adjacent to the existing facilities, including the existing underground workings and the location of the underground decline portal proposed for 2001...all proposed drill locations are in close proximity to existing exploration tote roads which will minimize disturbance relating to the establishment of roads and drill sites” (CZN. 2001. Page 25)**

4-19-04; 1:57PM  
19-APR-2004 14:38 From-MVLWB

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**Mackenzie Valley Land and Water Board**

7th Floor - 4910 50th Avenue • P.O. Box 2130  
YELLOWKNIFE, NT X1A 2P6  
Phone (867) 669-0506 • FAX (867) 873-6610

April 19, 2004

File: MV2001C0022

Mr. Alan Taylor  
Canadian Zinc Corporation  
Suite 1202-700 West Pender Street  
VANCOUVER, BC V6C 1G8

Fax: (604) 688-2043

Dear Mr. Taylor:

**Drilling Locations Permitted Under LUP MV2001C0022**

In light of recent discussions and correspondence relating to Land Use Permit (LUP) MV2001C0022, we have had cause to review the question of the area within which drilling for the purpose of mineral exploration is permitted. We note that Condition 1 of LUP MV2001C0022 states:

*"The Permittee shall not conduct this land use operation on any lands not designated in the accepted application."*

In your application you indicated that the drilling program would be limited to an area within 1000 metres of the millsite, and, as such, lands within that 1000 metre radius are the only lands that are "designated in the application" as described above. The Mackenzie Valley Land and Water Board expects Canadian Zinc to operate in compliance with the conditions of the land use permit.

We understand that this contradicts information provided to you in earlier correspondence respecting drilling locations, and we apologize for any misunderstanding.

If you have any questions regarding this letter, contact me at (867) 669-0506 or email [bwooley@mvlwb.com](mailto:bwooley@mvlwb.com).

Yours sincerely,

A handwritten signature in black ink, appearing to read "B. Wooley".

Bob Wooley  
Executive Director

Copied to: Shane Hayes, Fort Simpson Sub-District, DIAND, Fort Simpson  
Paula Spencer, South Mackenzie District, DIAND, Yellowknife

Alan Taylor

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**From:** Sarah Baines [sbaines@mvlwb.com]  
**Sent:** April 20, 2004 2:03 PM  
**To:** 'Alan'  
**Subject:** Report of EA for Phase II drilling

Hi Alan,

Here is the Report of Environmental Assessment as approved by the Minister. We do not have a copy of the Minister's letter but I am working on retrieving the document from the MVEIRB.

Pasted below is an email from Alan Ehrlich of the MVEIRB stating his position on the matter of drilling locations permitted under MV2001C0022.

Sarah

From Alan Ehrlich:

Hi Sarah,

I'd like to correct Martin Haefele's comment regarding the Canadian Zinc EA. The Review Board's assessment and recommendations were based on consideration of the development as described by the developer. The first line of the executive summary of the Report of EA spells out that the MVEIRB reviewed the developments that were proposed by Canadian Zinc Corp.

CZN proposed to drill adjacent to the existing underground workings, close to existing roads, and within 1000m of existing mine site facilities. CZN also described their proposed development as occurring entirely within Mining lease 2393 and Surface lease Mining Lease 93F10/10-S-2.

We all have this posted on our website - see <http://www.mvlwb.com/Registry/EA/Canada24/Canada24EA.pdf>

The Board recommended approval of the proposal under 133(1) (b)(ii), and the company was explicit as to what its proposal was.

I hope this clarifies what the Review Board considered. If you have any questions about this type of material in the future, encourage you to refer back to this to the documents on the EA Public Registry.

Regards,

Alan Ehrlich

Senior Environmental Assessment Officer

Metamorphic Valley Environmental Impact Review Board

Tel: (467) 766-7056

Fax: (467) 766-7074

20/04/2004





April 20, 2004

**\*\*via fax 867-873-6610 and email\*\***

Mackenzie Valley Land and Water Board  
7<sup>th</sup> Floor, 4910-50<sup>th</sup> Avenue,  
Yellowknife, NT  
X1A 2P6  
**Attention: Sarah Baines, Regulatory Officer**

Dear Sarah:

**Re: Request for Amendment to LUP MV2001C0022, Prairie Creek NT.**

Canadian Zinc Corporation hereby submits a request for an Amendment to LUP MV2001C0022, specifically with reference to the Condition in Part C, Section 1, to include all lands within the Prairie Creek Property, as described in the attached Application.

***Reasons for Amendment***

The recent issuance of Land Use Permit MV2001C0023 for underground work coupled with market conditions, and investor interest has directed the Company to place additional emphasis on further exploration diamond drilling in other areas of the Prairie Creek Property.

***Permit Background***

The original application for a Land Use Permit to support a 60-70 drill hole program at the Prairie Creek property was accepted by your Board March 7, 2001. Supporting documentation accompanying the application included a Project Description Report dated February 28, 2001. The application was referred to EA on April 11, 2001 and the review process was completed which resulted in LUP MV2001C0022 dated November 8, 2001 being issued to the Company.

***Nature of Amendment***

The company wishes to carry out diamond drill operations in a similar manner to that described in the existing license except the area of interest needs to expand to include other areas of the Prairie Creek Property. The drilling program would be carried out utilizing existing and appropriate drill and heavy equipment.

The Company is confident that the environmental and socio/cultural implications of this requested amendment remain negligible and consistent with predictions presented in the original Project Description Report filed with the Mackenzie Valley Land and Water Board, as well as the Report of Environmental Assessment prepared by the Mackenzie Valley Environmental Impact Review Board.

Your prompt attention to this application would be much appreciated and if you have any questions please contact me immediately.

Yours truly,

Alan B. Taylor  
Vice President Exploration



**Mackenzie Valley Land and Water Board**  
**7th Floor - 4910 50th Avenue**  
**P.O. Box 2130**  
**YELLOWKNIFE NT X1A 2P6**  
**Phone (867) 669-0506**  
**FAX (867) 873-6610**

**Application for:**

**New Land Use Permit**

**Amendment**

**MV2001C0022**

**or Renewal**

**\*\*TYPE A\*\***

1. Applicant's name and mailing address: Canadian Zinc Corporation 1202 – 700 W. Pender St. Vancouver, BC, V6C 1G8	Fax number: 604-688-2043
2. Head office address: As above  Field supervisor: Mr. Alan Taylor Satellite telephone: 1-600-700-2454 Satellite fax: 1-600-700-9209	Telephone number: 604-688-2001   Fax number: As above
3. Other personnel (subcontractor, contractors, company staff etc.)  TOTAL: To be determined. Est. 14 (Number of persons on site)	
4. Eligibility: (Refer to section 18 of the <i>Mackenzie Valley Land Use Regulations</i> )  a)(i) <input checked="" type="checkbox"/> a)(ii) ?    a)(iii) ?    b)(i) ?    b)(ii) <input type="checkbox"/>	
5. a) Summary of operation (Describe purpose, nature and location of all activities.)  As part of the ongoing process of establishing, confirming and enhancing the known mineral resource at the Prairie Creek property, Canadian Zinc proposes to conduct an additional surface mineral exploration drilling program, to follow up on the 6-7 hole Phase I program applied for on July 28, 2000.  The main objective of the proposed drilling exploration program is to further delineate the area of vein and stratabound mineralization that makes up the known mineral resource in Zone 3 where the majority of exploration work has been conducted to date. The program is designed to provide the additional degree of confidence in the geological database necessary to upgrade the existing 11.8 million tonne mineral resource to mineral reserve status through the application of geostatistical modeling. As a result, proposed holes are located between and in close proximity to existing holes in order to provide in-fill drilling on a closer spaced grid.  Subject to available funding, the program is expected to entail drilling of 50 – 60 holes of up to 500 metres each in length for a total of up to 25,000 to 30,000 metres of recovered core.  The area proposed for investigation includes other areas of the Prairie Creek Property that are registered to Canadian Zinc Corporation including Mining Leases and Mineral Claims as described further in the original Project Description Report. Access to the drill sites will be via the network of existing tote roads.  b) Please indicate if a camp is to be set up. (Please provide details on a separate page, if necessary.) The land use operation will be based in and serviced from the existing facilities at the Prairie Creek Mine. No new camp will be set up.	

1. Applicant's name and mailing address: Canadian Zinc Corporation 1202 – 700 W. Pender St. Vancouver, BC, V6C 1G8	Fax number: 604-688-2043
	Telephone number: 604-688-2001

6. Summary of potential environmental and resource impacts (describe the effects of the proposed land-use operation on land, water, flora & fauna and related socio-economic impacts). (Use separate page if necessary.)

Minimal environmental disturbance is expected to occur as all activity will take place within the area of traditional mining activity that being the boundaries of the existing mining leases and claims. . New surface disturbance will be restricted to the immediate area of each drill pad. To the extent practical drilling will be conducted from existing pads or from new pads constructed immediately adjacent to existing tote roads. Where new road access is required, distances are expected to be minimal, typically in the order of a few to 20 –30 m in length.

A total of some 249 holes have been drilled on the property to date. An application to drill an additional 6-7 holes was made on July 28, 2001. An Environmental Assessment Report on this Phase I drilling program was submitted to the MVEIRB on January 26, 2001. A detailed Project Description Report summarizing potential impacts has been prepared and submitted in support of this application for the Phase II program. Upon completion of the two programs the total number of holes drilled on the property will be in the range of 300 to 320.

7. Proposed restoration plan (please use a separate page if necessary).

The area of the proposed development is within the area of traditional mining activity. Depending on the results of the exploration program these areas are expected to be subject to ongoing activity associated with further exploration and mine development. Accordingly, final reclamation and abandonment of these sites is not proposed at this time.

The proposed drilling program will entail minimal disturbance of surficial materials. All proposed drill locations are in close proximity to existing exploration tote roads which will minimize disturbance relating to the establishment of roads and drill sites. To the extent practical drilling will be conducted from existing pads or from new pads constructed immediately adjacent to existing tote roads, again to minimize surface disturbance. Where required, extensions to existing tote roads will be kept to a minimum, typically only from a few up to 10 or 20 metres. The drill pads will be prepared only large enough to accommodate and position the approximate 7m x 4m drill rig.

Where clearing is required to create short extensions, or spurs, from existing tote roads, or the drill pads themselves, surficial materials will be stripped and stockpiled adjacent to the area. Any trees which require clearing will be bucked into 1.5 metre lengths. When all drilling is complete, cut banks will be re-contoured to conform to the local topography and stabilized, and stockpile surficial materials will be back bladed over the disturbed areas.

8. Other rights, licences or permits related to this permit application (mineral rights, timber permits, water licences, etc.)

Mining Lease 2932, 2931, 2854, 2933, 3315,3338, Mineral Claims F67134, F67135, F67136, F67137 and Surface Lease 95F10/10-5-3.

No new roads required, only access spurs to drill pads from existing roads.

Roads:  Is this to be a pioneered road?  Has the route been laid out or ground truthed?

9. Proposed disposal methods.

- |   |  |
|---|--|
| a) Garbage: Prairie Creek refuse site                   | c) Brush & trees: NA   |
| b) Sewage (Sanitary & Grey Water):<br>Exfiltration sump | d) Overburden (Organic soils, waste material, etc.):<br>To be stockpiled adjacent to drill pad |

10. Equipment (includes drills, pumps, etc.) (Please use separate page if necessary.)

Type & number	Size	Proposed use
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6. Summary of potential environmental and resource impacts (describe the effects of the proposed land-use operation on land, water, flora & fauna and related socio-economic impacts). (Use separate page if necessary.)

Minimal environmental disturbance is expected to occur as all activity will take place within the area of traditional mining activity that being the boundaries of the existing mining leases and claims. . New surface disturbance will be restricted to the immediate area of each drill pad. To the extent practical drilling will be conducted from existing pads or from new pads constructed immediately adjacent to existing tote roads. Where new road access is required, distances are expected to be minimal, typically in the order of a few to 20 –30 m in length.

A total of some 249 holes have been drilled on the property to date. An application to drill an additional 6-7 holes was made on July 28, 2001. An Environmental Assessment Report on this Phase I drilling program was submitted to the MVEIRB on January 26, 2001. A detailed Project Description Report summarizing potential impacts has been prepared and submitted in support of this application for the Phase II program. Upon completion of the two programs the total number of holes drilled on the property will be in the range of 300 to 320.

2 Longyear Super 38 or equivalent	4m(w)x 7m(l) x 8m(h)_– 350 GMC diesel	Core Drilling
1 Cat front end loader	966	Road maintenance
1 Cat bulldozer	D8	Road Maintenance
1 Cat grader	14G	Road Maintenance
2 rock trucks	Volvo 5350	Road Maintenance
3 Pick up trucks	¾ ton	Personnel transport

11. Fuels	( )	Number of containers	Capacity of containers	Location
Diesel		4	1.7 million litres ea	Exisitng Tank Farm Drill Rigs Mobile equipment
		2	1200 lites	
		5	400 – 1200 litres	
Gasoline		2	20,000 litres ea	Existing Tank Farm Pick up trucks
		3	150 litres ea	
Aviation fuel				
Propane				
Other				

12. Containment fuel spill contingency plans. (Please attach separate contingency plan if necessary).

A spill contingency plan has previously been prepared and submitted for the Prairie Creek Mine.

13. Methods of fuel transfer (to other tanks, vehicles, etc.)

Manual or electric pump, gravity.

14. Period of operation (includes time to cover all phases of project work applied for, including restoration)

Estimated duration of operation: 6 months  
Period of operation: June 1 – October 31, 2004

15. Period of permit (up to five years, with maximum of two years of extension).

11. Fuels	( )	Number of containers	Capacity of containers	Location
Diesel		4 2 5	1.7 million litres ea 1200 litres 400 – 1200 litres	Exisitng Tank Farm Drill Rigs Mobile equipment
Gasoline		2 3	20,000 litres ea 150 litres ea	Existing Tank Farm Pick up trucks
Aviation fuel				
Propane				
Other				
5 years: Additional exploration drilling will be conducted in subsequent years.				
16. Location of activities by map co-ordinates (attached maps and sketches)				
Minimum latitude (degree, minute) 61° 33' N			Maximum latitude (degree, minute) 61° 33' N	
Minimum longitude (degree, minute) 124° 48' W			Maximum longitude (degree, minute) 124° ' W	
Map Sheet no. 95F10				
17. Applicant Print name in full Alan B. Taylor, VP Exploration  Signature: <i>Original Signed By:</i> Alan B. Taylor Date: April 20, 2004				
18. Fees <input checked="" type="checkbox"/> Type A - \$150.00      ?      Type B - \$150.00  Land use fee: _____ hectares @ \$50.00/hectare      \$ ____  <input type="checkbox"/> Assignment fee \$50.00      \$ ____ 0.00  Total application and land use fees      \$ 150.00				

**West Point First Nation**  
**#1-47031 Mackenzie Highway**  
**Hay River NT. XOE-OR9**  
**Ph: (867)874-6677/ Fax (867)874-2486**  
**Email: wpfn@nt.sympatico.ca**

May 10, 2004

Sarah Baines  
Regulatory Officer  
Mackenzie Valley Land and Water Board  
7<sup>th</sup> Floor 4910 50<sup>th</sup> Avenue  
P.O. Box 2130  
Yellowknife, NT X1A 2P6  
Fax: (867) 669-0506  
873-6610

Mackenzie Valley Land  
& Water Board

File

MAY 15 2004

Application # MV2001C0022  
Copied To PW/8B/Reg

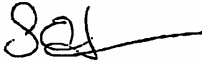
Dear Ms. Baines:


**Re: File No: MV2001C0022**  
**Request for Amendment to LUP MV2001C0022, Prairie Creek, NT**

In reviewing File No: MV2001C0022 and Request for Amendment to LUP MV2001C0022, Prairie Creek, NT. We at West Point First Nation **DO NOT APPROVE** this Application.

If you have any further questions pertaining to this application, please don't hesitate to contact me at (867) 874-6677.

Sincerely,

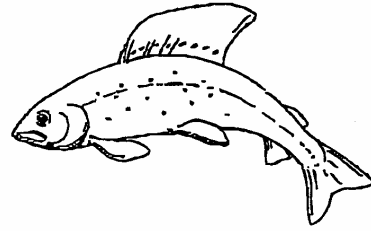


 Karen Felker  
Chief, WPFN



Fisheries  
and Oceans

Pêches  
et Océans



Fish Habitat Management  
Suite 101, 5204 – 50<sup>th</sup> Avenue  
Yellowknife, Northwest Territories  
X1A 1E2

**TO/A:**

Sarah Baines  
Regulatory Officer  
Mackenzie Valley Land and Water Board  
7<sup>th</sup> Floor, 4910 – 50<sup>th</sup> Avenue  
Yellowknife, NT  
X1A 2P6  
Fax (867) 873-6610

11 May, 2004

page 1 of 3

**MESSAGE**

Enclosed please find DFO-FHM comments on:

DFO File No. SC04006  
MVLWB File No. MV2001C0022

**Canadian Zinc Corporation, Phase II Drilling Amendment Request, Prairie Creek, NT**

**FROM/DE:**

J. David Tyson  
Area Habitat Biologist  
Western Arctic Area

*Telephone:* (867) 669-4919  
*Facsimile:* (867) 669-4940  
*Email:* tysond@dfo-mpo.gc.ca

**Canada**





Fisheries  
and Oceans

Pêches  
et Océans

Fish Habitat Management  
Suite 101, 5204-50<sup>th</sup> Avenue  
Yellowknife, Northwest  
Territories  
X1A 1E2

Your file / Votre référence  
MV2001C0022

Our file / Notre référence  
SC04006

11 May, 2004

**Mackenzie Valley Land  
& Water Board**

File

MAY 11 2004

Mackenzie Valley Land and Water Board  
7<sup>th</sup> Floor, 4910 – 50<sup>th</sup> Avenue  
Yellowknife, NT  
X1A 2P6

Application # MV2001C0022

Copied To PL1881Reg

Attention: Melody McLeod

**RE: Canadian Zinc Corporation, Phase II Drilling Amendment Request, Prairie  
Creek, NT**

Dear Ms. McLeod:

The Department of Fisheries and Oceans, Fish Habitat Management – Western Arctic Area (DFO) received the amendment application by Canadian Zinc Corporation (CZN) for Land Use Permit MV2001C0022 for advanced exploration at the Prairie Creek mine site. DFO has reviewed the application and has a number of concerns regarding the proposed changes.

The purpose and scope of work proposed by CZN in the amendment are significantly different from the project originally reviewed under Part 5 of the *Mackenzie Valley Resource Management Act (MVRMA)* in 2001. The purpose of the project as proposed in 2001 was to conduct "in-fill" drilling for the further delineation of the Zone 3 vein mineralization for the support of a bankable feasibility study (*CZN – Environmental Assessment Report, Phase II Mineral Exploration Drilling Program, Prairie Creek Mine, 7 June, 2001*). CZN has altered the purpose of the project in their amendment application to the exploration of mineral deposits elsewhere on the property.

Concurrent with the change in the purpose of the proposed drilling program there is a change in the scope and footprint. In the original proposal, CZN was very explicit in their description of the project: the project was to be confined to the use of existing tote roads in an area of 36.6 ha in the Harrison Creek drainage, north northeast of the campsite (*CZN – Environmental Assessment Report, Phase II Mineral Exploration Drilling Program, Prairie Creek Mine, 7 June, 2001*). This area has been previously impacted by development. The proposed amendment moves the drilling activities to areas not previously impacted by development and for which no environmental assessment has been conducted. 1995

**Canada**

DFO is concerned at the lack of information regarding the proposed amendment and the potential effects on fish and fish habitat in the area. Of key concern is the potential impact of this development on bull trout populations on the property. Bull trout are considered to be at risk in the Northwest Territories and sensitive in neighbouring jurisdictions (Wild Species 2000). Because of the growing concern, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has designated bull trout as a Highest Priority Candidate for assessment. COSEWIC cited population declines as a result of human activities that cause migration barriers, habitat degradation, and habitat fragmentation as reasons for concern. A species status report is being prepared for the committee to consider.

In summary, DFO feels that the Land Use Permit amendment proposes a significant change in the scope, purpose and footprint of the project. CZN has provided no information regarding the proposed locations, development activities, impacts, and mitigation. Additional information is required to determine whether the proposed project will have any effect on fish and fish habitat, particularly bull trout populations. DFO recommends that, as per section 26(4) of the Mackenzie Valley Land Use Regulations, this project be treated as an application for a new permit.

If you have any questions, feel free to contact me at (867) 669-4919, or by fax at (867) 669-4940.



J. David Tyson  
Area Habitat Biologist  
Fish Habitat Management  
Department of Fisheries and Oceans - Western Arctic Area

copy. J. Dahl, Area Chief, Habitat, DFO-FHM

**Canada**



Indian and Northern  
Affairs Canada  
www.inac.gc.ca

Affaires indiennes  
et du Nord Canada  
www.ainc.gc.ca

#16 Yellowknife Airport  
Yellowknife NT X1A 3T2

Telephone: (867) 669-2761  
Facsimile: (867) 669-2720

*Your file - Votre référence*

May 14, 2004

Mackenzie Valley Land and Water Board  
PO Box 2130  
Yellowknife NT X1A 2P6

MV2001C0022  
Mackenzie Valley Land  
& Water Board

File

MAY 18 2004

Application # MV2001C00

Copied To AMSB/lee

**ATTENTION:** Sarah Baines

Dear Ms. Baines:

**Re: LUP Amendment Request - Canadian Zinc Corporation  
Surface Exploration  
Prairie Creek**

On behalf of DIAND, the above mentioned land use permit amendment request for Canadian Zinc Corporation has been reviewed. Attached for your consideration are our inspectors' recommended land use operating conditions and narrative for this proposed operation.

Should you have any questions please contact Charlene Coe at (867) 669-2762 or Michelle Pond at 669-2765.

Yours truly,

Edward R. Hornby  
District Manager  
South Mackenzie District

ERH/np

Canada

Indian and Northern Affairs Canada  
Box 150  
Fort Simpson, NT  
X0E 0N0

May 14, 2004

Indian & Northern Affairs Canada  
South Mackenzie District Office  
140 Bristol Ave.  
Yellowknife, NT  
X1A 3T2

Michelle Pond

Land Use Permit MV2001C0022  
Amendment Request: Phase II Drilling at Prairie Creek Minesite.

The area that Canadian Zinc is proposing to drill in may require heavy equipment to cross Prairie Creek at some point. Therefore, the following conditions should be added to the existing permit:

26(1)(m) Fuel Storage  
131. Spill Response

**New Condition: Clean Equipment**

The Permittee shall ensure that any piece of heavy equipment crossing a watercourse is clean and free of visible hydrocarbon residue.

Since this project is considered as an exploration activity only, it should be treated as one. Therefore, any potential adverse environmental effects caused by the proposed activity are mitigable with conditions set out in the Land Use Permit.

Should you have any questions or concerns relating to this matter, please do not hesitate in contacting this Fort Simpson office at (867) 695-2626 anytime.

\*\*\*\*\*

**Shane Hayes**  
**Resource Management Officer**



**Mackenzie Valley Land and Water Board**

7th Floor - 4910 50th Avenue • P.O. Box 2130  
YELLOWKNIFE, NT X1A 2P6  
Phone (867) 669-0506 • FAX (867) 873-6610

May 14, 2004

File: MV2001C0022

Mr. Alan Taylor  
Canadian Zinc Corporation  
Suite 1202-700 West Pender Street  
VANCOUVER, BC V6C 1G8

Fax: (604) 688-2043

Dear Mr. Taylor:

**Drilling Locations Permitted Under LUP MV2001C0022**

The purpose of this letter is to further define the area within which drilling is permitted under Land Use Permit (LUP) MV2001C0022. We note that Condition 1 of LUP MV2001C0022 states:

*"The Permittee shall not conduct this land use operation on any lands not designated in the accepted application."*

The "lands designated in the accepted application" include the entire area coloured yellow and labelled as "proposed 2001 surface drilling area" on the drawing titled, "*Prairie Creek Mine: Proposed Exploration*". This drawing is attached for your reference. The Mackenzie Valley Land and Water Board expects Canadian Zinc to operate in compliance with the Conditions of the Land Use Permit.

If you have any questions regarding this letter, contact me at (867) 669-0506 or email [bwooley@mvlwb.com](mailto:bwooley@mvlwb.com).

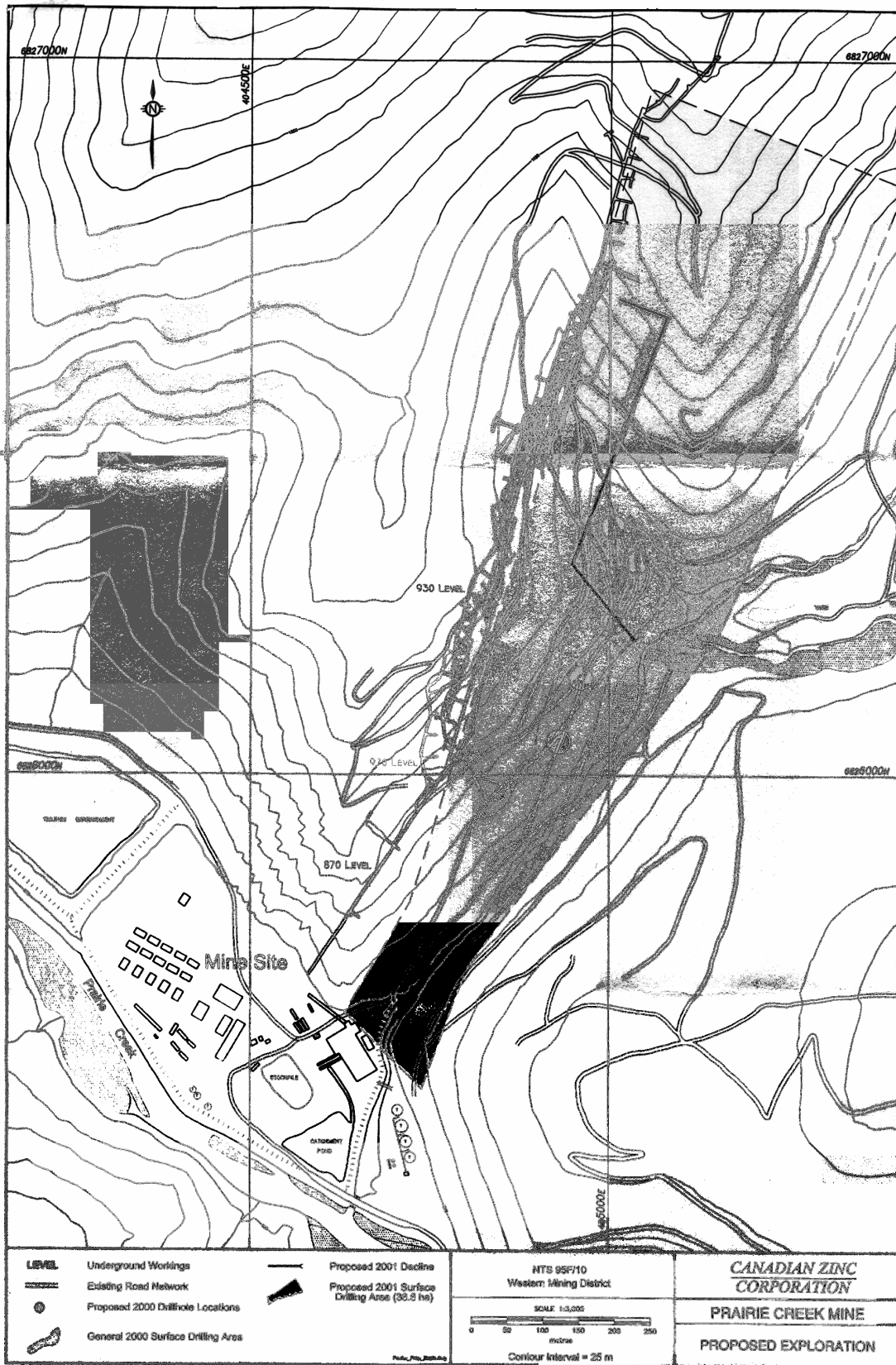
Yours sincerely,

A handwritten signature in blue ink, appearing to read "B. Wooley", is written over the typed name.

Bob Wooley  
Executive Director

Attachment (1)

Copied to: Shane Hayes, Fort Simpson Sub-District, DIAND, Fort Simpson  
Paula Spencer, South Mackenzie District, DIAND, Yellowknife





## DEH CHO FIRST NATIONS

BOX 89, FORT SIMPSON, N.W.T. X0E 0N0  
TEL: (867) 695-2355 FAX: (867) 695-2038



May 17, 2004

Sarah Baines  
Regulatory Officer  
Mackenzie Valley Land and Water Board  
7<sup>th</sup> Floor-4910 50<sup>th</sup> Avenue  
Yellowknife, NT X1A 2P6  
Phone: 867-669-0506  
Fax: 867-873-6610

Mackenzie Valley Land  
& Water Board

File

MAY 17 2004

Application # MV2001C0022  
Copied To PUM/ISB/Reg

**Re: Canadian Zinc Corporation  
Amendment Request: Phase II Drilling Program  
MV2001C0022**

The Deh Cho First Nations have reviewed the application from Canadian Zinc Corporation (CZN) requesting an amendment to the locations permitted under land use permit MV2001C0022 and find that the area proposed in the amendment request is clearly outside the scope of the original application, as well as outside the scope of the environmental assessment conducted by the Review Board. We have come to our conclusion after reviewing the original application, as well as the environmental assessment documents, including the Detailed Project Description submitted by CZN to the Review Board, the Review Board's Environmental Assessment Report, and supporting Information Requests and correspondence from CZN and other parties to the environmental assessment. After a careful review of all relevant documents pertaining to land use permit MV2001C0022, we conclude that the amendment application is a new land use permit application, as defined in S. 26(4) of the Mackenzie Valley Land Use Regulations.

Please refer to our submission to the Board, dated April 15, 2004<sup>1</sup>, in which we outline the factual and regulatory issues surrounding land use permit MV2001C0022. This previous submission has direct relevance to the amendment application in question. We are also providing the Board with the following concerns regarding CZN's recent amendment request.

<sup>1</sup> We have attached this submission for your convenience.



Firstly, for clarity, our interpretation of the “scope” of a development project definitely encompasses the geographical location of a development. This is consistent with Canadian dictionary definitions of “scope” as “the area over which any activity extends”<sup>2</sup> and “the range of something.”<sup>3</sup> Canadian thesaurus interpretations of “scope” are equally clear, and include the words “area”, “confines”, and “extent”.<sup>4</sup> CZN also described the “scope” of the drilling program in submissions to the Review Board during the EA as including the geographical extent of the proposed drilling program and CZN tied the proposed project to specific geographic locations. For example, under “Scoping the Assessment”, CZN stated:

...the proposed 60 hole exploration drilling program is to be carried out from surface along strike in a southwesterly to northeasterly direction over a distance of about 1000m and parallel to the existing underground workings from about the 875 to 1125 elevation. The entire drill program is proposed to take place within 1000m of the existing minesite facilities, within the area of traditional mining activity at Prairie Creek and within the boundaries of Mining Lease 2932 and Surface Lease 95F10/10-5-3. In all cases, potential drill hole locations are in close proximity to the 249 holes drilled on the property in earlier years and the existing network of exploration roads.<sup>5</sup>

Thus, the project scope described in the original land use permit application MV2001C0022 was narrow, explicit, and clear. In defining the geographical scope of the project, CZN’s application described a very focused and confined area of approximately 1000 metres in circumference. However, in stark contrast to the original scope of the application, CZN is now requesting to drill anywhere within the “Prairie Creek property”, which, according to CZN, totals approximately 18,320.56 acres of land<sup>6</sup>, the vast majority of which is previously undisturbed and ecologically sensitive terrain.

Secondly, the narrow scope of the project was repeatedly used by CZN to justify the “negligible impacts” of the project.<sup>7</sup> CZN emphasized to the Review Board during the environmental assessment that the drilling program would have negligible environmental, social, and cultural impacts because the described area

<sup>2</sup> De Wolf et al. 1997. *Gage Canadian Dictionary*. Gage Educational Publishing Company. Page 1310.

<sup>3</sup> Hawkins, J.M. (editor). 1985. *The Oxford Paperback Dictionary*. Oxford University Press. Page 592. Note: “Range” is further defined as “an extent, the limit between which something operates...the distance...” Page 543.

<sup>4</sup> *Collins Pocket Reference Thesaurus*. 1990. HarperCollins Publishers. Page 445.

<sup>5</sup> CZN. *Cumulative Impact Assessment for the Phase II Mineral Exploration Drilling Program at Prairie Creek Mine, NWT*. Prepared for CZN by EBA Engineering Consultants Ltd. June 4, 2001. Page 1.

<sup>6</sup> Alan Taylor, CZN. December 10, 2003. *Letter to Sarah Baines, MVLWB*.

<sup>7</sup> See CZN. 2001 *Detailed Project Description*. Land Use Permit MV2001C0022.

was small and previously disturbed. The following CZN statements illustrate how CZN referenced the proposed locations of the drilling program to justify the “negligible” environmental impacts of the program:

“The impact assessment provided in Canadian Zinc (2001) predicted that the anticipated residual impacts of the Phase II drilling program on all the biophysical resources, cultural and heritage resources, visual and aesthetic resources and land and resources use were expected to be negligible. **These results are consistent with the short-term, highly localized nature of the proposed drilling program** and the fact that all of the activities would occur within the footprint of existing mining activity at the Prairie Creek mine.”<sup>8</sup> (emphasis added)

“All areas proposed for use in this application are within 1000 metres of the existing facilities...as such, impacts of the proposed developments on cultural and heritage resources are expected to be negligible.”<sup>9</sup>

The Review Board, in the *Report of Environmental Assessment*, also noted that CZN’s justification of “negligible impacts” pertained directly to the narrow, focused scope of the development: “CZN predicts that the impacts of the proposed development on the use of land, water and renewable resources to be negligible. All areas proposed for use in this application are within 1000 metres of the existing facilities.”<sup>10</sup>

Thirdly, as the original scope of land use permit MV2001C0022 was limited to the previously disturbed 1000 metre area near the mill site facility, the participants in the environmental assessment, including the Deh Cho First Nations, the Department of Fisheries and Oceans, and Parks Canada only assessed the environmental, social, and cultural impacts of a drilling program within 1000 metres of the mill site facility. Furthermore, in reaching their conclusion, the Review Board noted: “The Review Board has made this decision based on the commitments and undertakings to mitigate environmental impacts made by the Canadian Zinc Corporation. If these measures are not implemented, the Review Board’s conclusions about impact significance could be affected...The Review Board fully expects the Canadian Zinc Corporation to discharge all the commitments and undertakings given in its environmental assessment report and

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<sup>8</sup> CZN. *Cumulative Impact Assessment for the Phase II Mineral Exploration Drilling Program at Prairie Creek Mine, NWT*. Prepared for CZN by EBA Engineering Consultants Ltd. June 4, 2001. Page 3.

<sup>9</sup> CZN. 2001. *Detailed Project Description*. Page 13.

<sup>10</sup> Mackenzie Valley Environmental Impact Review Board. *Report of Environmental Assessment, Mineral Exploration Drilling Program*. S. 5.6.2.1.2, Page 20. Note the Environmental Assessment for the 50-60 drill core program relied on this document.

supporting documentation.”<sup>11</sup> The numerous statements made by CZN in submissions to the Review Board, including in the *CZN Detailed Project Description*, *CZN Cumulative Effects Assessment Report*, and *CZN Environmental Assessment Report* are indeed “commitments” made during the environmental assessment. We also refer the Board to recent correspondence from the Review Board to MVLWB staff, in which the scope of the project and the conclusions of the environmental assessment are clarified: “the Review Board’s assessment and recommendations were based on consideration of the development as described by the developer”, noting that “the company was explicit as to what its proposal was.”<sup>12</sup>

Fourthly, the Deh Cho First Nations are very concerned that the conclusions and recommendations of the environmental assessment will not be incorporated into the land use permit, should an amendment be approved by the Board. As the Board is defined as a “regulatory authority” under the *MVRMA*, we must stress that the Board is required, under S. 62 and S. 118 of the *MVRMA*, to ensure that the requirements of Part 5 have been complied with, prior to issuing any permits or licenses. We find that the Board would be in violation of S. 62 and S. 118 of the *MVRMA*:

**62.** A board may not issue a licence, permit or authorization for the carrying out of a proposed development within the meaning of Part 5 unless the requirements of that Part have been complied with, and every licence, permit or authorization so issued shall include any conditions that are required to be included in it pursuant to a decision made under that Part.

**118. (1)** No licence, permit or other authorization required for the carrying out of a development may be issued under any federal or territorial law unless the requirements of this Part have been complied with in relation to the development.

With reference to the above sections of the *MVRMA*, we fail to see how the requirements of Part 5 could possibly be complied with, should an amendment be allowed that completely disregards and contradicts statements and commitments made by the company throughout the environmental assessment. To allow amendments that completely redefine the location of a project would render the environmental assessment process, and the conclusions of the Review Board, completely meaningless. As such, we find that it would be negligent of the Board to permit this drilling program in an area that was clearly outside the scope of the original application and environmental assessment. The environmental, social and cultural impacts of the development outside the originally proposed location have not been assessed.

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<sup>11</sup> Mackenzie Valley Environmental Impact Review Board. Oct. 2001. *Report of Environmental Assessment on the Canadian Zinc Corporation Phase II Mineral Exploration Drilling Program*. Page 2, 14.

<sup>12</sup> Alan Ehrlich. April 8, 2004. *Letter to Sarah Baines*.

Finally, we also find that the remainder of the Terms and Conditions in land use permit MV2001C0022 would be devoid of context, should this amendment be approved without further review.

In summary, we find that the amendment request should be treated as an application for a new permit, as defined in S. 26(4) of the *Mackenzie Valley Land Use Regulations*:

**S. 26(4)** Where a land-use requested in a proposed amendment is not within the scope of the land-use for which the permit was issued, the Board shall treat the request as an application for a new permit in accordance with sections 22 or 23.

Sincerely,



Laura Pitkanen  
Deh Cho First Nations

CC. Melody McLeod, Chair MVLWB  
Chief Peter Marseilles, Nahanni Butte Dene Band  
Chief Tim Lennie, Pehdzeh Ki First Nation  
CC. Chris Reid, Legal Counsel

**Brenda Backen**

---

**From:** Sarah Baines [sbaines@mvlwb.com]  
**Sent:** Thursday, May 20, 2004 1:46 PM  
**To:** Brenda Backen  
**Subject:** FW: MV2001C0022

For the registry...

-----Original Message-----

**From:** Wilson, Anne [Yel] [mailto:Anne.Wilson@EC.GC.CA]  
**Sent:** Monday, May 17, 2004 3:16 PM  
**To:** Sarah  
**Cc:** Pacholek, Paula [Yel]  
**Subject:** MV2001C0022

Hi Sarah,

I have reviewed the requested amendment, in which Canadian Zinc Corp. proposes to drill an additional 50-60 drill holes, in addition to the 50-60 drill holes already permitted. It was not clear if the original holes had all been drilled, or if some of these would be replaced by new locations. In any event, the proposed drilling remains within the scope of the land use permit and can be addressed by the standard mitigation measures.

*Anne Wilson  
Water Pollution Specialist  
Environmental Protection Branch  
Yellowknife, NT  
Ph. 867-669-4735  
Fax 867-873-8185*



# CPAWS

CANADIAN PARKS AND WILDERNESS SOCIETY  
NWT CHAPTER, Box 1934, YELLOWKNIFE, NT, X1A 2R2  
Phone (867) 873-9893 Fax (867) 873-9593 e-mail cpawsnwt@yellowknife.ca

Mackenzie Valley Land & Water Board

Sarah Baines,  
Regulatory Officer  
Mackenzie Valley Land and Water Board  
By fax (867) 873-6610

File

MAY 19 2004

Application # MV2001C0022

Copied To PHL/SB/Reg

SM

May 18, 2004

**Re: CZN application to amend land use permit MV2001C0022**

Dear Ms. Baines,

Please accept this letter as comments of the Northwest Territories Chapter of the Canadian Parks and Wilderness Society (CPAWS-NWT) on the above-listed amendment application.

Section 26 (4) of the Mackenzie Valley Land Use Regulations states that

*Where a land-use requested in a proposed amendment is not within the scope of the land-use for which the permit was issued, the Board shall treat the request as an application for a new permit in accordance with sections 21 or 23.*

The original application for this permit, and the cumulative effects report for the environmental assessment that was completed, clearly set out that the entire exploratory drilling program would be conducted within 1000 m of the existing mine site facilities, and within the boundaries of Mining Lease 2932 and Surface Lease 9SP10/10-5-3.

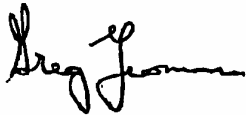
The environmental assessment was based on the understanding that the drilling would only be conducted within one lease of CZN's various mineral leases and mining claims, the lease which contains the actual mine and airstrip, and is almost certainly the most heavily impacted of CZN's leases and claims.

Amending the permit would allow drilling to take place on lands throughout the 'Prairie Creek Property.' These are lands that have not been as heavily impacted as lease 2932, if at all. As part of an expanded project scope, these lands may be subjected to an unknown number of new and extended roads and drill pads, an increase in heavy equipment crossing streams, and other potential impacts to the land and wildlife. New fuel storage sites and sources of water for use during drilling may also be required. None of these potential impacts were contemplated during the environmental assessment, and the land use in the amendment are outside the scope of the land use for which the permit was issued.

This permit was issued for a very specific activity in a clearly specified area. CPAWS is concerned by the possibility of allowing an increase in the scope and scale of activities at the mine site through the amendment of existing permits, which would allow expanded activities, and impacts, on the 'Prairie Creek Property' without a prior preliminary screening or environmental assessment. Given the location of the mine upstream from Nahanni National Park Reserve, and the high level of public concern regarding the Prairie Creek mine that has been expressed to the Board at the time of this original application and since, allowing an expansion of activities without full regulatory oversight would be contradictory to the spirit and purpose of public participation and the environmental assessment.

Therefore CPAWS respectfully submits that the Board should reject the application for amendment, and treat the request as an application for a new permit as per section 26 (4), and conduct a preliminary screening.

Sincerely,

A handwritten signature in black ink, appearing to read "Greg Yeoman". The signature is written in a cursive, flowing style.

Greg Yeoman  
Conservation Director  
CPAWS-NWT



Nahanni National Park Reserve of Canada  
Parks Canada Agency  
P.O. Box 348  
Fort Simpson, NWT X0E 0N0

May 18, 2004

Ms. Sarah Baines  
Regulatory Officer  
Mackenzie Valley Land and Water Board  
7<sup>th</sup> Floor – 4910 50<sup>th</sup> Avenue  
P.O. Box 2130  
Yellowknife, NWT X1A 2P6

Dear Ms. Baines:

RE: **Review of Amendment Document: Phase II Drilling at Prairie Creek Minesite – LUP MV2001C0022**

As you requested in your letter dated April 27, 2004, Parks Canada Agency has reviewed the amendment application as submitted by CZN on April 23, 2004 and LUP MV2001C0022, offers the following comments:

1. Parks Canada Agency believes that this amendment constitutes a significant change and should be considered as a new permit. The revised project has expanded from a geographic area of 3.14 square kilometres (1000 meter radius surrounding the existing mine site facility) to an area approximately 123 square kilometers. This constitutes a significant increase in the geographic scope of the project. The environmental effects for disturbance in this expanded area have not been assessed and this analysis needs to be conducted prior to granting approval to Canadian Zinc.
2. In addition, with the expanded geographic scope of the project, a number of other issues arise which will not have been addressed in the environmental assessment. How will these remote sites be accessed? If helicopters will be used to access or if a helicopter portable drill will be used, what will be the associated environmental effects, and how will these be mitigated? What support services are required (fuel caches, acceptable landing sites, drilling fluids and equipment, etc.)? There are also a number of contradictions in the correspondence from Alan Taylor to Sarah Baines dated April 20, 2004 with respect to the access roads. In section 6, existing pads or new pads “will be constructed immediately adjacent to existing tote roads”. However in the next statement, the possibility of new access roads is discussed. In section 7, extensions to existing roads are also mentioned, and in section 8, “only access spurs to drill pads from existing roads will be required”. Clarification is needed on whether or not new roads will be required. What is the difference between access spurs and new access roads? How will these be constructed and what are the environmental effects associated with this construction? What mitigation will be implemented?
3. Another matter of significant concern to the Parks Canada Agency is that the proposed expanded geographic scope of the drilling could result in drilling within the lands withdrawn as an interim



measure by the Deh Cho Process and under consideration for expansion of Nahanni National Park Reserve. In the attachment, the leases, mineral claims and surface claims have been mapped and it appears that drilling will be undertaken in withdrawn lands. Mining activity in a national park would be contrary to Parks Canada mandate. If mining is considered in lands withdrawn for Nahanni National Park Reserve, this proposal would also raise significant public concern, as evidenced by proposed mining activity even adjacent to national parks in other jurisdictions.

4. Furthermore, Parks Canada is of the opinion that the revised project should be referred to environmental assessment. In Appendix F to the *Guidelines for Environmental Impact Assessment in the Mackenzie Valley* (Spring 2001 Draft), section G3, guidance is provided to preliminary screeners on the characteristics of developments that should be referred to the Review Board for environmental assessment. The guide further states that "any development proposal, or component of a development that meets at least one of "a list of characteristics provided should be referred to environmental assessment. The revised project will meet the following characteristics in the list:
  - Development will be in an area or region that is previously undisturbed. The expanded geographical scope requested for the drilling will be in areas previously undisturbed.
  - Development adds to the fragmentation of an area. The drilling program for 50-60 holes and requirement for new road access as described in the correspondence from Alan Taylor to Sarah Baines dated April 20, 2004 will definitely result in fragmentation of the areas.
  - Development disturbs habitat of, or individuals, of rare, endangered or protected species. The grizzly bear population is a population designated as a population of special concern in the NWT and Yukon Territory. The development proposed will disturb both the habitat and individuals. As such Species at Risk SARA legislative requirements must be carefully considered. In particular one should consider the prohibition with respect to affecting or preventing species residence. For example, bear den sites would be required to be identified and avoided. Confirmation of the importance of this area to grizzly bears can be confirmed by input by John Weaver who conducted grizzly research in this area last summer.
  - Development potentially disturbs or potentially adds to the disturbance of species that occur or migrate across regulatory or political boundaries. Since the grizzly bear has a large range, the development will result in disturbances to a species that migrates across regulatory or political boundaries.
  - In 2002 a study on the distribution, life history and habitat requirements of Bull Trout in the Lower South Nahanni watershed was completed for the Parks Canada Agency. It identified the Prairie Creek drainage and a number of its tributaries as key spawning habitat for Bull Trout. COWSEWIC has identified Bull Trout on its Highest Priority Candidate List. Species on this list are suspected of being in some category of risk, extinction or extirpation in Canada. Given the precautionary principle and the ramifications on mining activities from the implementation of SARA legislation, further research needs to be conducted on the importance of the Prairie Creek drainage to local populations of Bull Trout as well as their status in the Northwest Territories.

The referral to environmental assessment is particularly important when considering the factors that have been included in the permitting process for Canadian Zinc in the past. In the *Report of Environmental Assessment for the Canadian Zinc Corporation Phase II Mineral Exploration Drilling Program* provided by the proponent dated June 7, 2001, mitigation measures are described in general terms only. In providing comments on the deficiencies in the mitigation, Parks Canada was advised that mitigation not prescribed in the EA Report would be included in the permit. Parks Canada therefore made a request to Mr. Bob Wooley, Executive Director of the MVLWB, on November 6, 2001, to be provided with an opportunity for input to the MVLWB for the purpose of establishing terms and conditions on the land use permit. Although the Board was required to consult with Parks Canada Agency as per Part 4, section 97(3) of the *Mackenzie Valley Resource Management Act*, this was not done. The land use permit that was issued did not include specific mitigative measures that would have ensured greater protection of the environment.

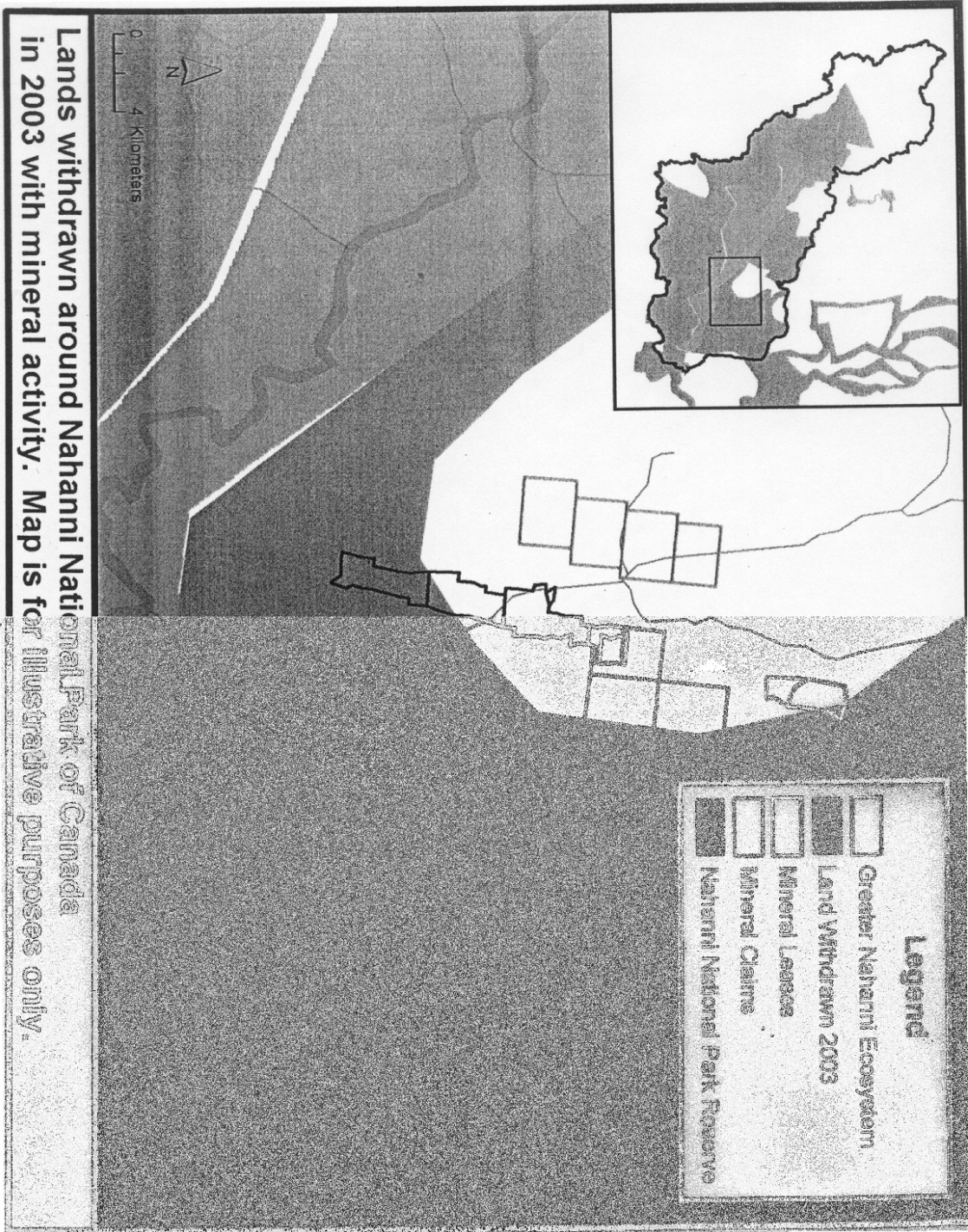
In summary, Parks Canada recommends that the proposed amendment to the drilling program be considered as a new permit and that the project be referred to environmental assessment. In considering the possible impacts to Nahanni National Park Reserve, Parks Canada further requests that we be consulted by the MVLWB before a land use permit is issued, as required by Part 4, section 97(3) of the *Mackenzie Valley Resource Management Act*.

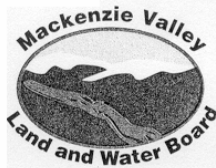
If you have any questions with respect to these comments, please do not hesitate to call me at (867) 695-3151.

Yours truly,

Chuck Blyth  
Superintendent, Nahanni National Park Reserve

Attachment





Mackenzie Valley Land and Water Board  
7th Floor - 4910 50th Avenue • P.O. Box 2130  
YELLOWKNIFE, NT X1A 2P6  
Phone (867) 669-0506 • FAX (867) 873-6610

June 1, 2004

File: MV2001C0022  
MV2004C0030

Mr. Alan Taylor  
Canadian Zinc Corporation  
Suite 1202 – 700 West Pender Street  
VANCOUVER, BC V6C 1G8

Fax: (604) 688-2043

Dear Mr. Taylor:

**Board Decision – Amendment Request  
Mineral Exploration at Prairie Creek Mine**

The Mackenzie Valley Land and Water Board (MVLWB) met on June 1, 2004 to deal with the aforementioned application. The decision was to refer the application to the Mackenzie Valley Environmental Impact Review Board (MVEIRB) for an environmental assessment pursuant to Subsection 125(1) of the *Mackenzie Valley Resource Management Act*. Please note that the application is being referred to the MVEIRB as a new Land Use Permit and has been assigned file number MV2004C0030.

The application is being referred to the MVEIRB specifically due to public concern about the cumulative effects of this project on the South Nahanni Watershed. For further clarification, please see the attached reasons for decision and the preliminary screening report.

If you have any questions, contact Bob Wooley, Executive Director at (867) 669-0506 or email [mvlwbpermit@mvlwb.com](mailto:mvlwbpermit@mvlwb.com).

Yours sincerely,

A handwritten signature in dark ink, appearing to read "Melody J. McLeod".

Melody J. McLeod  
Chair

Attachment

Copies to: Vern Christensen, MVEIRB  
Cherlene Coe for Ed Hornby, South Mackenzie District, DIAND,  
Yellowknife  
Harb Norwegian, Deh Cho First Nation  
Chief Keyna Norwegian, Liilti Kue First Nation

PRELIMINARY SCREENING REPORT FORM

PRELIMINARY SCREENER: MVLWB REFERENCE / FILE NUMBER: MV2001C0022 TITLE: Mineral Exploration, Prairie Creek Mine Site ORGANIZATION: Canadian Zinc Corporation MEETING DATE: June 1, 2004	EIRB REFERENCE NUMBER:
---	------------------------

- Type of Development:
- New
  - Amend, EIRB Ref. #
  - Requires permit, license or authorization
  - Does not require permit, license or authorization

Project Summary

(1) Operation Summary

- Land based diamond drilling of up to 60 holes to further delineate the mineral resources on the Prairie Creek Property
- Access to drill sites will be mainly by existing tote roads but short 20-30 metre access spurs may have to be constructed
- Drilling will be conducted on existing drill pads or from new drill pads located adjacent to existing tote roads
- The existing camps facilities at the Prairie Creek Mine will be used
- Operation to be conducted during the summer months until November 29, 2006 when the LUP expires

(2) Fuel

- All fuels needed for the operation will be stored at the existing, fully bermed fuel tank farm facility at the Prairie Creek Mine site. Fuel will be transferred to equipment in small batches on an as needed basis by helicopter or pick up truck.
- No fuel will be stored at each individual drill site or access spur site except within the fuel tanks in the equipment.

(3) Equipment

- 2 Longyear Super 38 drills or equivalent
- 1 Cat front end loader
- 1 Cat bulldozer
- 1 Cat grader
- 2 rock trucks
- 3 pickup trucks

Scope

Conduct mineral exploration activity consisting of 60 to 60 diamond drill holes located throughout the Prairie Creek Mine property.

Coordinates: 61°36'N & 121°46'W.

Principal Activities (related to scoping)

- |                                       |   |  |
|---------------------------------------|---|--|
| <input type="checkbox"/> Construction | <input checked="" type="checkbox"/> Exploration | <input type="checkbox"/> Decommissioning |
| <input type="checkbox"/> Installation | <input type="checkbox"/> Industrial             | <input type="checkbox"/> Abandonment     |
| <input type="checkbox"/> Maintenance  | <input type="checkbox"/> Recreation             | <input type="checkbox"/> Aerial          |
| <input type="checkbox"/> Expansion    | <input type="checkbox"/> Manufacture            | <input type="checkbox"/> Harvesting      |
| <input type="checkbox"/> Operation    | <input type="checkbox"/> Quarry                 | <input type="checkbox"/> Camp            |
| <input type="checkbox"/> Repair       | <input type="checkbox"/> Linear / Corridor      | <input type="checkbox"/> Scientific      |
| <input type="checkbox"/> Research     | <input type="checkbox"/> Storage                | <input type="checkbox"/> Solid Waste     |
| <input type="checkbox"/> Water Intake |   |  |
| <input type="checkbox"/> Other:       |   |  |

Principal Development Components (related to scoping)

- |   |  |
|---|--|
| <input type="checkbox"/> Access Road                                | <input type="checkbox"/> Waste Management            |
| <input type="checkbox"/> construction                               | <input type="checkbox"/> disposal of hazardous waste |
| <input type="checkbox"/> abandonment/removal                        | <input checked="" type="checkbox"/> waste generation |
| <input type="checkbox"/> modification e.g., widening, straightening | <input type="checkbox"/> Storage                     |
| <input type="checkbox"/> Airstrips, Aircraft or Vehicle Movement    | <input type="checkbox"/> disposal of sewage          |
| <input type="checkbox"/> Blasting                                   | <input type="checkbox"/> Geostatic Sampling          |
| <input type="checkbox"/> Bulking                                    | <input type="checkbox"/> trenching                   |
| <input type="checkbox"/> Bunting                                    | <input type="checkbox"/> diamond drill               |
| <input type="checkbox"/> Burying                                    | <input type="checkbox"/> benchscale core sampling    |
| <input type="checkbox"/> Chipping                                   | <input type="checkbox"/> bulk soil sampling          |
| <input type="checkbox"/> Cut and Fill                               | <input type="checkbox"/> Gravel                      |
| <input type="checkbox"/> Cutting of Trunks or Removal of Vegetation | <input type="checkbox"/> Hydrological Testing        |
| <input type="checkbox"/> Dams and Impoundments                      | <input type="checkbox"/> Site Remediation            |
| <input type="checkbox"/> construction                               | <input type="checkbox"/> Installation                |
| <input type="checkbox"/> abandonment/removal                        | <input type="checkbox"/> grubbing                    |

MV2001C0022, Canadian Zinc Corporation

- modification
- Ditch Construction
- Drainage Alteration
- Drilling other than Geoscientific
- Ecological Surveys
- Excavation
- Explosive Storage
- Fuel Storage
- Topsoil, Overburden or Soil
  - fill
  - disposal
  - removal
  - storage

- planting/seeding
- reforestation
- scarify
- spraying
- recontouring
- Slashing and removal of vegetation
- Soil Testing
- Stream Crossing/Bridging
- Tunneling/Underground
- Road repair and access spur construction

**NTS Topographic Map Sheet Numbers**  
95F10

**Latitude / Longitude:**  
61°33' N; 124°48' W

**Nearest Community and Water Body:**  
Community: Nahanni Butte  
Water Body: Prairie Creek

**Land Status (consultation information)**

- Free Hold / Private       Commissioners Land       Federal Crown Land       Municipal Land

**Transboundary Implications**

- British Columbia       Alberta       Saskatchewan       Yukon  
 Nunavut       Wood Buffalo National Park       Inuvialuit Settlement Region

**Type of Transboundary Implication:**       Impact / Effect       Development

Public Concern  
(DESCRIBE)

**PHYSICAL - CHEMICAL EFFECTS**

**IMPACT**

1. Ground Water

water table alteration

water quality changes

infiltration changes

other

N/A

**IMPACT**

2. Surface Water

flow or level changes

water quality changes

**MITIGATION**

Drilling may penetrate a confined aquifer, resulting in artesian flow and a lowered potentiometric surface. Requiring the proponent to plug and permanently seal all drill holes where artesian flow is encountered should mitigate these effects.

Improper handling of drill wastes, fuels and garbage may result in toxic leachate reaching ground water through recharging areas. Requiring the proponent to use techniques that limit the volume of these substances that come into contact with soil or water, and techniques that reduce spill response times should help mitigate these effects.

The techniques to be used include: the use of a recirculating drill; the burning of all combustible garbage in a forced-air fuel fired incinerator; the use of drip pans at fuel transfer locations; and having readily available spill plans and kits, and personnel trained in the use of the kits on site. All spills are to be reported to the Spill Line.

**MITIGATION**

The use of a recirculating drill will help reduce the volume of water required during drilling. Since exact drilling locations are not known, water sources are not yet known.

Improper handling of drill wastes, sewage and fuel may result in these substances entering surface waters. Drill waste containment should be minimized by requiring the proponent to use a recirculating drill and to deposit all cuttings in a land based sump at least 100 m above the high water mark of any water body/area.

Sewage and greywater is to be deposited in the existing exfiltration sump on site which is currently permitted under MV2001C0022.

Hydrocarbon contamination should be minimized by locating fuel caches at least 100 m above the high water mark of a water body/course; by ensuring that all equipment crossing creeks is free of visible hydrocarbon residue; by checking the fuel containers every week for leaks; by having spill kits readily available at all drill and spur construction sites; and by using drip pans when refuelling equipment.. The main fuel storage facility already permitted for use is fully bermed.

Using sumps will limit the aerial extent of possible contaminant source areas.

Sediments may enter water bodies/ courses through erosion of banks and hill slopes. To reduce erosion potential stream banks should not be cut; stream beds should not be used as access routes, erosion control structures should be installed where needed; and all disturbed areas should be recontoured/restabilized to conform to local topography.

- water quantity changes
- Drainage pattern changes
- temperature
- wetland changes / loss
- other:
- N/A

**IMPACT**  
3. Noise

- noise in/near water
- other: noise increase
- N/A

**IMPACT**  
4. Land

- geologic structure changes
- soil contamination
- buffer zone loss
- soil compaction & settling
- Destabilization / erosion
- permafrost regime alteration
- other: explosives/scarring
- N/A

**IMPACT**  
5. Non Renewable  
Natural Resources

- resource depletion

**MITIGATION**

All equipment to be used will generate noise. No mitigation but impact should be for short, intermittent periods of time.

**MITIGATION**

Fuel and chemical spills could contaminate soils. Having spill kits and spill contingencies in place, as well as training personnel to respond to such events, will speed up response times. This should help reduce the impacts of any spills.

Constructing new access spurs and drill pads may cause soil compaction in currently undisturbed areas. These effects will be minimized by using, wherever possible, the existing tote roads, drill pads, campsite and main fuel tank farm facility.

Drilling and operating equipment near or in streams may cause bank erosion and destabilization. To reduce erosion potential, stream banks should not be cut; stream beds should not be used as access routes; drilling and trail construction should be well above the high water mark of any water body/course; erosion control structures should be installed where needed; and all disturbed areas should be recontoured/restabilized to conform to local topography.

**MITIGATION**

No resources will be depleted during this operation but reviewers have stated concerns that this exploration may lead to mining of the mineral resources.

other:

N/A

**IMPACT**  
6. Air/Climate/  
Atmosphere

Other

N/A

**BIOLOGICAL ENVIRONMENT**

**IMPACT**  
1. Vegetation

species composition

species introduction

toxin / heavy accumulation

other: foliage damage

N/A

**IMPACT**  
2. Wildlife & Fish

effects on rare, threatened or endangered species

fish population changes

waterfowl population changes

breeding disturbance

population reduction

species diversity change

health changes  
(Identify)

behavioural changes

habitat changes / effects

**MITIGATION**

Standard filters on the equipment will reduce emissions but overall no mitigation.

**MITIGATION**

The equipment has been only used at the Prairie Creek Mine site for a number of years; therefore, the probability of introducing new plant species to the site is low.

Fuel and chemical spills could damage plant foliage. Having spill kits and spill contingencies in place, as well as training personnel to respond to such events, will speed up response times and minimize any impacts.

All vegetation will be removed at the new access spur sites and possibly at the drill sites. No mitigation unless the disturbed areas are revegetated (naturally or by human effort). An A&R plan for LUP MV2001C0023 is currently being reviewed that will address these issues because the A&R Plan has to take into account the entire mine site.

**MITIGATION**

Reviewers have identified that the Prairie Creek watershed is important habitat for Grizzlies (listed as Special Concern under the *Species at Risk Act*) and Bull Trout (on COWSEWIC's Highest Priority Candidate List).

Disturbance to these species can only be minimized, not fully prevented but it should only be for a short period of time.

Spawning grounds can be protected by prohibiting the use of steam beds as access routes and by requiring that access routes be constructed at least 30 metres from any stream, and by prohibiting drilling within 100 metres of the high water mark of any stream.

Covering all water in-takes with mesh will prevent the entrainment of fish.

Wildlife may avoid the area during times of operation because of the noise and/or smells (exhaust, chemicals). No mitigation.

Parks Canada is concerned that this development will fragment continuous habitat areas. No mitigation but for the most part currently existing infrastructure will be used; therefore, further fragmentation of the landscape should be minimal.

The number and total area of new access spurs and drill pads that have to be constructed are unknown.



game species effects

toxins / heavy metals

forestry changes

agricultural changes

other:

N/A

**INTERACTING ENVIRONMENT**

**IMPACT**

**1. Habitat and Communities**

predator-prey

wildlife habitat / ecosystem

Composition changes

reduction / removal of keystone or endangered species

removal of wildlife corridor or buffer zone

other:

N/A

**IMPACT**

**2. Social and Economic**

planning / zoning changes or conflicts

increase in urban facilities or services use

rental house

airport operations / capacity changes

human health hazard

impair the recreational use of water or aesthetic quality

affect water use for other purposes

affect other land use operations

**MITIGATION**

Improper garbage handling may attract numerous predators to the area which will increase the pressure on prey species. Storing garbage in bear proof containers and burning garbage regularly will help mitigate this effect.

**MITIGATION**

Reviewers and the public have raised concerns that development in the Prairie Creek watershed destroys the pristine nature of the whole South Nahanni Watershed, the location of the Nahanni National Park Reserve.

Canadian Zinc Corporation is in good standing with the Recorder's Office and has the legal right to work the claims and leases listed in the application.

quality of life changes

public concern

other:

N/A

There is much concern regarding the cumulative effects of this operation on the downstream environment, including the Nahanni National Park Reserve, and the Prairie Creek watershed as a whole. More in-depth studies may be needed to determine these cumulative effects.

**IMPACT**

**3. Cultural and Heritage**

**MITIGATION**

effects to historic property

increased economic pressure on historic properties

change to or loss of historic resources

change to or loss of archaeological resources

increased pressure on archaeological sites

change to or loss of aesthetically important site

effects to aboriginal lifestyle

other:

The area covered by two of Canadian Zinc's Mining Leases (2931 and 2854) was withdrawn under the Deh Cho Interim Measures Agreement, and as reported by Parks Canada, these lands are being considered for the expansion of the Nahanni National Park Reserve. These Leases were recorded prior to the withdrawal; therefore, Canadian Zinc has the legal right to work these leases.

N/A

**NOTES:**

Consultation

Pursuant to Section 27 Subsections (a) and (b) of the **Deh Cho First Nations** (DCFN) Interim Measures Agreement, the MVLWB determined that written notice was given to the DCFN and that a reasonable period of time was allowed for DCFN to make representations with respect to the application.

PRELIMINARY SCREENER / REFERRING BODY INFORMATION

	RA or DRA	ADVICE	PERMIT REQUIRED
<b>Federal/Territorial</b>			
Environment Canada	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fisheries and Oceans	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Indian and Northern Affairs Canada	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Canadian Heritage ( Parks Canada)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
National Energy Board	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Natural Resources Canada	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public Works and Gov't Services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Transport Canada	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Northern Oil and Gas Directorate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Canadian Nuclear Safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Industry Canada	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Canadian Transportation Agency	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
National Defence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GNWT - RWED	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
GNWT - MACA	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
GNWT - Transportation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
GNWT - Health	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Prince of Wales Heritage Center	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
MVEIRB	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Other</b>			
Canadian Parks and Wilderness Society	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Terra Firma Consultants	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Aboriginal / First Nations -Deh Cho</b>			
Deh Cho First Nations	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Liidlii Kue First Nation (Ft Simpson)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Deh Gah Got'ie Dene Council (Ft Prov.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Acho Dene Koe First Nation (Fort Liard)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Nahanni Butte First Nation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Pehdzeh Ki First Nation (Wrigley)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
TthedzhehK'edeli First Nation (JMR)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ka'a'gee Tu First Nation (Kakisa)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sambaa K'e Dene Band (Trout Lake)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
K'atlodeeche First Nation (Hay River)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
West Point First Nations (Hay River)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Hamlet of Fort Providence	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Hamlet of Fort Liard	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Village of Fort Simpson	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Town of Hay River	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Enterprise Settlement Corporation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Dene Nation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Hay River Metis Nation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Hay River Metis Council	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fort Liard Metis Local #67	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fort Providence Metis Council	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fort Simpson Metis Local #52	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Northwest Territory Metis Nation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Nahendeh Land and Environmental Services	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Development Corporation Manger, Sambaa K'e	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Research Cons., Sambaa K'e	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Mandell Pinder, Barristers & Solicitors, Ka'a'gee Tu First Nation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>North Slave</b>			
Dogrib Treaty 11 Council	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dogrib Rae Band	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wha Ti First Nation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dechi Laot'l Council (Wekweti)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gameti First Nation (Rae Lakes)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lutselk'e Dene First Nation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yellowknives Dene First Nation (Ndilo)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yellowknives Dene First Nation (Dettah)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rea-Edzo Metis Local #64	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
North Slave Metis Alliance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hamlet of Rae Edzo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Charter Community of Wha Ti	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
City of Yellowknife	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**South Slave**

Fort Smith Metis Council	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Salt River First Nations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Smith Landing First Nation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Katlodeeche First Nation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
West Point First Nation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Northwest Territory Metis Nation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hay River Metis Council	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Deninu Ku'e First Nations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fort Resolution Metis Council	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Deninu Ku'e Env. Working Committee	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Akaiicho Territory Government	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Town of Hay River	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Deninoo Community Council	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Town of Fort Smith	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Enterprise Settlement Corporation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**REASONS FOR DECISION**

**DECISION:**

The Mackenzie Valley Land and Water Board (The Board) is satisfied that the preliminary screening of application MV2001C0022, Canadian Zinc Corporation, Amendment request has been completed in accordance with Section 125 of the *Mackenzie Valley Resource Management Act*.

The Board is satisfied that a reasonable period of notice was given to Communities and First Nations affected by the application as required by Subsection 63(2) of the *MVRMA* so that they could provide comments to the Board.

Having reviewed all relevant evidence on the Public Registry, including the submissions of the Applicant, the written comments received by the Board and any staff reports prepared for the Board, the Board has decided that in its opinion that there is significant public concern regarding the proposed development.


As a result, the Board, having due regard to the facts and circumstances, the merits of the submissions made to it, and to the purpose, scope and intent of the *Mackenzie Valley Resource Management Act* and the Mackenzie Valley Land Use Regulations has decided that this Land Use Permit be referred to the MVEIRB for Environmental Assessment.

PRELIMINARY SCREENING DECISION	
<input checked="" type="checkbox"/>	Outside Local Government Boundaries
<input type="checkbox"/>	The development proposal might have a significant adverse impact on the environment, refer it to the EIRB.
<input checked="" type="checkbox"/>	Proceed with regulatory process and/or implementation.
<input checked="" type="checkbox"/>	The development proposal might have public concern, refer it to the EIRB.
<input type="checkbox"/>	Proceed with regulatory process and/or implementation.
<input type="checkbox"/>	Wholly within Local Government Boundaries
<input type="checkbox"/>	The development proposal is likely to have a significant adverse impact on air, water or renewable resources, refer it to the EIRB.
<input type="checkbox"/>	Proceed with regulatory process and/or implementation.
<input type="checkbox"/>	The development proposal might have a public concern, refer it to the EIRB.
<input type="checkbox"/>	Proceed with regulatory process and/or implementation.

Preliminary Screening Organization

Mackenzie Valley Land and Water Board

June 1, 2004

Signature  
  
 \_\_\_\_\_

**Appendix B**  
**Fuel Spill Contingency Plan**



## Prairie Creek Project

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**2004/2005**

**FUEL SPILL**

**CONTINGENCY PLAN**

October 2004

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## ***FUEL SPILL CONTINGENCY PLAN***

### **INITIAL RESPONSE ACTIONS**

In the event of a spill or potential spill incident, the following steps should be taken by personnel at the spill site:

1. Be alert, ensure your safety and the safety of others first.
2. Isolate, remove or extinguish all ignition sources
3. Assess the hazard to persons and the environment in the vicinity of the spill or leak, identify escape routes, block spill drainage paths and implement measures at the pre-identified spill control points (see Section 5.1).
4. Before undertaking a response action proximal to the spill, ensure personnel have and don the appropriate personal protective equipment (PPE) (see Section 5.3 for details)
5. If possible without further assistance, control danger to human life and the environment.
6. Assess whether the spill, leak or system failure can be readily stopped or brought under control.
7. When safe to do so, stop the leak and/or flow of the spilled material.
8. Gather information on the event and the status of the situation, including the nature, extent and approximate amount of the liquid spilled.
9. Report the spill, leak or system failure without delay to the On-Scene Coordinator. Determine if the spill is a reportable event or quantity (refer to Section 3), and if so, report the spill to the **24 hour NWT/Nunavut Spill Line at (867) 920-8130.**

10. Resume any safe, effective action to contain, clean up, or stop the flow of the spilled product.

**Preamble**

This *Fuel Spill Contingency Plan* is effective from January 1, 2004 to December 31, 2005 and applies to all projects and operations of Canadian Zinc Corporation at the Prairie Creek Property and access corridor.

The following formal distribution has been made of this plan:

Mackenzie Valley Land and Water Board

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Canadian Zinc Corporation - Prairie Creek Site Office

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Canadian Zinc Corporation - Vancouver Office

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Additional copies and updates of this Plan may be obtained by writing to:

Canadian Zinc Corporation  
Suite 1202-700 West Pender Street,  
Vancouver, British Columbia  
V6C 1G8  
Phone: 604-688-2001  
Fax: 604-688-2043  
Email: alan@canadianzinc.com

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**Prairie Creek Minesite Address:**

Canadian Zinc Corporation  
Prairie Creek Minesite  
C/O Villers Air Service,  
P.O. Box 328,  
Fort Nelson, British Columbia  
V0C 1R0  
Satellite phone: 1-600-700-2454  
Satellite fax: 1-600-700-9209

# **FUEL SPILL CONTINGENCY PLAN**

## **1.0 Introduction and Plan Purpose**

The purpose of Canadian Zinc Corporation's Fuel Spill Contingency Plan is to provide a plan of action for every foreseeable fuel spill event at the Prairie Creek Property and the fuel storage and transfer facilities related to the planned property access road.

It is the policy of Canadian Zinc Corporation to initiate clean up activity when, in the opinion of its management, the company is clearly associated, or likely associated with a spilled product. It is also the policy of the company to comply with existing regulations, ensure protection of the environment, and to keep employees, government officials and the public, informed.

## **2.0 Response Team**

The members of the fuel spill response team, and their designations, are listed below:

### **On-Site:**

On-scene Coordinator:	Mr. David Hart, Site Manager Canadian Zinc Corporation
On-scene Coordinator: (Alternate)	Assistant Site Manager (Individual to be determined) Canadian Zinc Corporation
On-scene Resource: (When on site)	Mr. Alan Taylor, COO Canadian Zinc Corporation

### **Off-Site:**

Response Manager:	Mr. Alan Taylor, COO Canadian Zinc Corporation
Environmental Advisor:	Mr. David Harpley, Environmental Coordinator Canadian Zinc Corporation
Environmental/Safety Advisor:	Mr. Richard Hoos, Principal Consultant EBA Engineering Consultants Ltd.

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### **Additional Information or Assistance**

Additional resources and assistance are available from the following sources:

Shell Bulk Petroleum	Mr. Bill Streeper / Rick Baldrige
Phone (Ft. Nelson):	(250) 774-7247
Fax:	(250) 774-7250

Government of NWT	
Pollution Control Division	
Phone (Yellowknife):	(867) 873-7654

Dept. of Indian Affairs & Management Officers	Daniel Quevillon/Shane Hayes Resource
Northern Development (Ft. Simpson):	
Phone:	(867) 694-2626
Fax:	(867) 695-2615

Indian & Northern Affairs Canada	
Contaminants Phone Hot Line:	☎ 1-800-661-0827

RCMP Phone (Yellowknife):	☎ (867) 920-8311
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For large or complicated spills, Shell Bulk Petroleum can be contacted who have access to additional spill response equipment available for deployment. This could be facilitated by aircraft normally operated into the site by Villers Air Service.

For advice on contaminated material management, the environmental consulting resources and INAC contacts listed can also be consulted.

---

### **3.0 Reporting Procedures**

The Fuel Spill Response Team must be notified immediately about the occurrence of any spill. The following chain of command must be followed in the reporting process.

#### **Immediately Contact:**

##### On-Scene Coordinator

Contact Person: David Hart, Site Manager  
Phone: (Prairie Creek Camp): 1-600-700-2454  
Fax: 1-600-700-9209

Or if the On-Scene Coordinator cannot be immediately contacted:

##### On-Scene Coordinator (Alternate)

Contact Person: Alternate Site Manager

The on-scene coordinator is responsible for determining if the spill is reportable, based on the INAC Spill Reporting Protocol for Mining Operations dated July 27, 2004 (see Appendix A), reporting the spill if it is reportable, and for notifying CZN management. In addition, the on-scene coordinator is responsible for recording all spills on the Canadian Zinc Spill Report Form (see the end of this document), and the INAC Monthly Spill Reporting Form (attached to the INAC Protocol in Appendix A). The on-scene coordinator is also responsible for submitting the latter form to the INAC District Inspector monthly if spills have occurred.

Spills of flammable liquids, such as diesel and gasoline, are reportable if the spilled quantity exceeds 100 litres. Spills of drilling fluid, used or waste oil, vehicle fluids and wastewater are reportable if the spilled quantity exceeds 100 litres or 100 kg. Spills are also reportable if they are near or into a water body, irrespective of quantity. For more details, consult the INAC protocol.

<b><i>24 Hour NWT/Nunavut Spill Reporting Line</i></b>	
<b>Phone:</b>	<b>(867) 920-8130</b>
<b>Fax</b>	<b>(867) 873-6924</b>

Note: A spill report should be filled out on the Spill Reporting Form as completely as possible prior to calling the 24 Hour Spill Reporting Line.

---

#### **4.0 Fuel Spill Response Planning and Response Actions**

Spills that could potentially occur during fuel handling, transfer or storage operations, and their associated impacts, will be kept to a minimum by:

- ? utilizing fuel transfer hoses with double locking mechanisms;
- ? utilizing lined and self-bermed fuel storage areas with 110% capacity of the largest tank;
- ? ensuring all valves on storage tanks are secured and locked when not in use;
- ? conducting fuel transfers over secondary containment or a surface liner (e.g. drip pans, fold-a-tanks) placed under all container or vehicle fuel tank inlet and outlet points, hose connections and hose ends;
- ? maintaining a supply of spill response equipment (absorbent pads, booms) at all fuel transfer and vehicle maintenance locations;
- ? storing all contaminated equipment and related waste in sealed drums for later disposal off-site with the appropriate authorizations;
- ? careful manual measurement of fuel content in the tanks when transferring fuel;
- ? regular inspections of fuel storage tanks and hoses for evidence of leaks;
- ? training in proper fuel handling procedures and transfers conducted by trained personnel;
- ? spill response training for personnel associated with fuel handling;
- ? immediate cleanup of minor spills; and,
- ? identifying relevant control points down-gradient of the main fuel storage and transfer locations.
- ? Fuel containers, should be marked with the responsible party's name, product type and year purchased or filled.

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#### **4.1 Response Actions for Fuel Spills on Land**

1. Identify the source of the leak or spill, and if safe to do so and readily possible, stop the leak or spill;
2. Contain the spill and the source if possible, and block drainage paths down-gradient, especially at the pre-determined control points;
3. Leaks from a tank can be stopped by:
  - ? ceasing filling operations;
  - ? turning off valves;
  - ? utilizing patching kits to seal leaks;

In the event of a rupture to a tank, the self-bermed design is intended to capture the full capacity of the largest fuel tank within its walls. The captured fuel can be pumped into a reserve fuel storage tank.

4. Spills (on gravel, rock, soil, vegetation) can be contained by placing a soil berm down slope of the running or seeping fuel. Plastic tarps can be placed over the berm and at the foot of it, to permit the fuel to pool on the tarp for easy capture. Absorbent pads can be used for this purpose, and the pads can be squeezed into empty drums and re-used. Larger pools can be pumped back into drums, empty storage tanks, or “TIDY” tanks. It is especially important to prevent the fuel from entering a body of water where it will have greater environmental impact;
5. Stains on rock can be soaked up with absorbent sheeting. The sheeting should be placed in drums for disposal;
6. Contaminated soil and vegetation may have to be removed and disposed of in an environmentally acceptable manner. Contact the government authority identified by the 24 Hour Spill Reporting Line for approval before undertaking this.

#### **4.2 Response Actions for Fuel Spills on Snow**

- ? The presence of snow can assist in containing spilled fuel and functions as a natural absorbent to facilitate the collection of spilled fuel;
- ? Berms can be constructed from compacted snow with a plastic tarp placed over this;
- ? The snow-fuel mixture can be scraped up and stored in a lined area or in drums for future disposal following the appropriate authorization.

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### **4.3 Response Actions for Fuel Spills on Water**

It is important to immediately control the release of spilled fuel into water and to contain it to the immediate spill area if possible. Assuming that fuel has entered water, actions to be taken can include:

- ? Deploy boom (s) to contain the spill area. The effectiveness of this action can be limited by winds, currents (in the case of moving water) and other factors;
- ? Absorbent pads and similar materials can be used to capture small spills on water. Absorbent booms can be drawn in slowly to encircle spilled fuel and absorb it. These materials are hydrophobic (absorb hydrocarbons and repel water). Absorbent booms are often relied on to recover any hydrocarbons that escape containment booms. Contaminated material must be subsequently placed in drums for later approved disposal;
- ? In the event of a larger spill on water, it will be necessary to limit the extent of the spill, using booms, and immediately seek the assistance of the Shell Bulk Petroleum response team. Keep the 24 Hour Spill Reporting Line informed of the situation and developments.
- ? A skimmer may be deployed once a boom has been secured to capture the spilled product. The skimmer utilizes a mechanism to draw hydrocarbons (and a percentage of water). It is then pumped through hoses to empty fuel drums;
- ? Culverts can permit water flow while capturing and collecting fuel by using a board to control the water level. It can be staked and surrounded with absorbent material to capture the fuel on the water surface.
- ? Response Actions for Fuel Spills on Ice.
- ? Where a spill occurs on ice, snow should be compacted around the edge of the spill to serve as a berm (and lined with plastic sheeting). The ice will limit seepage of fuel into the water, but the contaminated snow/ice must be immediately scraped up. Permission may be given from the government to burn off pools of fuel (contact the 24 Hour NWT/Nunavut Spill Reporting Line). Remaining contaminated snow can be placed in drums or in a lined berm (on land) for later approved disposal.
- ? Fuel that escapes under the ice through breaks or cracks is extremely difficult to collect. Expertise should be sought immediately. Shell Bulk Petroleum's response team can be made available in a matter of hours.

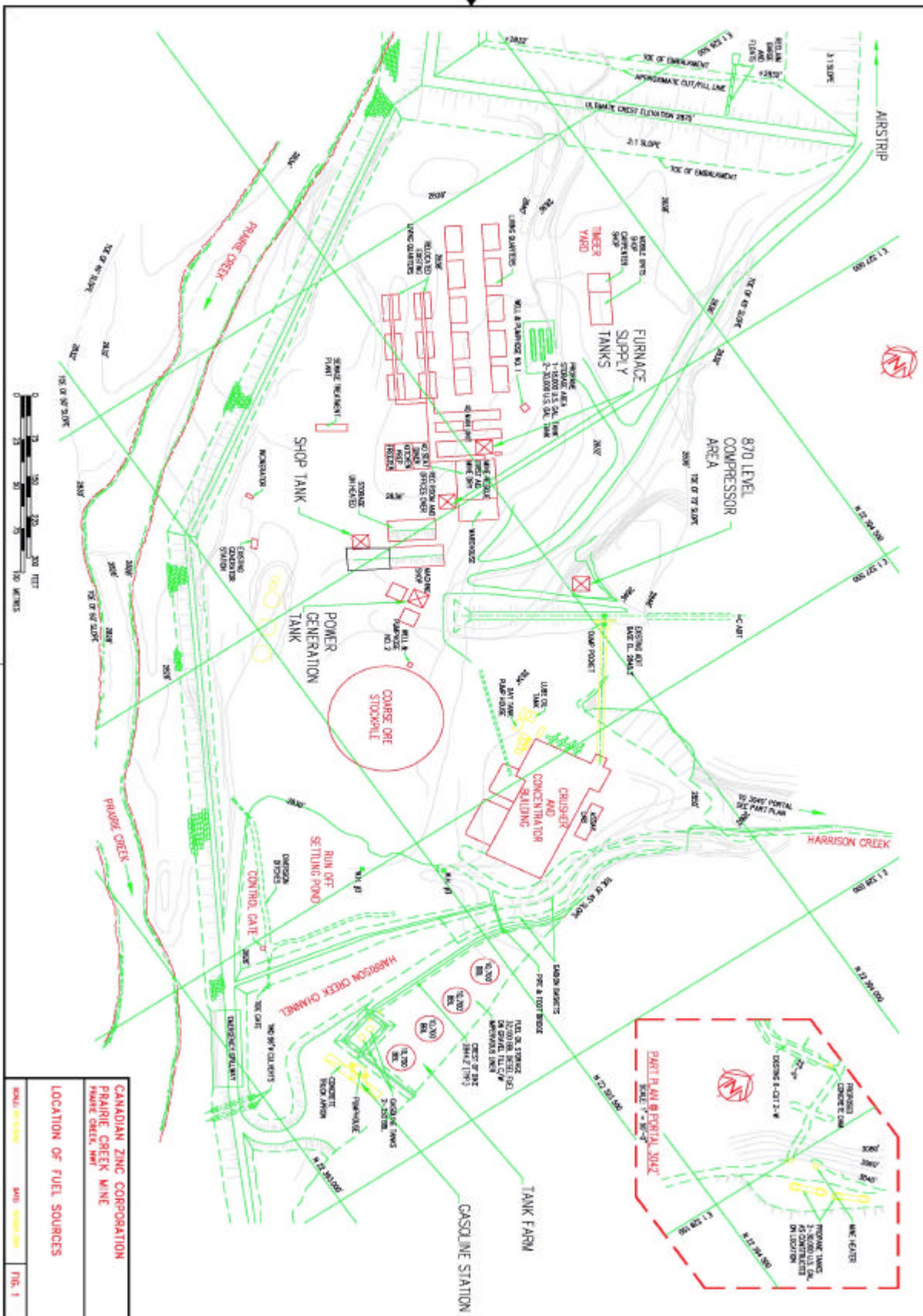


## ***5.0 Inventory of Fuel Sources and Response Equipment***

### ***5.1 Fuel Sources and Spill Control Points***

The main fuel source locations at the site are as follows (see Figure 1 for locations):

- ? The Tank Farm consists of four 10,000 barrel capacity tanks for diesel (presently partly full), two 350 barrel capacity tanks for gasoline (presently empty), and waste oil stored in two 5,000 gallon (20,000 litre) tanks and a number of 45 gallon (200 litre) drums (a small number of these drums may contain used varsol or antifreeze). The control point for spills in the farm is the main containment berm for the tanks. Beyond this, the secondary control point would be the culverts where Harrison Creek discharges to Prairie Creek, and for spills to the south-east of the farm, the toe of the Prairie Creek containment berm;
- ? The Gasoline Station is located at the south end of the tank farm facility. At this time, the station contains 6 – 45 gallon drums of gasoline. The quantity of drums varies depending on site activity. Drums are located on a concrete berm with sump facilities.
- ? The two camp power generators are fed by a fully bermed 1000 gallon diesel tank mounted on a steel cradle. The secondary control point for a spill is the main site drainage channel which flows into the Catchment Pond (the outlet of the Catchment Pond is also a control point with a gate weir);
- ? Two 5000 gallon tanks on the south-west corner of the rear Machine Shop stores 10W& 40W oil for use in vehicles, these tanks are fully contained in a cement berm. The secondary control point for a spill is the main site drainage channel;
- ? A 1000 gallon tank on the north-west corner, and a 200 gallon tank on the south-east corner, which are both fully bermed, of the Administration Building (which currently houses the kitchen, Mine Rescue, First Aid and Mine Dry), provide diesel for heating furnaces. The secondary control point for a spill is the main site drainage channel;
- ? A 500 gallon diesel tank at the 870 level underground staging area provides diesel supply to the compressor and generator for mine ventilation and electrical supply. This tank is fully bermed and the secondary control point for a spill is the main site drainage channel;
- ? A limited number of 45 gallon (200 litre) drums containing aviation gas or Jet B are stored at the airstrip. The drums are located on a clay liner. The control point for a spill beyond the containment is the toe of the Prairie Creek containment berm.



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## 5.2 *General Equipment*

Canadian Zinc Corporation has rotary and fixed wing aircraft on call. Heavy earth moving equipment, hand tools and miscellaneous equipment (e.g. plastic sheeting) are available at the Prairie Creek site as part of the exploration activities, and are accessible in the event of a spill.

## 5.3 *Personal Protective Equipment*

Personal protective equipment (PPE) is maintained on-site for the management and handling of fuels, chemicals and reagents. PPE available includes splash protection goggles, nitrile rubber gloves, impervious (Tyvek) suits and half-face masks equipped with HEPA-filters. This equipment should be used by all personnel involved in spill response who will be proximal to the spill.

For specific first aid, toxicological and other health related data, and the relevant protection equipment, the Spill Response team should consult the Material Safety Data Sheet (MSDS) for the specific fuel that has been spilled. MSDS's are maintained in the Administration Building.

## 5.4 *Spill Kits*

Spill kits (Table 6-1) are maintained on site at the main fuel farm facility, mechanical shop, gasoline station, fuel truck and at each diamond drill when operating.

**Table 6-1  
Items Contained in the Spill Kit**

1-48" x 48" x 1/16" Neoprene Pad (Drain Stop) Plug N Dike Granular, 1-gal U.S. (3.8 litres) Splash Protection Goggles 2-PVC Oil Resistant Gloves 1 Pkg. Polyethylene Disposable Bags (5 mil), 10 per Package 1 Shovel (Spark Proof) 1 Case T-12 3" x 12' Mini Boom, 4 Booms/Case 1 Bale 11P 256 17" x 19" x 1/2" Pads, 100 Pads / Bail
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## **6.0 Training and Spill Exercises**

### **6.1 Training**

All members of the Fuel Spill Response Team will be trained and familiarized with the spill response resources, including their location and access, the Fuel Spill Contingency Plan and appropriate spill response methodologies and reporting.

All personnel and contractors at the Prairie Creek property will be familiarized with the location of the Fuel Spill Contingency Plan on site and encouraged to read it. All personnel and contractors will be introduced to the salient aspects of initial response actions to a spill as part of site orientation on arrival.

Fuel handling crews will be trained in the safe operation of these facilities, spill prevention techniques and initial spill response actions.

### **6.2 Spill Exercises**

Canadian Zinc Corporation will conduct annual spill exercises to test the response of the Spill Response Team to fuel spills.

A report will be made by the On-Scene Coordinator noting the responses of personnel, and any problems or deficiencies encountered. This report will be used to evaluate the ability to respond to spills and determine areas necessary for improvement.

#### **Canadian Zinc Corporation**

Prairie Creek Minesite  
C/O Villers Air Service,  
P.O. Box 328,  
Fort Nelson,  
British Columbia  
V0C 1R0  
Satellite phone: 1-600-700-2454  
Satellite fax: 1-600-700-9209

24 Hour spill report line: ph 867-920-8130  
fax: 867-873-6924

## CANADIAN ZINC FUEL SPILL REPORT FORM

**Date and Time:**

---

**Person Reporting:**

---

**Date and Time of Spill:**

---

**Exact Location of Spill:**

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**Cause of Fuel Spill:**

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**Nature of Fuel and Amount Estimated:**

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**Action Taken:**

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**Follow-up:**

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## **Appendix A: INAC Spill Reporting Protocol (July 29, 2004)**

### **Terms and Conditions For Implementing the Spill Reporting Protocol For Mining Operations**

1. Applies to both exploratory and production mineral operations
2. Applies only to spills for which Indian and Northern Affairs Canada (INAC) would be designated as Lead Agency under the NWT/Nunavut Spills Working Agreement.
3. This Spill Reporting Protocol does not apply to spills for which the Government of the Northwest Territories (GNWT), Government of Nunavut (GN), Environment Canada Environmental Protection Branch (EPB), Canadian Coast Guard (CCG), National Energy Board (NEB), or Inuvialuit Land Administration (ILA) would be designated the Lead Agency under the Northwest Territories, Nunavut Spills Working Agreement.
4. Immediately reportable spills include releases as per Schedule 1, and releases of substances of lesser volumes that are likely to be imminent environmental or human health hazard or where an operator is uncertain if a release is reportable.
5. All spills requiring assistance by the Operator (i.e. not cleaned up immediately and assistance is required for cleanup) continuing spills, or situations where further spillage is possible are to be reported immediately.
6. An on-site record shall be kept of all minor spills and immediately reportable spills and be available to INAC Inspectors or officials upon request.
7. All minor spills shall be reported to the District INAC Inspector(s) either monthly in a condensed form attached, or at an interval acceptable to the Inspector.
8. Operator, i.e., the company or individual that holds an authorization for the project, must have all spill contingency plan approved by either INAC or a party acceptable to INAC.
9. Spill contingency plan must meet the appropriate regulatory requirements and/or spill contingency planning guidelines, including procedures to clean up minor spills and ensure environmental protection.
10. Appropriate field spill kits, as indicated in the spill contingency plan must accompany each crew and/or mobile equipment and/or vehicle.
11. Contractors and subcontractors for the Operator must abide by the Protocol and the spill contingency plan. All spills or releases, whether by operator, contractors or subcontractors, remain the liability of the Proponent and or Operator.

12. All spills, regardless of size (areal extent), amount and product, remain the liability of the Proponent and must be cleaned up immediately. All spills must be cleaned up to the satisfaction of the INAC Inspector.





**Schedule 1 – Immediately Reportable Quantities**

<b>TDG Class</b>	<b>Substance</b>	<b>Immediately Reportable Quantities for NWT/NU 24-Hour Reports</b>
<b>1</b> <b>2.3</b> <b>2.4</b> <b>6.2</b> <b>7</b> <b>None</b>	<b>Explosives</b> <b>Compressed gas (toxic)</b> <b>Compressed gas corrosive</b> <b>Infectious substances</b> <b>Radioactive</b> <b>Unknown substance</b>	<b>Any amount</b>
<b>2.1</b> <b>2.2</b>	<b>Compressed gas (flammable)</b> <b>Compressed gas (non-corrosive, non-flammable)</b>	<b>Any amount of gas from containers with a capacity greater than 100 L</b>
<b>3.1</b> <b>3.2</b> <b>3.3</b>	<b>Flammable liquid</b>	<b>= 100 L</b>
<b>4.1</b> <b>4.2</b> <b>4.3</b>	<b>Flammable Solid</b> <b>Spontaneously combustible solids</b> <b>Water reactant</b>	<b>=25 kg</b>
<b>5.1</b> <b>9.1</b>	<b>Oxidizing substance</b> <b>Miscellaneous products or substances excluding PCB mixtures</b>	<b>=50 L or 50 kg</b>
<b>5.2</b> <b>9.2</b>	<b>Organic peroxides</b> <b>Environmentally hazardous</b>	<b>= 1 L or 1 kg</b>
<b>6.1</b> <b>8</b> <b>9.3</b>	<b>Poisonous substances</b> <b>Corrosive substances</b> <b>Dangerous wastes</b>	<b>= 5L or 5 kg</b>
<b>9.1</b>	<b>PCB mixtures of 5 or more parts per million</b>	<b>= 0.5 L or 0.5 kg</b>
<b>None</b>	<b>Other contaminants (e.g. crude oil, drilling fluid, produced water, waste or spent chemicals, used or waste oil, vehicle fluids, wastewater etc.)</b>	<b>= 100 L or 100 kg</b>

As well, all releases of harmful substances, regardless of quantity, are immediately reportable to the 24-Hour Spill Line where the release:

- ? **Is near or into a water body;**
- ? **Is near or into a designated sensitive environment or sensitive wildlife habitat;**
- ? **Poses an imminent threat to human health or safety; or**
- ? **Poses an imminent threat to listed species at risk or its critical habitat.**

## **Example Scenarios**

(assumes spills are under control)

<b>Activity</b>	<b>Spill Location</b>	<b>Quantity and Product Spilled</b>	<b>Spill Reporting</b>
<b>Fuel tank refilling</b>	<b>Bermed storage tank are on crown land</b>	100 L gasoline	<b>Immediately reportable To NWT 24-Hour Spill Report Line</b>
<b>Truck refueling</b>	<b>Within licensed project area on Crown Land</b>	2 L of diesel	<b>On-site record of spill, clean-up, and included in minor spill reporting to INAC Inspector</b>
<b>Camp Operations</b>	Camp on Crown Land	<b>75 L of grey water overflows camp sump</b>	<b>On-site record of spill, clean-up, and included in minor spill reporting to INAC Inspector</b>
<b>Exploratory drilling</b>	<b>Within a creek on the project area</b>	5 L hydraulic oil	<b>Immediately reportable to the 24-Hour Spill Report Line</b>

## **Appendix C**

### **Nahanni Butte Correspondence**

- ? Synopsis of the Prairie Creek Cooperation and Development Agreement
- ? October 17, 2003 Letter from NBDB to CZN
- ? October 20, 2003 Letter from McDonald & Company (Counsel for NBDB) to Fasken Martineau (Counsel for CZN)
- ? April 14, 2004 Letter from McDonald & Company (Counsel for NBDB) to Fasken Martineau (Counsel for CZN)

**A SUMMARY OF THE PRINCIPAL TERMS OF  
THE PRAIRIE CREEK DEVELOPMENT COOPERATION AGREEMENT  
between  
SAN ANDREAS RESOURCES CORPORATION (“the Company”)  
and  
NAHANNI BUTTE DENE BAND (“Nahanni”)  
COMPLETED IN DECEMBER 1996**

“the Project” means all existing mineral claims and leases at Prairie Creek, Northwest Territories together with a surrounding area of 5 kilometres from each such claim and lease.

“the Access” means an all season road and ferry connecting Prairie Creek and the Liard Highway.

**The Company and Nahanni have agreed to adopt the following policies:**

- ? A cooperative environmental agreement process will be established.
- ? A Nahanni member will be appointed to the Project Management Committee
- ? Maximization of Aboriginal and northern employment with a minimum target for Deh Cho First Nations employment of 20% of the workforce. A Liaison Officer will be appointed to coordinate this policy amongst the various Deh Cho First Nations communities.

**Nahanni has given undertakings to the Company that it will grant and procure:**

- ? Maximum financial assistance in order to reduce the capital and operating costs of the Access.
- ? Quiet enjoyment of the Project and the Access.
- ? An easement for the Access connecting the Project and the Liard Highway.
- ? Cost saving benefits to the Company as a consequence of its involvement in the Project.
- ? Support for the Project and that it will do nothing to adversely affect the Project or the establishment of the Access.
- ? Assembly and provision of its traditional knowledge in support of the Project and the Access.

**In return for the undertakings to the Company, Nahanni has been granted the following arrangements in relation to the Project:**

- ? A 5% net profits interest in the Project payable following the generation of profits after taxation equivalent to the aggregate costs of bringing the Project into production and establishing the Access.
- ? An option to purchase either a 10% or a 15% interest in the Project, at any time prior to the expiry of three months following permitting for the Project, for the cash payment of either \$6 million or \$9 million respectively.
- ? Precedence on contracts provided that the contract terms are competitive as to price, delivery, capability, performance and quality.
- ? Following the commencement of commercial production, Nahanni and the Project will fund equally between them:
  - i) The establishment of the The Prairie Creek Education Centre in Nahanni Butte at a cost of up to a maximum of \$150,000 and the annual operating costs up to a maximum of \$50,000. This centre will focus on adult literacy programs and special needs education for children; and
  - ii) A Scholarship Trust Fund of \$20,000 per annum initially, increasing to \$30,000 per annum following the payback of all capital costs.
- ? Upon commencement of construction of the Access, the Project will contribute \$25,000 per annum to a Trust Fund to provide compensation to traditional harvesters who are negatively affected by the Project and the Access.

Nahanni Butte Dene Band  
General Delivery  
Nahanni Butte, NT  
X0E 0N0  
Tel: (867) 602-2900  
Fax: (867) 602-2910

October 17, 2003

~~President and CEO~~  
Canadian Zinc Corporation  
Suite 1202-700 West Pender Street  
Vancouver, BC  
V6C 1G8  
Tel: (604) 688-2001  
Fax: (604) 688-2043

Dear Sir(s):

I am writing to advise you that the Nahanni Butte Dene Band considers the Agreement between San Andreas Resources Corporation and Nahanni Butte Dene Band, dated December 9, 1998, terminated.

As you know, we have filed an application in Federal Court challenging the MVLWB's decision to issue a water license to Canadian Zinc on September 10, 2003.

Under the circumstances, I am cancelling the meeting which was scheduled for October 21 in Nahanni Butte. Now that we have retained legal counsel to represent our interests in this matter any discussions relating to these issues should be with our lawyers.

Sincerely, 

Chief Peter Marcellais

CC: McDonald and Co.  
Grand Chief Herb Norwegian

# MCDONALD & COMPANY

BARRISTERS & SOLICITORS

Michael J. McDonald\*  
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\*Personal Law Corporation  
\*Attorney Counsel  
(also of the Ontario Bar)

October 20, 2003

Fasken Martineau  
Barristers and Solicitors  
2100 - 1075 West Georgia Street  
Vancouver BC V6E 3G2

VIA FAX

Attention: Michael Parrish

Dear Sirs:

**Re: Nahanni Butte First Nation et al v. Mackenzie Valley Land and Water Board et al**

Further to my letter dated October 17, 2003, I received a phone call this morning from our clients who advised that yet another communication had been made to them from a Canadian Zinc representative. In this case, it was a Canadian Zinc consultant, a Mr. Dan Rourke, who professed to claim ignorance about the application but nonetheless requested a meeting with the Deh Cho First Nations to discuss issues respecting the Canadian Zinc mine. Our clients informed Mr. Rourke that he should not be communicating to them directly, as the communication should take place between lawyers now that the application has been filed. Please inform Canadian Zinc representatives that communications should only take place between lawyers.

Yours truly,

MCDONALD & COMPANY



Waldemar (Wally) Braul

wbraul@mcfa.mcdonaldco.com  
WB/da

cc: Deh Cho First Nations

**MCDONALD & COMPANY**  
BARRISTERS & SOLICITORS

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†Associate Counsel  
also of the Ontario Bar

April 14, 2004

File No. 1054-05

**VIA FACSIMILE**

Fasken Martineau  
Barristers and Solicitors  
2100 - 1075 West Georgia Street  
Vancouver BC V6E 3G2

Attention: David Searle, Q.C.

Dear Sirs:

Re: Nahanni Butte First Nation et al v. Mackenzie Valley Land and Water  
Board et al

---

We confirm that our clients are not interested in holding the discussions between your client and elders of Nahanni Butte. These discussions would not resolve the legal issues involved in this matter. We look forward to receiving your filed materials with respect to this matter, as we have instructions to proceed forthwith.

Yours truly,

McDONALD & COMPANY



Waldemar (Wally) Braul

*wbraul@mcdonaldandco.com*

WB/rh

cc: Deh Cho First Nations  
John Donihee for Mackenzie Valley Land and Water Board  
Heather Potter for Attorney General

002715[1]

# **Appendix D**

## **Health and Safety Plan**



## **INITIAL RESPONSE ACTIONS**

In the event of a health or safety incident, the following steps should be taken by personnel at the incident site:

11. Ensure your safety first.
12. Attend to the health and/or safety of the persons affected by the incident. **DO NOT MOVE PATIENT** unless it is essential to prevent further injury to the victim or other personnel. Make them as comfortable as possible. Provide warmth if someone is incapacitated.
13. Contact the Medic, Site Safety Officer, and the Camp Manager if this is not the same person, in that order. Inform them of the incident and situation.
14. Before undertaking a response action to remove or reduce a health or safety risk, ensure personnel have and don the appropriate personal protective equipment (PPE)
15. If possible without further assistance, control the danger.
16. Gather information on the event and the status of the situation.

## **PREAMBLE**

This *Health and Safety Plan* is effective from January 1, 2005 and applies to all projects and operations of Canadian Zinc Corporation at the Prairie Creek Property and access corridor.

The following formal distribution has been made of this plan:

NWT WCB (?)

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Mackenzie Valley Land and Water Board (?)

---

Canadian Zinc Corporation - Prairie Creek Site Office

---

Canadian Zinc Corporation - Vancouver Office

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Additional copies and updates of this Plan may be obtained by writing to:

Canadian Zinc Corporation  
Suite 1202-700 West Pender Street,  
Vancouver, British Columbia  
V6C 1G8  
Phone: 604-688-2001  
Fax: 604-688-2043  
Email: alan@canadianzinc.com

---

### **Prairie Creek Minesite Address:**

Canadian Zinc Corporation  
Prairie Creek Minesite  
C/O Villers Air Service,  
P.O. Box 328,  
Fort Nelson,  
British Columbia  
V0C 1R0  
Satellite phone: 1-600-700-2454  
Satellite fax: 1-600-700-9209

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## PLAN OVERVIEW

The guidelines and procedures outlined in the following chapters of this Health and Safety Plan (the Plan) are designed for the health and safety of the employees, visitors or contractors of CANADIAN ZINC CORPORATION (CZN) while working or visiting on or around the Prairie Creek Minesite. It is the Company's policy to insure that proper procedures are implemented and followed at all times, to insure the health and safety of everyone involved in the project.

This Plan lists policies and procedures intended to meet or exceed the regulations of the N.W.T. WCB applicable to the various projects taking place on the site. All equipment required to safely work through the course of duties of employees on site and required to insure safety of visitors while touring the site, shall be provided by CZN so as to insure the health and safety of all involved.

Please read each section thoroughly so as to understand the importance of each topic as it pertains to your work area.

This Plan covers health and safety issues and response to incidents, emergency fire response and CZN's alcohol and drug policy. This Plan does not address responses to fuel spills, except for the related health and safety issues. In the event of a fuel spill, the reader should consult CZN's *Fuel Spill Contingency Plan*.

This Plan is a working document. Any comments or suggestions for improvements or updates should be directed to one of the following:

ALAN TAYLOR  
COO & V.P. OF EXPLORATION  
Vancouver, B.C.  
OFFICE: 1 604 688 2001  
FAX: 1 604 688 2043  
alan@canadianzinc.com

Health & Safety Representative  
Prairie Creek Minesite  
Sat phone: 1-600-700-2454  
Sat fax: 1-600-700-9209

## 1.0 EMERGENCY MEDICAL ATTENTION

**ALL PERSONNEL MUST BE PREPARED TO ASSIST THE MEDIC SHOULD THE NEED ARISE.**

1. Ensure your health and safety first.
2. If there is an injury, make the person as comfortable as possible. Provide warmth if someone is incapacitated. DO NOT MOVE PATIENT unless it is essential to prevent further injury to the victim or other personnel.
3. Contact medic immediately via radio or in person and tell them the following:
  - ? Location of injured persons
  - ? number of injured persons
  - ? type (s) of injury
4. Contact site safety officer, and the camp manager if not the same person, by radio and give the exact details that led to the incident.
5. Administer first aid until medic arrives on scene.
6. Prepare any and all equipment needed to assist in rescue / extraction of injured worker.
7. *If medivac is required, designate someone to phone the ambulance service and give all information required as outlined below.*
  8. The medic will examine the injured person (s) to determine the full extent of injury. The medic will continue to provide treatment as needed until passed on to a person with a higher level of certification, or a hospital has been reached.
  9. In the event that the medic must accompany the injured worker during transport, the manager shall order that all work on the property cease until the medic returns, unless a person with proper training or certification remains on site.
  10. Notification of major injury shall consist, but not be limited to, the following:

**ALAN TAYLOR - CANADIAN ZINC CORPORATION ( 604-688-2001 )**  
**SYLVESTER WONG - N.W.T./W.C.B. ( 867-669-4415 )**  
**R.C.M.P./ FT. SIMPSON (IF ACCIDENT FATAL) ( 867-695-3111)**
11. In the event of major or fatal injury, the manager will order all work on the property to halt and nothing be moved until:

W.C.B. INVESTIGATION IS COMPLETE.  
W.C.B. INFORMS OTHERWISE.  
CZN ACCIDENT INVESTIGATION IS COMPLETE.

12. All witnesses to a major or fatal accident must remain on site until all agencies have completed their investigation or interviews.

**LOCATION OF SITE: LONGITUDE- 124, 46', 46.0" W  
LATITUDE - 61, 32', 44.1" N**

**EMERGENCY NUMBERS**

AMBULANCE (Fort Nelson)-----	250 774 2344
HOSPITAL (Fort Nelson)-----	250 774 6916
HOSPITAL (Fort Simpson)-----	867-695-7000
HOSPITAL (Fort Simpson after hours)-	867-695-3232
R.C.M.P. (Fort Simpson)-----	867 695 3111
FIXED WING (VILLERS Ft. Nelson)--	250 774 2072
FIXED WING (WOLVERINE Ft. Simpson)	867-695-2263
HELICOPTERS (CANADIAN, Ft. Nelson)	250 774 6171
(GREAT SLAVE HELI, Ft. Simpson)----	867 695 2326
W.C.B.--(YELLOWKNIFE)-----	867 873 7468
INDIAN & NORTHERN AFFAIRS	867 669 4729
ENVIRONMENT CANADA-----	867 669 4729
CANADIAN ZINC CORP.-----	604 688 2001

When calling appropriate agencies as listed above, be sure to give the following information to whom you speak with;

- YOUR NAME
- LOCATION OF SITE
- TYPE OF EMERGENCY
- INJURIES? HOW MANY AND WHAT TYPE
- SPECIAL EQUIPMENT OR PERSONNEL NEEDED
- WHAT IS BEING DONE ALREADY
- WEATHER CONDITIONS AND LANDING AREA IF FLIGHT REQUIRED

**If a medivac has been called for, be sure to keep landing area clear of debris and people, as the pilot does not have a visual sight below the plane or helicopter.**

## 2.0 EMERGENCY RESPONSE TEAM

All members of the response team will have the following qualifications;

- First aid certification
- Fire response training
- Evacuation training
- General rescue training

All members of the response team will have the following equipment at their disposal;

- ✍ Coveralls ( red in color )
- ✍ Full brim hard hats
- ✍ Level II first aid kit
- ✍ Fall arrest full body harness
- ✍ Flashlight with extra batteries
- ✍ Appropriate Personal Protective Equipment (PPE)
- ✍ Back pack to hold said equipment

The emergency response vehicle on site will be accessible to the members at all times and be equipped with the following;

- ✍ Fire fighting equipment
- ✍ Spill response equipment
- ✍ Emergency rescue equipment
- ✍ Radio communication

In the event of an emergency, the head of the response team is in complete charge of the scene until another agency responds, or the matter at hand has been remedied.

A report will be filled out and sent to the appropriate agencies after a complete investigation has been done and the safety supervisor feels satisfied that the investigation is complete.

In the event that the response team feels evacuation of the site is critical, a muster point far enough away from the site will be established, well marked and accessible 24 hours a day by helicopter.

A map of the camp and surrounding area shall be established and located on the safety board in the main building. Coordinates for precise locations will be marked on the map and a copy will be given to each designated air carrier.

Members shall be released from their regular duties to undergo training when necessary.

### **3.0 GENERAL SAFETY PRECAUTIONS**

All personnel shall be provided with an effective means of communication while working alone or away from the main site. This is to insure contact with safety or rescue personnel should an emergency arise.

All yard personnel shall wear ALL required protective apparel (steel-toe boots, hard-hat, safety glasses) relevant to the task at hand. All personnel shall wear ALL appropriate personal protective equipment (face mask, tyvek suit) relevant to the task at hand. The company will strictly enforce this so as to prevent injury to its workers.

At least one person from each drill team shall be the holder of an acceptable first aid certificate that is current. A copy of this certificate will be provided to the site safety officer.

All yard personnel shall have a valid first aid certificate acceptable to the site safety officer.

A Level 3 advanced certified first aider shall be on site at all times and ready for immediate dispatch in the event of an emergency.

All safety and rescue equipment will be current, under the direct control of the site safety officer, inspected regularly, and replaced as required.

First aid equipment shall be supplied by CZN, and will be under the direct control of the on-site first aider.

All personnel and visitors to the site will be given a safety orientation within 12 hours of arrival, or before work and touring commences, whichever is sooner.

- Villers Air Services (based in Fort Nelson) is our designated medivac carrier and are available to us during daylight hours, at any time. In the event of a helicopter evacuation, Great Slave Helicopters will be called upon and transport will be made to Ft. Nelson. (weather and visibility permitting).
- Wolverine Air Services (based in Fort Simpson) is our alternate medivac carrier and are available to us during daylight hours, at any time.

No worker or person on site shall be asked or expected to perform duties in which they are not comfortable with or trained for.

No person shall attempt to operate equipment of any kind unless they have shown they are competent in its safe use. Only then will they operate the equipment after a supervisor grants permission.

Power and machine tools are only to be operated if the operator is trained in its safe use and if all safety precautions are in effect.



Any person seen to be intentionally performing an unsafe act, which could harm themselves or others, shall be immediately reprimanded or dismissed from the site.

No person is permitted in restricted areas, such as underground or inside powerhouses, unless given proper consent by an immediate supervisor, and only then if both the camp manager and site safety officer are aware of where they are.

No person shall leave the immediate site area unless a supervisor is informed, and a destination is given with an estimated time of return.

During operations, the following response teams will be on site:

- EMERGENCY RESCUE
- EMERGENCY FIRE RESPONSE
- EMERGENCY SPILL RESPONSE.

Anyone on site who sees or feels there is a hazard or threat to personal safety should report the hazard to the site safety officer at once.

Hazard and warning signs are posted throughout the area and are to be heeded by anyone in the area. Personnel caught purposely ignoring these signs will be dealt with in a strict manner.

No work shall be performed on the site unless authorized by senior supervisory personnel.

All vehicles used for transporting personnel shall have all safety precautions in place as outlined in the regulations sec.10.46 (1) through (4) of ??.

All personnel will be trained in the prevention of heat stroke/exhaustion in the summer, and hypothermia in the winter.

## 4.0 EMERGENCY FIRE RESPONSE

The following equipment shall be readily accessible to the members of the EMERGENCY FIRE RESPONSE TEAM;

- Fire retardant coveralls.
- Emergency breathing equipment.
- Protective headgear with chinstrap.
- Fire retardant gloves.
- Fire retardant face protection.
- Emergency response vehicle.

All equipment outlined above will be kept in a dispatch location and free of any obstacles which may hinder an immediate response.

As well as the above mentioned equipment, emergency personnel shall have an effective means of communication (radios) as well as an effective means of identifying emergency response members from other personnel.

All personnel on site must be prepared to assist the response team in the event of a fire.

Training exercises will be carried out on a regular basis, and no less than 20 hours a year shall be designated to this training.

All personnel newly hired to the site will be shown the whereabouts and use of fire fighting equipment within 48 hours of their arrival by the site safety officer.

An effective means of alerting personnel of a fire shall be established at the site, and all workers will be aware of the following:

- Where to meet in the event of an alarm sounding.
- How to safely reach this location in an orderly manner.
- How to assist the response team as needed.

There are areas on the site that are designated as CONTROLLED BURNING AREAS. Burning will only be done if the supervisor advises it and the material is fit for burning.

Aerosol cans, paint cans, diesel conditioner cans or any other potentially explosive device shall be disposed of in the incinerator ONLY. This will prevent the risk of personal injury from exploding objects.

Each burn area shall have at least 2 extinguishers at the ready in the event of fire spread or risk of fire spread.

All controlled burns will be closely monitored at all times until they have extinguished on their own, or with assistance.

In the event of fire in the main building or a housing trailer, personnel who discover the fire will do the following:

- ✍ Insure that all other workers are alerted for evacuation
- ✍ Call the response team for assistance
- ✍ Try to extinguish the fire ( if feasible )
- ✍ Sound a warning device

Should a fire start while refuelling of equipment, personnel shall immediately contact the response team and try to extinguish the fire as quickly as possible. If this is not feasible, the area should be evacuated immediately and other workers in the area alerted. Response team members should be assisted as needed.

If a fire should start at the chemical storage area, the area should be evacuated immediately and the response team contacted. The response team will in turn assist in the evacuation of all employees to the airstrip after contacting the appropriate agencies who have the equipment needed to extinguish chemical fires.

In the event of fire at the main fuel storage area, all workers should be evacuated to the airstrip immediately. When safe to do so, the response team should be alerted and transportation called for.

All agency phone numbers should be posted by the telephone in the safety area of the main administration building for quick access.

All fuel storage areas will be clearly marked with signs indicating “no smoking” and “flammable”.

Flammable material, such as refuse, oily rags and paper, shall not be allowed to accumulate, and shall be properly disposed of at least once a day.

All equipment related to fire response should be properly maintained and serviced by the response team on a regular basis.

## 5.0 DIAMOND DRILLING

Each drill will be equipped with the following:

- ✍ First aid kit
- ✍ Eye wash station
- ✍ Emergency stretcher
- ✍ Means of communication
- ✍ Fall arrest equipment

Each member of a drill team shall have, or be provided with, the following personal protective equipment:

- ✍ Hardhat
- ✍ Ear and eye protection
- ✍ Fire resistant coveralls
- ✍ Steel toe footwear
- ✍ Hand protection

Each member of a drill team shall have a current first aid certificate and a copy of this ticket shall be kept on file for future reference.

**All safety mechanisms will be installed and in place before drilling commences. These will be inspected weekly and after a drill has been transferred to a new location. Also, all guards, lifelines, etc. shall be repaired or replaced, as necessary.**

Each drill site shall be equipped with appropriate means to fight a fire at the drill. Each employee of that drill will be trained in its use and care before drilling commences.

**Drill shacks shall have a means of illumination inside and out. All power cords will be kept in such a manner so as not to cause a tripping, hanging or otherwise harmful hazard to workers.**

**Shacks are to be kept free of flammable and general debris. Garbage cans are to be used and emptied after each shift so as not to attract animals.**

**Drill members shall be trained in emergency survival in the event overnight stay in the shack is required. Each shack shall have emergency rations and water on hand in the event of such an emergency, or rescue is not feasible. Rations should be sealed and safely stowed so as not to attract animals.**

**Workers employed at drill sites will be trained in the prevention and management of heat stroke and hypothermia, and in emergency evacuation of the drill shack.**

**Driller helpers, while in the basket, will wear the fall arrest equipment provided. Proper use of this equipment will be shown to those new on the site or who have not previously been certified in fall arrest procedures.**

**In the event of an injury, contact the medic via radio and explain what happened, drill number and condition of the patient. Be prepared to assist the medic as necessary upon his/her arrival.**

**Any person who enters a drill shack while drilling is in progress shall wear appropriate protective clothing.**

**Drillers shall inspect all wire lines and cables before and after their shift for any wear or stress. Worn cables will be replaced immediately.**

**Drill personnel shall insure that they place a guard or take other precautions to insure they do not get pant legs caught in drill pipe while in motion. No work is to be done on or near spinning pipe.**

**Drill rods will be inspected regularly to check for stress and cracks. Damaged rods will be taken out of service and replaced as needed.**

**All vehicles that are used to transport drill personnel shall have flood lights installed to assist in night vision while driving in steep mountainous terrain. These same vehicles will be equipped with the following:**

- ✍ radio communication
- ✍ first aid kit
- ✍ spare tire and related equipment
- ✍ spare fuel in case of running out.

**Drill towers will be inspected regularly to check for cracks or stress wear. Damaged towers will be repaired before work commences with that drill.**

**Any unsafe action, accidental or otherwise, will be reported to the site safety officer immediately for investigation.**

**Personnel working on drill sites that do not conform to personal or general safety procedures will be reprimanded and possibly dismissed from the site.**

## 6.0 YARD AND FIELD CREW

### Yard Crew

All yard crew shall be equipped with, and wear at all appropriate times, the following personal safety apparel;

- ? Hardhat
- ? Hi-viz vest
- ? safety glasses
- ? hearing protection
- ? gloves ( as needed )

**Steel toe footwear is the responsibility of the worker and shall be worn at all times while working on the site.**

All yard personnel shall be under the supervision of a qualified supervisor at all times, and no work is to be performed *until verified by the supervisor.*

**Yard personnel shall work in teams of two to minimize the risk of injury and facilitate response to injury. Each team shall be supplied with at least one radio.**

**If the need arises for a worker to work alone, they will be supplied with a radio and the supervisor will check on that worker on a regular basis.**

**Yard personnel will be trained in the use of power tools before being allowed to use them.**

**If a worker feels that an area or work practice is unsafe, they should bring the matter up with the site safety officer as soon as possible.**

**No worker shall be asked to perform a job which he/she feels is unsafe or that they have not been properly trained to perform.**

### Field Crew

All members of field operations shall be equipped with the following items;

- ✍ First aid kit
- ✍ Emergency blanket
- ✍ Hi-viz signal flag
- ✍ Waterproof matches
- ✍ Clothing and footwear suitable for the conditions

☞ Bear banger, spray or equivalent protection

**When field operations personnel leave the site for the day, their estimated location will be marked on the map which will be located in the geology drafting room on the second floor of the administration building.**

**Field personnel will also give safety supervisor an estimated time of arrival. If intentions are to be later, they will contact the camp and let them know of change.**

Field personnel will be trained in emergency survival in the event of an overnight stay in the mountains.

If field personnel are made to stay the night in the field for any reason, and they do not contact camp the following day, emergency response members will start an immediate search for the worker.

**Field workers shall bring enough food to suffice in the event of overnight stay.**

**It is advised that field workers take a change of clothes in case they get wet to prevent undue sickness or hypothermia.**

Each member of field operations should have some form of first aid training.

**If a helicopter is used for fieldwork, the pilot will have the same radio frequency as the workers in the field to enable calls for pick-up or if an emergency arises.**

**In the event of an emergency in the field, the pilot will return to camp to retrieve the medic and at least one other member of the response team with the appropriate gear, and immediate evacuation/rescue will occur.**

## **Vehicle Checks**

The following checks are to be made, at least once every day:

- 1) Check of the condition and operation of vehicle controls.
- 2) Proper travel of the steering wheel, in both directions.
- 3) Proper braking of the vehicle, within acceptable limits.
- 4) Proper travel of the clutch, in both directions.
- 5) Proper E-brake movement, within acceptable limits.
- 6) Check fluid levels.
- 7) General check of conditions of tires.
- 8) Check all warning systems installed.

ONLY PEOPLE AUTHORIZED BY THE SITE MANAGER ARE PERMITTED TO OPERATE ANY MOBILE PIECE OF EQUIPMENT.

## 7.0 WILDLIFE AND ENVIRONMENTAL ISSUES

### IMPORTANT NOTE TO FIELD AND YARD PERSONNEL!!!

**GRIZZLY BEARS ARE PRESENT IN OUR AREA. YOU MUST BE AWARE OF THE POSSIBILITY OF AN ENCOUNTER AT ALL TIMES. APPROPRIATE MEASURES MUST BE TAKEN TO AVOID SUCH ENCOUNTERS (WORK TOGETHER. WORK CLOSE TO VEHICLES. IF A BEAR IS SPOTTED, BACK-UP SLOWLY AND LEAVE THE AREA, REPORT ITS PRESENCE TO THE CAMP MANAGER). IN THE EVENT AN ENCOUNTER CANNOT BE AVOIDED, TAKE ALL POSSIBLE MEASURES TO INSURE YOUR SAFETY! LET OFF A BEAR BANGER, AND/OR USE AVAILABLE EQUIPMENT TO MAKE A LOT OF NOISE, CLIMB A TREE, USE BEAR SPRAY. IN A WORST CASE SCENARIO, LAY FACE DOWN AND COVER YOUR NECK AND HEAD WITH YOUR ARMS. DO NOT RUN AND DO NOT REMOVE YOUR BACKPACK! THIS ITEM COULD SAVE YOUR LIFE.**

*These points and more will be covered in animal attack prevention training.*

The manager shall insure that all personnel are informed of the possibility of animal attack, trained in the prevention of such an attack and that all reasonable measures are taken to prevent or protect from such an attack.

**All yard and field personnel will particularly be made aware of the risk of animal attack and be supplied with a means of protection, as well as training in attack prevention.**

At NO time during the company's presence on this site is hunting permitted. CZN is a firm supporter of fish and wildlife issues in our area. Monitoring of wildlife spotting is ongoing on site. Please respect this rule during your stay with us. The only exception to this rule is if you or a partner is in LIFE THREATENING DANGER due to actual or imminent animal attack. If a firearm is used and the animal is killed or wounded, the Fish and Wildlife Branch of the territorial Resources, Wildlife and Economic Development (RWED) are to be notified immediately.

Please do not torment ANY animals on site. This includes ground squirrels, crows, or any other "annoying" animal. Respect for the area is to be adhered to at all times while on site. All project related wildlife fatalities must be reported immediately, accidental or otherwise.

Garbage cans are available and should be used at all times. NO litter should be left out where animals and birds could be exposed to it. CZN imposes a minimal impact on the local wildlife. If you see garbage, pick it up and dispose of it properly. Metals and other non-biodegradable items will be placed in labelled bins for proper disposal at a later date.



IF YOU SEE ANY ENVIRONMENTAL ISSUE YOU FEEL SHOULD BE ADDRESSED,  
PLEASE ADVISE YOUR SUPERVISOR IMMEDIATELY.

## **8.0 DRUG AND ALCOHOL POLICY**

**COMPLIANCE TO THIS POLICY IS CONSIDERED A CONDITION OF EMPLOYMENT.**

CZN is committed to the safety and well being of our employees, contractors and their families along with our business partners and the communities from which we operate. The Company recognizes that the use of illicit drugs and the misuse of alcohol or other drugs can limit an employee's ability to properly perform their job, and can have serious negative impacts and consequences on the health and safety of themselves and others.

The Company also recognizes that alcohol or drug dependency is a treatable condition, and that awareness, education, early detection and treatment for those that need it, are all necessary to maintain a safe and healthy workplace.

The intent of this policy is one of awareness, prevention and rehabilitation, while attempting to minimize intrusion into our employee's personal lives. The policy is subject to ongoing review and amendments from time to time as the Company sees fit to ensure its effectiveness.

### **Scope**

This policy applies to all applicants for employment, temporary, part time and full time employees, contract workers performing work or services for CZN, or any visitor while on the Prairie Creek property.

For the purposes of this policy, drugs of concern include illegal and illicit drugs, alcohol, inhalants, medications or any other substances, which inhibit or may inhibit an individual's ability to perform their job safely and productively.

Prescription drugs must be cleared with the First Aid Attendant prior to engaging in work at the site.

### **Substances and Applicable Rules**

For all employees, contract workers, and visitors to the site while engaged on the Prairie Creek Property, the Company prohibits:

- ? Anyone being unfit for work because of the use or after effects of alcohol or drug use;
- ? The misuse of medications, either prescribed or over the counter;

- ? The use, possession, distribution, offering or sale of alcoholic beverages except where authorized by the Camp Manager;
- ? The use, possession, distribution, offering of sale of illicit or illegal drugs, drug parphenalia or the presence in the body of illicit or illegal drugs;
- ? Employees and contract workers performing safety sensitive functions having a blood alcohol concentration exceeding 0.04% (0.04 grams/100ml) while on duty.

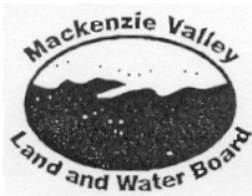
### **Searches and Drug Testing**

CZN reserves the right to conduct searches, and drug and alcohol testing, to enhance the effectiveness of this Policy and the Company's commitment towards providing a safe and healthy working environment.

**ANY PERSON FOUND TO BE IN BREACH OF THE CONDITIONS OF  
THIS POLICY WILL BE TERMINATED IMMEDIATELY AND  
TRANSPORTED OFF SITE ON THE NEXT AVAILABLE CARRIER**

## **Appendix E**

### **Diamond Drill Land Use Permit MV2001C0022**



**Mackenzie Valley Land and Water Board**  
7th Floor - 4910 50th Avenue • P.O. Box 2130  
YELLOWKNIFE, NT X1A 2P6  
Phone (867) 669-0506 • FAX (867) 873-6610

LUP-MV2001C-0022

November 30, 2001

File: MV2001C0022

Mr. J. Peter Campbell  
Canadian Zinc Corporation  
1202 - 700 West Pender St.  
VANCOUVER BC V6C 1G8

FAX: (604) 688-2043

Dear Mr. Campbell:

**ISSUANCE OF A TYPE "A" LAND USE PERMIT**

Attached is Land Use Permit MV2001C0022 granted by the Mackenzie Valley Land and Water Board (MVLWB) in accordance with the *Mackenzie Valley Resource Management Act*. A copy of this permit has been filed in the Public Registry at the office of the MVLWB. The Board approved Land Use Permit MV2001C0022 for a period of five (5) years commencing November 30, 2001 and expiring November 29, 2006.

Please be advised that this letter, with attached permit, all inspection reports, and correspondence related thereto, are part of the Public Registry and are intended to keep all interested parties informed of the manner in which the Permit requirements are being met. All Public Registry material will be considered when the Permit comes up for renewal or amendment.

As a condition of this land use permit, Canadian Zinc Corporation is expected to meet all commitments and obligations made by the company in its submissions to the Mackenzie Valley Land and Water Board and in the Environmental Assessment Process.

The full cooperation of Canadian Zinc Corporation is anticipated and appreciated.

Yours sincerely,

A handwritten signature in dark ink, appearing to read "Melody J. McLeod".

Melody J. McLeod  
Chair

Attachments

Copied to: Ed Emery, South Mackenzie District, DEAND, Yellowknife  
Greg Smith, Regulatory Officer, MVLWB  
Distribution List of Reviewers



**LAND USE PERMIT**

Permit Class	Permit No	Amendment No
A	MV2001C0022	

Subject to the Mackenzie Valley Land Use Regulations and the terms and conditions in this Permit, authority is hereby granted to:

Canadian Zinc Corporation

Permittee

To proceed with the land use operation described in application of:

Signature <b>J Peter Campbell</b>	Date <b>March 5, 2001</b>
Type of Land use Operation <b>Mineral Exploration</b>	
Location <b>Pacific Creek Mine</b>	

This permit may be assigned, extended, discontinued, suspended or cancelled pursuant to the Mackenzie Valley Land Use Regulations.

Dated at Yellowknife, NT this 6th day of November 2001

Signature Witness

Commencement Date  
November 30, 2001

Expiry Date  
November 29, 2006

**NOTE**

IT IS A CONDITION OF THIS PERMIT THAT THE PERMITTEE COMPLY WITH ANY OTHER APPLICABLE ACT, REGULATION, ORDINANCE BY-LAW OR ORDER. DEFAULT HEREOF MAY RESULT IN SUSPENSION OR CANCELLATION OF THIS PERMIT.

**CONDITIONS ANNEXED TO AND FORMING PART  
OF LAND USE PERMIT NUMBER MV2001C0022**

**Part A: Scope of Permit**

This permit entitles Canadian Zinc Corporation to conduct the following activities:  
Conduct mineral exploration activity consisting of 50 to 60 diamond drill holes located throughout the Prairie Creek Mine property, 61°33'N & 124°48'W.

2. The Permit is issued subject to the conditions contained herein with respect to the use of land for the activities and area identifies in Part A, Item 1 of this permit.
3. Compliance with the terms and conditions of this permit does not absolve the Permittee from responsibility for compliance with the requirements of all applicable Federal, Territorial and Municipal legislation.

**Part B: Definitions**

“Act” means the *Mackenzie Valley Resource Management Act*;

“Artesian Aquifer” means a water-bearing stratum, which when encountered during drilling operations, produces a pressurized flow of groundwater that reaches an elevation above the ground surface;

“Board” means the Mackenzie Valley Land and Water Board established under Part 4 of the *Mackenzie Valley Resource Management Act*;

“Dogleg” means clearing a line, trail or right-of-way that is curved sufficiently so that no part of the clearing beyond the curve is visible when approached from either direction;

“Drill Waste” means all materials or chemicals, solid or liquid, associated with the drilling of boreholes and includes borehole cuttings;

“Inspector” means an Inspector designated by the Minister under the *Mackenzie Valley Resource Management Act*;

“Oil Based Drilling Muds” means drilling fluids, which use naturally occurring solutions or refined hydrocarbons as a carrier fluid;

“Permeability” means the capacity to transmit water through a medium;

“Sewage” means all toilet wastes and grey water;

“Sewage Disposal Facilities” means sump(s) and/or sewage collection tank(s) designed to hold sewage;

“Sump” means a man-made pit, trench hollow or cavity in the earth's surface used for the purpose of depositing waste material therein;

**Part C: Conditions Applying to All Activities (the headings correspond to Subsection 26 of the Mackenzie Valley Land Use Regulations)**

**26(1)(a) LOCATION AND AREA**

- |     |  |  |
|-----|--|--|
| 1.  | <i>The Permittee shall not conduct this land use operation on any lands not designated in the accepted application.</i>  | PLANS                                  |
| 2.  | The Permittee shall not construct an adit or drill site within one hundred (100) metres of the ordinary high water mark of a water body, unless approval in writing is obtained from the Inspector.  | LOCATION OF<br>ADITS AND<br>DRILLSITES |
| 3.  | The Permittee shall use an existing campsite.  | CAMP<br>LOCATION                       |
| 4.  | The permittee shall not construct parallel lines or roads unless authorized by the inspector.  | PARALLEL<br>ROADS                      |
| 5.  | The permittee shall locate all lines, trails, rights-of-way to be constructed parallel to streams a minimum of thirty (30) meters from any stream except at crossings unless otherwise authorized in writing by a land use inspector.                                      | PARALLEL<br>STREAMS                    |
| 6.  | Prior to the commencement of diamond drilling the Permittee shall submit to the inspector, proposed drill targets on 1:50,000 and 1:5000 scale maps.   | DRILL<br>LOCATIONS                     |
| 7.  | <i>The Permittee's Field Supervisor shall contact an Inspector at (867) 695-2626 and the Board (867) 669-0506 at least forty-eight (48) hours prior to the commencement of this land use operation.</i>  | CONTACT<br>INSPECTOR/<br>BOARD         |
| 8.  | <i>The Permittee shall advise an Inspector at least ten (10) days prior to the completion of the land use operation of (a) the plan for removal or storage of equipment and materials, and (b) when final clean-up and restoration of the land used will be completed.</i> | REPORTS<br>BEFORE<br>REMOVAL           |
| 9.  | The Permittee shall use existing lines or roads to the extent identified in the accepted application. New tote road extensions shall not extend 30 meters past existing lines or roads.  | EXISTING<br>LINES<br>ROADS             |
| 10. | The Permittee shall notify an Inspector at least ten (10) days prior to backfilling any sump.  | BACKFILLING<br>NOTIFICATION            |
| 11. | <i>The Board reserves the right to impose closure of any area to the Permittee in periods when dangers to natural resources are severe.</i>  | CLOSURE                                |

**26(1)(c) TYPE AND SIZE OF EQUIPMENT**

- |     |   |                               |
|-----|---|-------------------------------|
| 12. | <i>The Permittee shall not use any equipment except of the type, size, and number that is listed in the accepted application.</i> | ONLY<br>APPROVED<br>EQUIPMENT |
|-----|---|-------------------------------|

13.	The Permittee shall ensure a garbage container is on site	GARBAGE
<b>26(1)(d) METHODS AND TECHNIQUES</b>		
14.	The Permittee shall plug all boreholes as the land use operation progresses.	PLUG HOLES
15.	The Permittee shall remove or cut off and seal all drill casings at ground level immediately upon completion of drilling.	REMOVAL AND SEALING OF DRILL CASINGS
16.	The Permittee shall not clear areas for drill rigs larger than identified in the accepted application.	MINIMIZE AREA CLEARED
<b>26(1)(e) TYPE, LOCATION, CAPACITY AND OPERATION OF ALL FACILITIES</b>		
17.	The Permittee shall not locate any sump within one hundred (100) metres of the ordinary high water mark of any water body.	SUMPS FROM WATER
18.	The Permittee shall ensure that the land use area is kept clean at all times.	CLEAN WORK AREA
<b>26(1)(f) CONTROL OR PREVENTION OF PONDING OF WATER, FLOODING, EROSION, SLIDES AND SUBSIDENCE OF LAND</b>		
19.	(a) The Permittee shall, where flowing water from bore holes is encountered, plug the bore hole in such a manner as to permanently prevent any further outflow of water; and	PLUG ARTESIAN WELLS
	(b) the artesian occurrence shall be reported to the Inspector immediately.	
	The Permittee shall slope the sides of waste material piles to a gradient specified in writing by an Inspector.	WASTE MATERIAL PILES
21.	The land use operation shall not cause obstruction to any natural drainage.	NATURAL DRAINAGE
	The Permittee shall not cut any stream bank.	STREAM BANKS
23.	The Permittee shall not use the bed of streams for access routes except for the purpose of crossing the streams.	STREAM BEDS - ACCESS
24.	The Permittee shall install erosion control structures as the land use operation progresses.	EROSION CONROL WHEN
25.	The Permittee shall prepare the site in such a manner as to prevent rutting of the ground surface.	PREVENTION OF RUTTING
<b>26(1)(g) USE, STORAGE, HANDLING AND ULTIMATE DISPOSAL OF ANY CHEMICAL OR TOXIC MATERIAL</b>		



26.	The Permittee shall not use chemicals in connection with the land use operation that were not identified in the accepted application unless improved by the Inspector.	APPROVAL OF CHEMICALS
27.	The Permittee shall remove all drill waste containing poisonous or persistent chemical additives to an approved disposal facility.	DRILL WASTE DISPOSAL
28.	The Permittee shall deposit all non-toxic drill waste into a sump.	DRILL WASTE
29.	The Permittee shall not allow any drilling waste to spread to the surrounding lands.	DRILL WASTE CONTAINMENT
30.	The Permittee shall dispose of all combustible waste petroleum products by incineration or removal.	WASTE PETROLEUM DISPOSAL
31.	<i>The Permittee shall report all spills immediately to the 24 hour Spill Report Line (867) 920-8130, which is in accordance with instructions contained in "Spill Report" form N.W.T. 1752/0593.</i>	<i>REPORT CHEMICAL AND PETROLEUM SPILLS</i>
<b>26(1)(h) WILDLIFE AND FISHERIES HABITAT</b>		
32.	<i>The Permittee shall minimize damage to wildlife and fish habitat in conducting this land use operation.</i>	<i>HABITAT DAMAGE</i>
33.	<i>The Permittee shall not harass wildlife during this land use operation.</i>	<i>NO WILDLIFE HARASSMENT</i>
34.	The Permittee shall use food handling and garbage disposal procedures that do not attract bears.	BEAR/MAN CONFLICT
35.	The Permittee shall construct and maintain the water intake with an adequate screening device to prevent entrainment of fish.	PREVENT ENTRAINMENT
<b>26(1)(i) STORAGE, HANDLING AND DISPOSAL OF REFUSE OR SEWAGE</b>		
	The Permittee shall dispose of all sewage and grey water as proposed in the accepted application.	SEWAGE DISPOSAL
37.	The Permittee shall use a forced-air fuel-fired incinerator to burn all combustible garbage except plastics.	INCINERATORS
	The Permittee shall remove all garbage and debris, including plastics from the land use area.	REMOVE GARBAGE
39.	The Permittee shall keep all garbage and debris in a bear proof, covered metal container until disposed of. This container shall be marked with the Permittee's name and will be on site.	GARBAGE CONTAINER

40.	The Permittee shall remove all scrap metal, discarded machinery, parts, barrels and kegs, buildings and building material.	REMOVE WASTE MATERIAL
<b>26(1)(j) PROTECTION OF HISTORICAL, ARCHAEOLOGICAL AND BURIAL SITES</b>		
41.	The Permittee shall not operate any vehicle within thirty (30) metres of a known or suspected archaeological site.	OPERATE VEHICLE
42.	The Permittee shall not remove, disturb or displace any archaeological specimen or site.	DISTURBANCE OF SITE
43.	The Permittee shall immediately cease any activity which disturbs an archaeological, historical, and/or burial site and contact the Mackenzie Valley Land and Water Board at (867) 669-0506 should an archaeological site of specimen be encountered or disturbed by any land use activity.	CONTACTS
44.	The Permittee shall ensure that all persons working under authority of the permit are aware of these conditions concerning archaeological land use activity.	NOTIFICATION TO EMPLOYEES
<b>26(1)(k) OBJECTS AND PLACES OF RECREATIONAL, SCENIC AND ECOLOGICAL VALUE</b>		
45.	The Permittee shall not feed wildlife.	NO FEEDING WILDLIFE
<b>26(1)(l) SECURITY DEPOSIT</b>		
<b>26(1)(m) FUEL STORAGE</b>		
46.	The Permittee shall not place any fuel storage containers within one hundred (30) metres of the normal high water mark of any water body.	FUEL BY STREAM
47.	The Permittee shall not allow petroleum products to spread to surrounding lands or into water bodies.	FUEL CONTAINMENT
48.	The Permittee shall: (a) examine all fuel storage containers for leaks a minimum of once every 7 days; and (b) repair all leaks immediately.	CHECK FOR LEAKS
<b>26(1)(n) METHODS AND TECHNIQUES FOR DEBRIS AND BRUSH DISPOSAL</b>		
49.	The Permittee shall complete total disposal of all debris and brush cleared prior to the expiry date of the Land Use Permit.	BRUSH DISPOSAL/ TIMING
<b>26(1)(o) RESTORATION OF THE LANDS</b>		

50.	The Permittee shall commence and foster revegetation on the land used, as directed by an Inspector, within one (1) year of the completion of the land use operation.	RE-ESTABLISH VEGETATION
51.	The Permittee shall complete all clean-up and restoration of the lands used prior to the expiry date of this Permit.	CLEAN-UP
52.	The Permittee shall backfill and restore all sumps prior to the expiry date of this Permit.	BACKFILL SUMPS
53.	The Permittee shall dispose of all overburden as instructed by the Land Use Inspector.	DISPOSAL OF OVERBURDEN
54.	The Permittee shall re-contour and re-stabilize all disturbed areas to conform to local topography prior to the expiry date of this Permit	RE-CONTOUR DISTURBED AREAS
<b>26(1)(p) DISPLAY OF PERMITS AND PERMIT NUMBERS</b>		
55.	<i>The Permittee shall display a copy of this Permit in each campsite established to carry out this land use operation.</i>	<b>DISPLAY PERMIT</b>
56.	<i>The Permittee shall keep on hand, at all times during this land use operation, a copy of the Land Use Permit.</i>	<b>COPY OF PERMIT</b>
<b>26(1)(q) MATTERS NOT INCONSISTENT WITH THE REGULATIONS</b>		
57.	The Permittee shall not remove any material from below the ordinary high water mark of any water body.	WORK IN WATER BODIES
58.	<i>The Permittee shall provide in writing to the Board and Inspector, at least forty-eight (48) hours prior to commencement of this land use operation, the following information:</i> <i>(a) person, or persons, in charge of the field operation to whom notices, orders, and reports may be served;</i> <i>(b) alternates; and</i> <i>(c) all methods for contacting the above person(s).</i>	<b>IDENTIFY AGENT</b>
59.	The Permittee shall submit to the Board an update of the contingency plan, for chemical and petroleum spills, if there are any changes in the operation during the life of the permit.	CONTINGENCY PLAN
60.	The Permittee shall review and update the existing contingency plan for approval by the Inspector.	CONTINGENCY PLAN
61.	The Permittee shall submit in writing to a Land Use Inspector, all amendment requests prior to the proposed amended activity commencing.	PRIOR NOTIFICATION

## **Appendix F**

### **Developer Identification and Performance Record**

## **Developer Identification and Performance Record**

Canadian Zinc Corporation is a Canadian public company engaged in the business of mineral exploration and development. Formerly known as San Andreas Resources Corporation, the Company changed its name to Canadian Zinc Corporation on May 25, 1999. San Andreas Resources Corporation had been previously incorporated under the Companies Act of British Columbia on August 29, 1991. Canadian Zinc is listed and trades on the Toronto Stock Exchange under the symbol "CZN".

The Company maintains its head office at Suite 1202, 700 West Pender Street in Vancouver, BC. The day-to-day business of the Company is run by management under the direction of a seven member Board of Directors as follows:

### **Management**

Mr. John Kearney	Chairman and Chief Executive Officer, President
Mr. Alan Taylor	Chief Operating Officer and Vice President, Exploration
Ms. Bella Poato	Office Administrator

### **Board of Directors**

Mr. John MacPherson	Director
Dr. David Shaw	Director
Dr. Robert Gayton	Director
Mr. Alan Savage	Director
Mr. Dave Nickerson	Director

The proposed development will be conducted under the direct supervision of Mr. Alan Taylor, VP, Exploration or, in his absence, his appointed designate. Mr. Taylor has been intimately involved with ongoing activity at the property since 1994.

Canadian Zinc has been actively involved in the NWT in exploration of the Prairie Creek property since 1991, over which time it has drilled 161 holes recovering some 540,000 metres of core in the process. Through this process the Company has successfully increased the known mineral resource on the property from the 1.8 million tonne reserve in 1991 to the present 11.8 million tonne resource. The Prairie Creek mine is the principal asset of the Company.

All work and activity undertaken by Canadian Zinc at the Prairie Creek property has been conducted in compliance with applicable legislation and the Company has worked closely with regulatory agencies to promptly address areas of concern identified in the course of regular site inspections. The Company maintains a written environmental policy and in 2000 initiated a clean-up program aimed at mitigating environmental risks and residual impacts relating to the storage of reagents, fuel products and other materials associated with the property's long term care and maintenance status.

## Tenure

CZN owns 100% of the Prairie Creek Mine and Property.

The main land holding comprises eight mining leases and two surface leases. The Company also holds four additional mineral claims. Details of the Project tenements are shown in the Table below.

### ***PRAIRIE CREEK PROPERTY***

<b>Property Type</b>	<b>Claim #</b>	<b>Lease/Claim Name</b>	<b>Area Ha</b>	<b>Area Acres</b>
<b><i>Mineral Claims</i></b>				
Claim	F67134	GATE 1	731.59	1,807.75
Claim	F67135	GATE 2	1,003.30	2,479.20
Claim	F67136	GATE 3	1,003.30	2,479.20
Claim	F67137	GATE 4	1,003.30	2,479.20
<b><i>Claims total</i></b>			<b><i>6,449.49</i></b>	<b><i>15,936.95</i></b>
<b><i>Surface Leases (held in Over holding Tenancy)</i></b>				
Surface Lease	95F/10-5-3	Minesite	113.60	280.74
Surface Lease	95F/10-7-2	Airstrip	18.20	45.07
<b><i>Surface Lease total</i></b>			<b><i>131.80</i></b>	<b><i>325.81</i></b>
<b><i>Mining Leases</i></b>				
Mining Lease	ML 2854	Zone 8-12	743.00	1,835.99
Mining Lease	ML 2931	Zone 4-7	909.00	2,246.18
Mining Lease	ML 2932	Zone 3	871.00	2,152.28
Mining Lease	ML 2933	Rico West	172.00	425.02
Mining Lease	ML 3313	Samantha	420.05	1,037.96
Mining Lease	ML 3314	West Joe	195.86	483.99
Mining Lease	ML 3315	Miterk	43.70	107.98
Mining Lease	ML 3338	Rico	186.16	460.00
<b><i>Mining Leases total</i></b>			<b><i>3,804.35</i></b>	<b><i>9,401.02</i></b>
<b><i>Grand Total</i></b>			<b><i>7,414.06 Ha</i></b>	<b><i>18,320.56 Acres</i></b>

All mining leases and claims are in good standing. The surface leases were renewed 2004 (date) under the stewardship of Indian and Northern Affairs Canada.