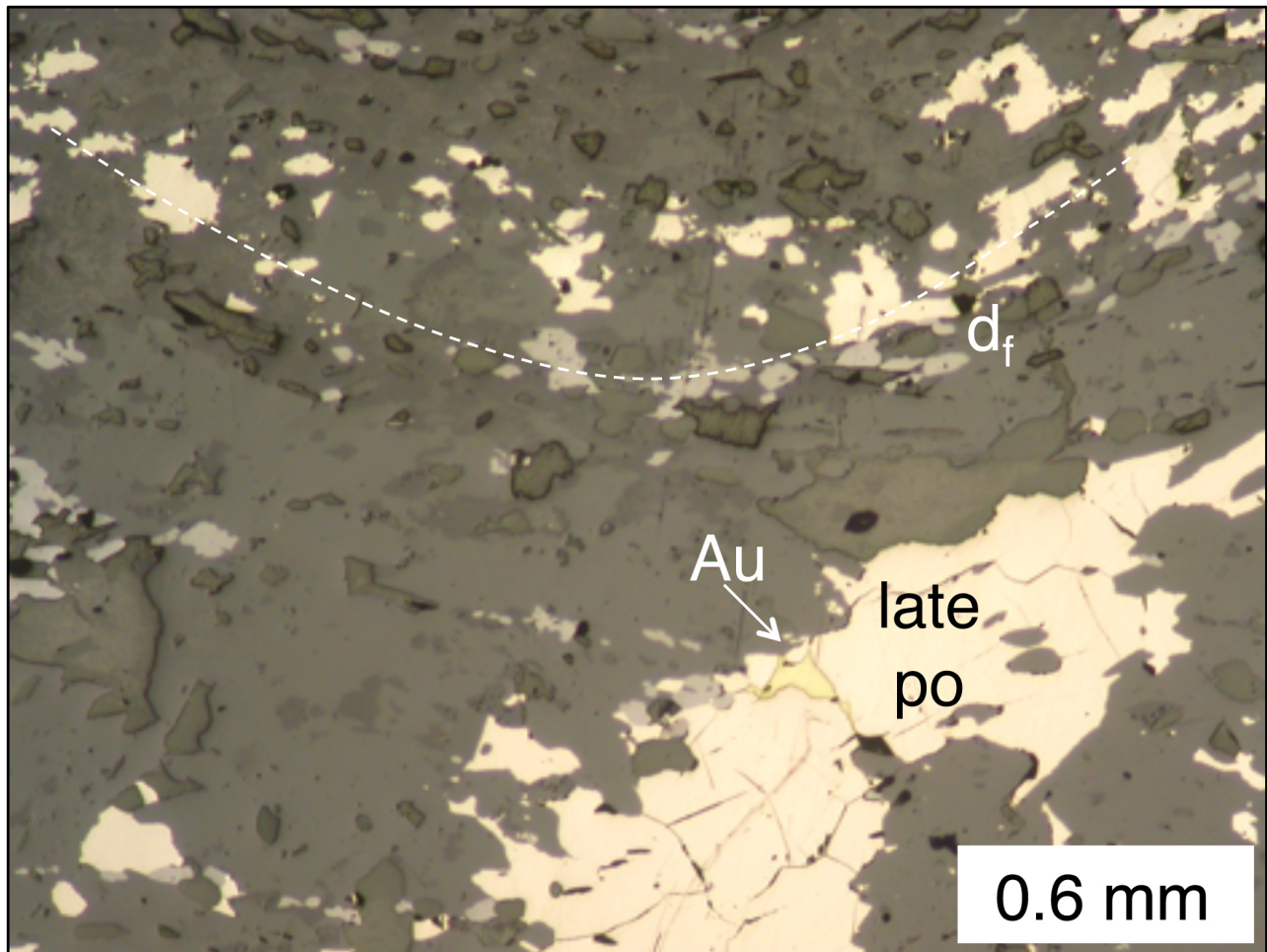


# 2011 Northwest Territories Mineral Exploration Overview

March 2012



H. Falck and K. Gochnauer, Northwest Territories Geoscience Office, Yellowknife, NT

This publication may be obtained from:

Northwest Territories Geoscience Office  
4601-B 52 Avenue  
P.O. Box 1500  
Yellowknife, NT, X1A 2R3 Canada  
867-669-2636  
[www.nwtgeoscience.ca](http://www.nwtgeoscience.ca)

In referring to this publication please use the following citation:

Falck, H., and Gochnauer, K., 2012. 2011 Northwest Territories Mineral Exploration Overview; Northwest Territories Geoscience Office, March 2012, 35 p.

**Cover Illustration:**

Photomicrograph of a polished thin section from the Ormsby Zone at located at Giauque Lake, 90 kilometres north of Yellowknife. Two generations of mineralization have been identified. A late generation of gold-associated pyrrhotite at Ormsby is discordant to a deformational fabric (dashed line, df) defined by elongated earlier sulfide grains, which lie parallel to an earlier D1 foliation trace.

Photo courtesy of Kevin Shelton.

© Copyright 2012

All Rights Reserved

## TABLE OF CONTENTS

<b>INTRODUCTION.....</b>	<b>4</b>
<b>NORTHWEST TERRITORIES MINING HIGHLIGHTS FOR 2011.....</b>	<b>7</b>
<b>NORTHWEST TERRITORIES MINERAL EXPLORATION HIGHLIGHTS FOR 2011 .....</b>	<b>9</b>
DIAMOND EXPLORATION .....	11
METAL EXPLORATION .....	15
<b>FURTHER INFORMATION.....</b>	<b>31</b>

## FIGURES AND TABLES

<b>Figure 1:</b> Location and areal coverage of claims, leases and permits for 2011 in the Northwest Territories. ....	6
--	---

<b>Figure 2:</b> Location of Mines and Exploration Projects active in the NWT during 2011....	10
---	----

<b>Table 1:</b> Summary of NWT diamond exploration in 2011 .....	14
--	----

<b>Table 2:</b> Summary of Northwest Territories exploration projects of precious, base and energy metals in 2011 .....	29
---	----

# 2011 Northwest Territories Mineral Exploration Overview

## Introduction

In the media, there is much excitement about the highly publicized exploration efforts in the territories adjacent to the Northwest Territories, with a rejuvenation of gold exploration and accompanying “Staking Rush” in the Yukon, and extraordinary advances in iron, diamond, and gold projects in Nunavut. In contrast, the news from the Northwest Territories has been much more muted with the challenges to exploration and mining receiving far more prominence; this should not be interpreted as a sign of little exploration activity. Information as to the activities and results of companies working in the NWT, are compiled within this report from public sources such as company websites, and news releases, as well as personal communications.

Claim staking has increased in new regions of the NWT and returned to areas where it has been absent for over 20 years. Regions that have seen recent lapses of significant acreages have, in turn, seen a surge in staked claims as new players pick up open ground (See Figure 1). Even in regions where large portions of Crown Lands are engaged in land claim withdrawals, numerous option agreements and exchanges of ownership of grandfathered claims have occurred this year.

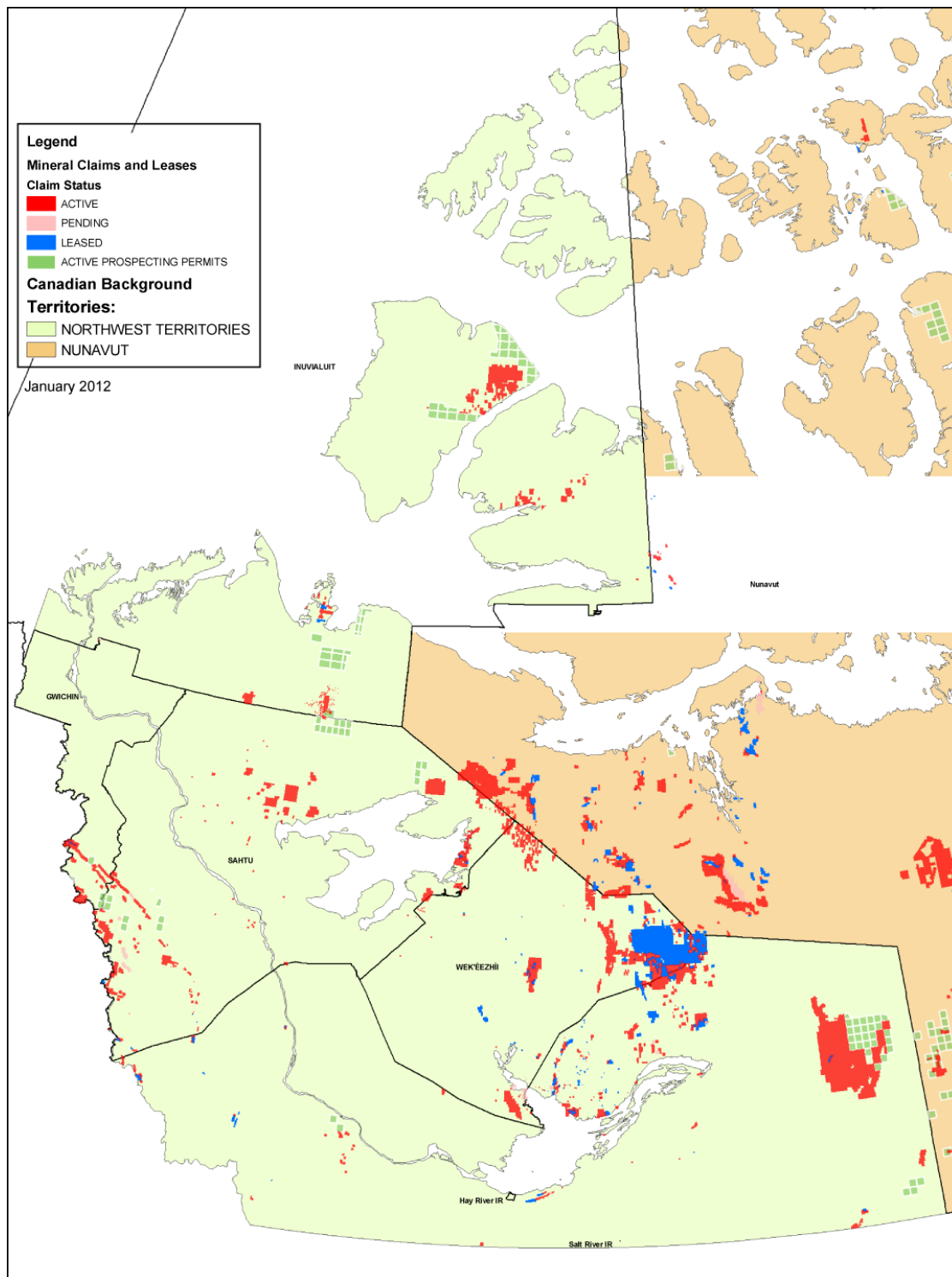
Drilling projects have also fared well in 2011. While the number of drills on the ground did not change dramatically from 2010, the established properties were all busy with multiple drills turning. Companies moving properties through the feasibility stage of exploration have expended large efforts to upgrade reserve estimates in order to meet securities exchange compliance standards. These efforts were not restricted to a single commodity but represent lead, zinc, gold, diamonds, cobalt, bismuth and rare earth metals. Natural Resources Canada statistics show expenditures for exploration, deposit appraisals, and mine construction of \$81.8 million as of January 25, 2012, a modest decline over the previous year when several large mine infrastructure upgrade projects were completed.

Four mines operated during 2011, including three diamond mines: Diavik, Ekati and Snap Lake; and Cantung tungsten mine. Diavik Mine continued with production levels comparable to pre-recession historic levels. Ekati Diamond Mine is seeing lower production as higher-grade reserves are exhausted, as the mine matures. Ekati, Canada’s first diamond mine, opened in October 1998 and is expected to close in 2018. News broke in late 2011 that BHP Billiton was considering selling the Ekati Diamond mine. They will not make that decision until June 2012. Snap Lake Mine has not published recent production figures but has announced a mine optimization plan that extends the mine life to twenty years. The re-opening of Cantung Mine encountered several snags but recent production numbers are similar to pre-shut down levels. An additional measure of confidence can also be interpreted from the mining companies’ increases in “on-property”



exploration efforts and large investments in infrastructure. Cantung mine is set to close in 2014, but additional exploration may extend that date.

Several projects, including: Avalon Minerals' Nechalacho, Canadian Zinc's Prairie Creek, Fortune Minerals' NICO, Tamerlane's Pine Point, Tyhee Gold's Ormsby/Nicholas Lake and Seabridge Gold's Courageous Lake projects are the subject of extensive efforts to move these advanced properties closer to production. Canadian Zinc received approval in December 2011 from the Mackenzie Valley Environmental Impact Review Board for the Prairie Creek project to proceed to the regulatory phase for approvals by the Mackenzie Valley Land and Water Board. Pending another step of approval, construction of the zinc, lead, silver mine could begin in 2013. Reports from De Beers Canada and Mountain Province Diamond Inc. indicate a positive feasibility for the Gahcho Kué project. The proposed mine plan calls for recovery of 4.5 million carats annually from open pits on the 5034, Hearne and Tuzo kimberlite pipes for an eleven-year mine life. Continued acquisition of properties, late fall exploration efforts and preparations for upcoming drill programs are evidence that increased exploration activity can be expected for late 2011 and into 2012.



**Figure 1:** Location and areal coverage of claims, leases and permits for 2011 in the Northwest Territories. New coverage for 2011 includes: 631 claims, 494,402 ha recorded; 102 leases issued, 96,949 ha; and 46 Prospecting Permits issued, 682,837 ha (Data compiled and map produced by the Mining Recorder, AANDC, January, 2012).

## NORTHWEST TERRITORIES MINING HIGHLIGHTS FOR 2011

**De Beers Canada's Snap Lake Diamond Mine**, 220 kilometres northeast of Yellowknife, recovered 926,000 carats from 869,000 tonnes in 2010. This year's production levels (2011) are anticipated to increase but results have not been released. An ongoing production ramp-up was started in 2010 with an annual production target of 1.6 million carats by 2012. A diamond drill program based both on surface and underground was completed to move projected resources to the reserve category. It resulted in a forecast 20-year life-of-mine as part of a six month optimization study to more economically extract the complicated ore body. The Snap Lake Mine targets a 2.5 metre thick dyke that dips northeastward at 12-15°. The deposit has resources (2008) of 1.4 million tonnes (indicated) and 25 million tonnes (inferred), with a recoverable grade of 1.2 carats per tonne. Recently, **Anglo American plc.** has agreed to acquire the Oppenheimer family's remaining 40% interest in De Beers for US\$5.1 billion, increasing Anglo American's current 45% shareholding to up to 85%.

The **Diavik Diamond Mine**, 300 kilometres northeast of Yellowknife, owned by **Rio Tinto plc (60%)** and **Harry Winston Diamond Mines Ltd. (40%)**, recovered 6.7 million carats from 2.2 million tonnes of ore processed in 2011. The production is slightly lower than forecast as a result of the additional processing of previously processed ore and a higher proportion of A-418 processed ore. Diamond recovery from A-418 was limited as the plant was processing ore with a high numbers of heavy minerals. Production from sub-level retreat mining of the A-154 South pipe commenced in July 2011 resulting in a 3% increase in grades and 8% increase in value for the second quarter.

A total reserve increase of 3.1 million tonnes resulted from a new extension identified with deep drilling of A-418: containing 2.4 million tonnes plus 0.7 million tonnes, which was previously categorized as resource. Processing of samples taken from the deep drilling extension of A-154 is planned for 2012. Harry Winston released a new mineral reserve table as of December 31, 2011, by pipe in open pit and underground mining as well as a new resource calculation in January 2012. The total proven mineral reserve for the A-154 South, A-154 North and A-418 pipes is 5.4 million tonnes at 3.0 carats per tonne and the probable reserves are 13.5 million tonnes at a grade of 3.2 carats per tonne. Measured and indicated resources for A-21 are 3.6 million tonnes at 2.8 carats per tonne and 0.4 million tonnes at 2.6 carats per tonne, respectively. A new life-of-mine plan and production by pipe, including A-21 pipe, are under review as well as design and implementation of improved mining and ore handling techniques. The mine life of Diavik, which is transitioning into a fully underground operation, is expected to extend until 2022-24.

Diavik Diamond mine will utilize a wind farm, to be installed in 2012, at its mine site located on East Island at Lac de Gras. Four 2.3-megawatt turbines will be constructed, providing a capacity of 9.2 megawatts, which are anticipated to reduce the demand for

diesel by about 4 million liters, or about 10 percent of total diesel consumption.

Exploration work completed at Diavik included seven drill tested kimberlite targets and an airborne EM survey across the Diavik leases with a 75-metre line spacing. A till sampling program following up on anomalies was also completed.

The **Ekati Diamond Mine**, owned by **BHP Billiton (80%)**, **Stewart Blusson (10%)** and **Chuck Fipke (10%)**, produced 2.58 million carats of diamonds. The mine plan had indicated a reduced total production for this year in comparison to the 3.611 million carats of diamonds recovered during 2010. Production was impacted by unseasonably high rainfall and the ongoing decline in average ore grades consistent with the mine plan. This trend to declining production levels is expected to continue for the remainder of the seven-year mine life. In May 2011, a US\$323 million (BHP Billiton share) expansion of the Misery open-pit was approved. The pushback of the existing Misery open-pit, which was mined from 2001 to 2005, was reported to be 12% complete by October and ore production is anticipated from late 2015 to mid 2017, expected to extend the life of the mine by one year, to 2018. Annual sales from Ekati represented approximately three per cent of current world rough diamond supply by weight and approximately 11 per cent by value in 2010. In late November, news emerged that BHP Billiton was studying the potential sale of the Ekati Mine. This study is expected to continue into the 1<sup>st</sup> half of 2012.

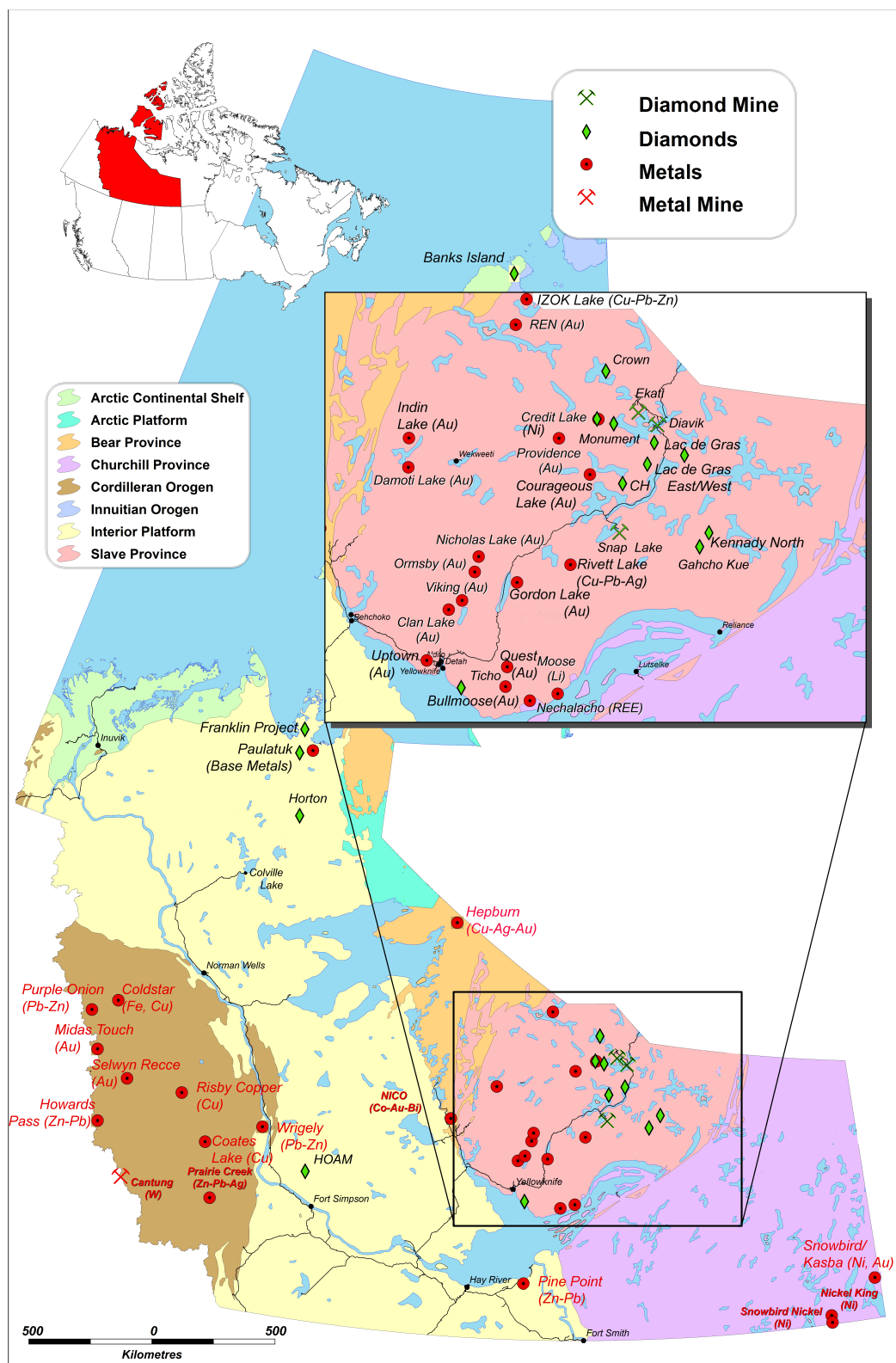
Operations returned to full production in October 2010 at **North American Tungsten Ltd.'s Cantung Mine**, Canada's only producing tungsten mine. Production for 2011 totalled 2,477,140 kg of tungsten trioxide at a grade of 0.93%. However, during the first three months of 2011 only 43,7280 kg of tungsten trioxide were produced from 69,835 tonnes at a grade of 0.85% WO<sub>3</sub> with a mill recovery rate of 73.35%. The poor production rate was attributed to development delays, and poor underground equipment and mill availability. Capital expenditures totaling \$6.5 million for new power generators, mill equipment and upgraded systems allowed mill recoveries to improve to an average of 75.3% for the year compared to 69.0% for fiscal 2010.

With the delivery of new mining equipment and completion of underground haulage way development, the production rate improved and the mill recovery was optimized to maximize the mill capacity (1150 tons/day). In addition to the tungsten product, Cantung also produced 195,459 kg of Cu for the first three quarters of 2011 but no production was reported for the final quarter.

While upgrading its infrastructure, North American Tungsten has also increased the Cantung Mine life to five years and the probable minerals reserves to an estimated 1,535,000 tonnes grading 1.17% WO<sub>3</sub> as of February, 2011; in addition, indicated mineral resources are estimated at 2.22 million tonnes grading 1.11% WO<sub>3</sub> and inferred

mineral resources are estimated at 0.39 million tonnes grading 0.84%  $\text{WO}_3$  using a minimum mining width of 5 metres and a cutoff grade of 0.80%  $\text{WO}_3$ .

In 2011, underground exploration focused on the West Extension below the 3600' level. In February 2012, North American Tungsten announced the drill intersection of high tungsten grades from the outer edge of the defined deposit in a new area called the "Amber Zone" located "below 3700 Level" of the Western Extension and the Central Flats areas. A summary of results includes 9.7 metres estimated true thickness grading 2.57%  $\text{WO}_3$ ; 6.4 metres grading 3.16%  $\text{WO}_3$ , and 2.4 metres grading 4.35%  $\text{WO}_3$  from Holes U1936, U1937, and U1943, respectively. The company is also conducting a pilot project to determine the feasibility of reprocessing tailings, which would also allow the extraction of lower grade ore. Additional tailings management options such as the underground disposition through a hydraulic back-fill system, which would reduce the extent of the tailings and reclamation costs, are also being examined.



**Figure 2:** Location of Mines and Exploration projects active in the Northwest Territories during 2011.

## NORTHWEST TERRITORIES MINERAL EXPLORATION HIGHLIGHTS FOR 2011

### *Diamond Exploration*

The locations of diamond exploration programs are shown in Figure 2.

**Archon Minerals Ltd.** acquired full ownership of leases covering the Buffer Zone, surrounding the Core Zone Joint Venture and the Ekati Mine site in 2010. Eighty-five mineral leases encompassing 70,010 hectares, were acquired which have numerous drill-confirmed kimberlite pipes and geophysical targets. The Jay kimberlite pipe in the Buffer Zone underwent resource studies but no new plans were proposed for the potential low-grade resources. Development of the Piranha pipe straddling the claim boundary with Diavik has also been considered as well as renewed interest in the Lynx pipe. Exploration activities in the winter of 2011 were hampered by a minimal snow pack such that large-diameter sample drilling using tracked vehicles was not possible. No new field work was conducted.

**Archon Minerals Ltd.** is also renewing for another five years, the land use and camp exploration permit for the Monument property. Kimberlite targets remain to be drill tested however, due to finances, no new field programs have been undertaken since May 2009.

**Arctic Star Exploration Corp.** (Formerly **Arctic Star Diamond Corp.**) transferred ownership of their Credit Lake property, forty kilometres southwest of Ekati Mine within the Providence Lake Greenstone Belt, to **Platinum Group Metals Ltd.** No diamond exploration activities were reported on the Credit Lake property, nor on the Crown property, claims staked in 2008, north of Ekati Minesite. The staking of additional open ground adjacent to the Crown property has been reported as a priority for Arctic Star Exploration Corp., as the source of indicator mineral trains appears to have been off the existing claim group.

**Diadem Resources Ltd.** has announced the acquisition of the **Darnley Bay Resources Ltd.'s** 50% interest in the Franklin Diamond Project on the Parry Peninsula and the 50% diamond interest in the Paulatuk South Lands. **Darnley Bay Resources Ltd.** retained its 100% interest to all other minerals on the South Lands. A drill was mobilized in 2010 and 5 holes (707 m) were completed by the beginning of September 2010 identifying three new kimberlites. Currently thirteen known kimberlites have been identified with seven proving to be diamondiferous. Preliminary reports received from CF Mineral Research Ltd. in early 2011, indicate promising indicator minerals and three microdiamonds measuring approximately 0.25 millimetres in diameter. The G-09 base metal target was drill-tested in March 2011. The hole reached bedrock at 158 metres but had to be abandoned in vuggy dolomite at 242 metres prior to reaching the target depth.

**De Beers Canada Inc.** (51%) and **Mountain Province Diamonds Inc.** (49 %) are joint venture partners in the Gahcho Kué Diamond Project located in the southeastern Slave



Province, 150 kilometres south-southeast of the Ekati and Diavik Mines. The Gahcho Kué Project consists of a cluster of four diamondiferous kimberlites, three of which, 5034, Hearne, and Tuzo, have a probable mineral reserve of 31.3 million tonnes grading 1.57 carats per tonne for total diamond content of 49 million carats. The permitting plan for an open-pit mine is expected to produce 4.5 million carats per year for 11 years initially. In 2011, the Gahcho Kué Joint Venture decided to expand the previously announced five-hole Tuzo Deep drill program to six holes. The purpose of the program is to extend the inferred mineral resource below 350 metres, which is the current limit of the Tuzo mineral resource. Two drill rigs are currently on site and the first deep drill hole was completed at the end of October, having intersected over 200 metres of kimberlite. The drill program is expected to be completed by February 2012.

The Gahcho Kué Project environmental impact assessment was filed with the Mackenzie Valley Environmental Impact Review Board late in 2010 and as of August 2011, has met the requirements to allow the Environmental Impact Review to commence.

A 3,991 line-kilometre airborne gravity survey consisting of 50-metre-spaced flight lines was conducted by Fugro Airborne Surveys Corp. A total of 1,198 line-kilometres were flown over the Gahcho Kué Project and 2,793 line-kilometres were flown over the **Mountain Province Diamonds Inc.** (100%) Kennady North Project. Mountain Province formed a newly incorporated company, **Kennady Diamonds Inc.** to manage the 13 leases and claims, north of Gahcho Kué, including the diamondiferous Kelvin, Faraday and Hobbes kimberlites. Analysis of the gravity survey resulted in the identification of 29 high priority targets on the Kennady North project that closely resemble kimberlites at the Gahcho Kué Project.

**Rio Tinto Canada Exploration Inc.** funded an exploration program on the CH property under an option agreement with **GGL Resources Corp.** Three of nine kimberlite targets on the CH property in the MacKay and Courageous lakes area, southwest of Ekati and Diavik mines were drilled in the early part of 2011. Severe winter conditions prevented the completion of the program. In mid-July, a till sampling and surficial mapping program was undertaken on the eastern part of the CH Project, west of the Diavik Diamond Mine. The collection of 205 till samples was submitted for a comparative indicator mineral surface-texture and mineral chemistry study at the Saskatchewan Research Council. Samples were also analyzed for 52 element geochemistry at ALS Minerals Labs. In addition to the till sampling, summer work also consisted of ground checks of several geophysical anomalies and mapping of the surficial geology. Results are expected by December 2011. Six claims of the CH property were surveyed with a total of 23 CH claims that have now been brought to lease.

The joint venture between **North Arrow Minerals Inc.** (50%) and **Springbok Holdings (Dr. Chris Jennings)** (50%) announced an option agreement regarding their Lac de Gras property with **Harry Winston Diamond Mines Ltd.** and its wholly owned subsidiary,

**6355137 Canada Inc.** The Lac de Gras project originally consisted of over 32,780 hectares and was contiguous with a 91,458 hectare block of claims held by Harry Winston Diamond Mines Ltd. now forming a “joint venture property” totaling over 124,238 hectares. The property directly adjoins the mineral leases that host the Diavik diamond mine, located only 10 kilometres to the north and the Ekati diamond mine is located within 40 kilometres to the northwest. Harry Winston Diamond Mines Ltd. committed to at least \$5,000,000 of exploration over a five-year period in order for the option to vest. Upon vesting, a joint venture will be formed in which Harry Winston will hold a 55% interest and North Arrow and Springbok will equally share a 45% interest in the entire 124,238 hectares joint venture property. Surficial mapping has begun to identify local ice directions and till characteristics in preparation for a systematic basal till sampling program, to be initiated in early 2012. The program will use a track mounted reverse circulation drill to sample a complete till column and reach basal till not accessed by previous sampling.

**Olivut Resources Ltd.’s** HOAM diamond property covers 1,071,750 hectares in the Interior Platform region south of Great Bear Lake. A re-evaluation of regional geophysical data, conducted by an independent expert in early 2011, resulted in the identification of numerous additional targets located up-ice from the areas of anomalous kimberlite indicator minerals. These targets became the subject of 27 detailed geophysical surveys grids, with additional geochemical sampling and shallow drilling. Soil geochemical sampling was conducted over the targets to test the suitability of the enzyme leach analysis process for prioritizing geophysical targets. A light-weight drill rig was utilized to drill five shallow holes. Kimberlite was intersected in three of the five holes drilled into four previously untested targets. Additional drilling is planned for this winter upon receipt of the results. Twenty-six kimberlite discoveries have been made to-date with several bearing microdiamonds. Exploration costs for 2011 on the HOAM Project are \$1,055,868.

**Peregrine Diamonds Ltd.** continued exploration on its Lac de Gras East and West properties. The East property consists of 63 mineral claims covering approximately 61,000 hectares, located 300 kilometres northeast of Yellowknife and the West property consists of 40 mineral claims covering approximately 34,000 hectares, located 275 kilometres northeast of Yellowknife. During 2011, the Company undertook ground magnetic geophysical surveys and legal claim surveys as part of an exploration program to follow-up to geophysical work performed in 2008. The program had anticipated expenditures of approximately \$500,000 in the Lac de Gras region for 2011.

**Rio Tinto Exploration Canada Inc.** started exploring the Banks Island area in the summer of 2010, following-up on promising results from kimberlite indicator mineral chemistry out of samples previously collected by **Diamond North Resources Ltd.** and **Majescor Resources Inc.** The Banks Island Project is located on the northeast tip of Banks Island, 240 kilometres northeast of Sachs Harbour. It consisted of 25 mineral claims and about 32 prospecting permits totalling 598,911 hectares just to the east of Aulavik National Park.

The 2010 program involved a 35,900 line-kilometre airborne geophysical survey, a regional heavy mineral concentrate stream sediment sampling. The program resulted in the staking of 158 additional claims in 2011. The exploration program planned to continue the stream sediment and surface sampling for this year. An airborne geophysical survey, about half the size of the 2010 survey, would be flown to complete the aeromagnetic coverage of the area. A small reverse circulation compressed air drill rig would also be mobilized to test high-priority targets identified from the 2010 airborne magnetic survey. Camp construction at Johnson Point has proceeded but results from the exploration program have not been released.

In 2011, **Talmora Diamond Inc.** held eleven prospecting permits (175,565 hectares) and 175 claims (22,171 hectares) in the Horton River area, south of Paulatuk in the Northwest Territories. Talmora has kimberlite indicator mineral analyses from the Horton River Project suggesting that the KIMs from the Diamondex's Lena West project were initially transported and deposited as Cretaceous sediments from east of the Lena West area. Talmora postulates that additional transportation step has meant that those highly promising indicator minerals originated from the area that it now holds. Additional staking and a limited exploration program were carried out in August 2011.

**Table 1:** Summary of NWT diamond exploration in 2011

Operator / Partners	Property	Drilling	Airborne Geophysics	Ground Geophysics	Sampling and Other Work
De Beers Canada Inc. (51%) and Mountain Province Diamonds Inc. (49 %)	Gahcho Kué	1 RC hole (ca. 750m)	1,198 Gravity		
Mountain Province Diamonds Inc.	Kennady North		2,793 km Gravity		
Rio Tinto Canada Exploration Inc./GGL Resources	CH	3 RC holes			205 till samples, 6 claims surveyed
Harry Winston Diamond Mines/ North Arrow Minerals Inc./Springbok Holdings	Lac de Gras				Surficial Mapping
Olivut Resources Ltd.	HOAM	5 ddh		27 Detailed Mag and EM surveys	Enzyme Leach Geochem Sampling
Peregrine Diamonds Ltd.	Lac de Gras			Detailed Mag surveys	Claims surveyed for lease requirements
Talmora Diamond Inc.	Horton River				Till Sampling, Staking of additional claims
Rio Tinto Canada Exploration Inc.	Banks Island	(?) RC Air holes	Ca. 18,000 km		Stream Sediment sampling, 158 claims staked

grav – gravity, ddh – diamond drill hole, RC – reverse circulation, Mag – magnetic, EM - electromagnetic

## ***Metal Exploration***

The locations of metal exploration programs are shown in Figure 2.

In February 2011, **Aben Resources Ltd.** optioned the right to staking on prospecting permits in the Mackenzie Mountain area from **Eagle Plains Resources Ltd.**, in addition to two properties, the Hit and Justin (Sprogge) projects in the eastern Yukon. The option was granted for 5,000,000 shares and a cash payment of approximately \$150,000 with a 3% net smelter return on any staked properties in the permit area. A field program was mobilized in June on the newly named Selwyn Recce Gold Project. The program included geological mapping, regional prospecting, geochemical surveys and geophysical surveys. Eighteen high-priority targets that had been previously identified were the focus of the efforts. In total 7368 soil samples, 681 rock samples, 668 silt samples, 14 heavy mineral bulk samples, and 51 petrographic analysis samples were collected. The results will be reported in a geological report to be completed by mid-December 2011.

Based on Eagle Plains' data and the exploration work Aben Resources conducted this summer, an additional 59,652 hectares were staked in the NWT and the Yukon. Much of this ground extends east of the ATAC Resources' Rau and Osiris gold zones in the Yukon. The area has garnered considerable attention recently with the discovery of Carlin-style mineralization in the Yukon at **ATAC Resources'** Osiris gold zone. The new claims are being examined for Carlin-type gold deposits, carbonate-hosted and sedimentary-exhalative ("sedex") style silver-lead-zinc deposits as well as sediment-hosted copper deposits.

**Avalon Rare Metals Inc.** has made substantial progress on its plans for mining the Nechalacho deposit. The deposit, located on the north shore of Great Slave Lake, 100 kilometres southeast of Yellowknife, contains a number of rare earth element enriched zones. The work has been towards defining the metallurgical process flowsheets for the Nechalacho heavy rare earths ore. A 3.7 tonne continuous pilot scale concentrate production run was conducted at SGS Minerals, Lakefield, Ontario. The recoveries reported were 89.7 percent for zirconium oxide, 79.5 percent for all rare earth oxides, 68.9 percent for niobium oxide and 63 percent for tantalum oxide. The locked cycle tests on the Basal Zone sample gave higher than predicted recoveries for  $Ta_2O_5$  and  $Nb_2O_5$ , at an average of 74.3% and 73.9% respectively, similar recoveries for REE at an average of 78.5% and lower recoveries for  $ZrO_2$  at an average of 83.8%. The concentrate production run also gave slightly higher  $Ta_2O_5$  and  $Nb_2O_5$  recoveries at 65.4% and 69.7% and lower REO recovery at 73.1% and  $ZrO_2$  recovery at 82%.

Hydrometallurgical tests were also conducted on the concentrate derived from the 3.7 tonne production run sample. The hydrometallurgical process is comprised of two main steps, an acid bake to initially break down the rare earth minerals most susceptible to chemical attack followed by a caustic crack of the residue of those minerals most resistant

to chemical attack, mainly zircon, followed by recovery and precipitation of the rare earths,  $\text{ZrO}_2$ ,  $\text{Nb}_2\text{O}_5$  and  $\text{Ta}_2\text{O}_5$ . Bench scale tests to optimize these processes are continuing.

The drill program completed in mid-October was designed to generate the 40 tonne bulk sample for metallurgical testing, utilizing a large diameter PQ drill rig. The bulk sample comprises 20 tonnes of Upper Zone and 20 tonnes of Basal Zone mineralization, which has been shipped to SGS Minerals for a full-scale pilot plant trial scheduled to begin in late November or early December, 2011. A total of 137 holes covering a length of 26,203 metres were completed in 2011. In addition to bulk sample collection, geotechnical drilling using an NQ diameter drill rig completed test drilling to identify a ramp route and proposed underground crusher location as well as, hydro-geological drilling at the proposed tailings disposal site. An updated resource estimate for the Nechalacho deposit is not yet available.

Additionally, Avalon Rare Metals has been notified by the Mackenzie Valley Environmental Impact Review Board that the Developers Assessment Report for the Nechalacho Project is in conformity with the Terms of Reference, allowing the project to proceed to an Environmental Review. Drilling is scheduled to resume at the site in 2012, with the objectives of detailed drilling to define the five-year mine plan, and acquisition of additional bulk sample material. Avalon has retained SNC-Lavalin to complete a feasibility study for its Nechalacho Project, as they move into their final stage of project evaluation and preparation prior to commencing construction. Avalon plans to have a bankable feasibility study for the project completed by the end of 2012, with projected production by 2015.

**Boxxer Gold Corp.** has terminated the option agreement with **Champlain Resources Inc.** on their Gordon Lake Gold property located approximately 110 kilometres northwest of Yellowknife, NWT. Champlain Resources failed to complete the expenditures for the earn-in requirements of the agreement. In 2010, mapping, prospecting and channel sampling of the Syn zone were completed with seven samples returning values from 0.16 grams per tonne gold (g/t Au) to 34.8 g/t Au.

**Bullmoose Mines Ltd.** has continued exploration at the Bullmoose Mine located 65 kilometres southeast of Yellowknife. Camp construction in 2010 accompanied a small prospecting and sampling program. The company applied for a land use permit to conduct an extended test mining operation program. The operation is intended to process existing surface ore stockpiles, identified by the sampling program.

In the southern Mackenzie Mountains, **Canadian Zinc Corp.**'s exploration of the Prairie Creek zinc-lead-silver project is advancing. The mine has measured and indicated resources of 5.84 million tonnes grading 10.71% zinc, 9.90% lead, 0.326% copper and 161 grams per tonne silver (g/t Ag). Inferred resources add 5.54 million tonnes grading 13.53% zinc, 11.43% lead, 0.514% copper and 215 g/t Ag. This summer, a two-fold

exploration drilling program was undertaken; 26 shallow holes (3125 metres) were drilled with a Longyear rig, directed at vein and stratabound targets in the immediate mine area, and a TM-2500 drill targeted deeper more distal extensions of the vein with four holes and wedges (2513 metres). Promising results from the shallow drilling include a new area of stratabound mineralization that was intersected within 150 metres of existing underground workings and new vein intercepts above the current mineral resource. Drill hole 190 returned intersections of 2.60 metres of 1.61% lead, 7.15% zinc and 12 g/t Ag and 2.70 metres of 3.56% lead, 8.84% zinc and 26 g/t Ag. Hole 196 returned a 7.52-metre interval grading 8.78% lead, 5.07% zinc, 138 g/t Ag and 0.258% copper, while Hole 193 cut 1.50 metres of 7.34% lead, 8.70% zinc, 263 g/t Ag and 0.650% copper. The last of the 2011 results were reported in February 2012 including high grade intersections from PC-11-209A with 2.54 metres of 20.18% lead, 9.93%, 239.4 g/t Ag and 0.341% copper; and from PC-11-210A with 3.89 metres of 25.78% lead, 9.01% zinc, 161.9 g/t Ag and 0.144% copper. The 210A drill hole intersected another high-grade zone separated by 4 metres of barren rock. Holes 209A and 210A were testing the potential vein extension, south of and outside the NI 43-101 resource.

The longer drill holes were cored in the Casket Creek area, about 2.5 kilometres to the north of the Prairie Creek Mine. These holes continued the 2010 deep drilling program to test for the down-plunge extension of mineralization and in a 1.6 kilometre step-out were directed towards a vein/structural target near the axis of an anticlinal fold. The structure was identified in drillhole PC-10-187 and a wedge hole (PC-11-187W2) intersected the vertical continuation of the fault structure 50 metres below the earlier intercept. The PC-11-187W2 intercept was 3.5 metres wide, and assayed 11.47% Zn, 5.26% Pb and 84 g/t Ag. However, this intersection occurs in lithologies that are stratigraphically located well above the primary host rock units found at the mine. Drillhole PC-11-206, was designed as a deeper undercut to intersect the structure 250 metres lower, preferably within the host lithologies found at the mine. As of the end of October, the hole had reached a depth of 1,365 metres, approximately 230 metres short of the target. The winter season forced suspension of the 2011 drilling program but it is planned to complete the hole in 2012 drilling season.

Canadian Zinc received approval in December 2011 from the Mackenzie Valley Environmental Impact Review Board for the Prairie Creek project to proceed to the regulatory phase for approvals by the Mackenzie Valley Land and Water Board. Pending another step of approval, construction of the zinc, lead, silver mine could begin in 2013, for 20 years. Canadian Zinc intends to upgrade the mill to 1200 tpd capacity; upgrade existing mine site facilities; and building new water treatment, paste backfill plant, dense media separation plants and other facilities at the mine site. In addition, the company intends to construct a waste rock pile in Harrison Creek valley, redesign and build a second water storage pond, and work on the existing winter access roads. When in full production, the Prairie Creek Mine is expected to produce 100 million pounds of zinc, 90 million pounds of lead and 2 million ounces of silver per year. Canadian Zinc estimates

the mine will provide full-time jobs for about 220 people once it is in full operation.

Canadian Zinc closed a \$4 million second and final tranche, in February 2012, of the previously announced non-brokered private placement with Zhongrun International Mining Co. private placement. The Chinese company now holds a 9.62% investment in Canadian Zinc. The first tranche of the private placement was made December 30, 2011 for gross proceeds of \$6 million.

**Coltstar Ventures Inc.** expanded its 170 kilometre long property in the Mackenzie Mountains to include 114 mineral claims and one prospecting permits covering 1126 km<sup>2</sup>. Located 190 kilometres west of Norman Wells, the Mackenzie Mountains property is underlain by both the Rapitan Formation and Coates Lake Groups. During July, Fugro Airborne Surveys completed a helicopter-borne magnetic survey of approximately 4400 line kilometres, at a 300-metre line spacing. The survey outlined two 10 kilometre-long magnetic anomalies, extending from drilled iron formation on **Chevron Corp.**'s Snake River (Crest) iron ore deposit onto Coltstar Venture's ground to the south. Patterson, Grant and Watson, consulting geophysicists, conducted a structural and lithological interpretation of the airborne geophysical data. Preliminary analysis of the geophysical data identified a number of anomalous areas for follow-up. Aurora Geosciences Ltd. conducted a ground exploration program over the Mackenzie Mountains property consisting of geological mapping, ground magnetic and susceptibility measurements and the collection of chip and rock samples. Copper-bearing boulder trains were identified but no results have been reported.

**Coltstar Ventures Ltd.** also identified and staked the Purple Onion Lead-Zinc-Silver property within the Misty Creek Embayment of the Selwyn Basin, which is located 150 kilometres south of its Mackenzie Mountains property. Purple Onion property consists of 44 claims spanning about 30,000 hectares and covering a 24 kilometre-long geochemical anomaly identified in a NTGO/GSC silt geochemical survey. Preliminary prospecting identified areas with abundant boulders coated in secondary zinc minerals and large expanses of bright green zinc moss.

**Devonian Metals Inc.** reported the results of eighteen diamond drill holes totaling 4,697 metres in March 2011, from about 15 kilometres southwest of Wrigley. A resource calculation was prepared in April 2010 prior to the drilling, concluded that the Wrigley deposits host an indicated resource of 230,000 tonnes grading 7.36% Zn, 2.26% Pb, and 12.97 g/t Ag, and an inferred resource of 2,830,000 tonnes grading 7.11% Zn, 1.70% Pb, and 10.19 g/t Ag at a 4% combined zinc plus lead cutoff. The geological setting is the carbonate middle Devonian Nahanni, Headless and Landry formations and the ore bodies are strongly fault-controlled. No fieldwork was conducted in 2011 and a new resource calculation is anticipated.



**Diamonds North Resources Ltd.** delineated two Iron Oxide Copper Gold targets on their Hepburn property east of Great Bear Lake, defined by a culmination of Induced Polarization survey with associated regional magnetic and radiometric anomalies, follow-up prospecting with attention to alteration and mineralization, and compilation of existing geophysical, geochemical and structural data. The two IP anomalies define east west zones, separated by 500 metres; the South being 2.5 kilometres long by 200 metres wide target, and the North being 2 kilometres long. A program of twenty-four line kilometres of IP and 61 samples were completed in 2011. Grab samples collected between 2006 and 2011 from the South Zone returned values up to 19.8% Cu, 123.0 g/t Ag, 0.43% U and 0.17% Bi and 0.28 g/t Au. The North Zone returned, from grab samples taken 2006-2011, up to 40.2% Cu, 1129 g/t Ag, 0.3% U and 0.64 g/t Au. The North Zone alteration including magnetite, sericite and chlorite make up a 500 metre wide zone. Full interpretation and modeling of the IP data is underway to better define drill targets.

**Fortune Minerals Ltd.** has submitted its Developers Assessment Report to the Mackenzie Valley Environmental Impact Review Board for the NICO gold, cobalt, and bismuth project, located in the southern Bear Province, 160 kilometres northwest of Yellowknife. The report suggests that the NICO project with its proven and probable mineral reserves of 31 million tonnes averaging 0.91 g/t Au, 0.12% Co, 0.16% Bi, and 0.04% Cu will provide, up to 233 full-time jobs during early years of operations when the underground and open pit parts of the mine are both in operation, and 127 jobs during open pit operations. The ore will be processed at the rate of 4,650 tonnes per day in a mill at the site and 180 tonnes of bulk concentrate will be shipped daily to the proposed hydrometallurgical refinery near Saskatoon for additional processing. During the 18-year operating mine life, the NICO project will contribute approximately \$128 million per year to the Gross Domestic Product (GDP) of the Northwest Territories and will contribute \$24 million per year in revenues to the federal and territorial governments. Total GDP for the entire operational phase of the project will amount to approximately \$2.3 billion. Recently, Fortune Minerals signed a Co-operative Relationship Agreement with the Tlicho Government in order to collect traditional knowledge critical to understanding the project impacts.

Additionally, a small winter and summer program were completed at the NICO mine site that included condemnation drilling beneath the NICO mill and camp site, geotechnical drilling at the proposed NICO airport site, and environmental monitoring. Six tonnes of underground ore were submitted for testing by SGS Lakefield. Highlights of the mini-pilot plant test, late in 2011, include a simplified ore process flowsheet with only one cyanide circuit for gold recovery reducing capital costs and increasing recoveries expected for gold from 73 % up to 76% and cobalt from 83% up to 84%. A pressure acid leach process prior to gold recovery mitigates risk of recovery losses from ores containing Au-Bi-Te alloys that can otherwise be refractory.

**GGL Resources Corp.** granted an option to **Emerick Resources Corp.** for a 75% interest in the Providence Greenstone Belt claims but due to current market conditions the option was terminated by Emerick in January 2012. The claim group of over 113,311 hectares lie within an area 120 kilometres long by up to 30 kilometres wide. In 2011, a geochemical orientation till sample survey was completed at the King John gold discovery where gold assays have been obtained from sporadic outcrops over a strike length of 500 metres. A survey grid was established and 319 till samples were submitted to Acme Labs for analysis. Work was also conducted on the Lord Cache gold discovery this fall, where a 12 metre-wide mineralized zone was mapped and prepared for channel sampling along the length of its exposure. Three other gold showings, the Noble Count, Area 130 and Area 1026 were also visited with Aurora Geosciences Ltd. An NI 43-101 report is in progress for the gold properties and several volcanogenic massive sulfide targets with copper-zinc-lead-silver and gold mineralization.

**International Lithium Corp.** (a subsidiary of **TNR Resources Ltd.**) continued to consult with local communities on their Moose Lithium Project, near Thor Lake, 115 kilometres east-southeast of Yellowknife. The meetings and site visits were part of the permitting process for a drill program. In 2010, a program of mapping and channel sampling was initiated to outline high-grade lithium and tantalum zones on the Moose 1 and Moose 2 pegmatite dikes. Ground magnetic and HLEM surveys were also completed. Spodumene crystals up to 4 metres in length have been observed in the Moose 2 pegmatite, which has a strike length of 427 metres and a width of 25-30 metres. A channel sample returned 1.50 wt%  $\text{Li}_2\text{O}$  over 7.5 metres and a grab sample returned 8.44 wt%  $\text{Li}_2\text{O}$ .

**Kalgoorlie Mining Company**, (formerly **US Nickel Ltd**) is currently reviewing its options the Snowbird Project, consisting of two blocks of claims (Kasba and Wendy) comprising 214 km<sup>2</sup>, located 625 kilometres northwest of Thompson, Manitoba. After planning for a drill program in 2011, the Kagoorlie Mining has decided to re-focus its efforts, with the successful acquisition of the Bullant Gold Project in Australia. It is currently looking to divest itself of the Snowbird nickel and gold Project

In December 2011, **Manson Creek Resources Ltd.** shovelled snow off outcrops to sample historic areas of trenching of the Uptown Gold project, located adjacent to the past producing Giant Mine, Yellowknife. Five gold-bearing zones in Archean granodiorite are known to occur on the 3,388 hectare property, adjacent to the Yellowknife greenstone belt. Work in the 1960's largely focused on gold-bearing quartz veins; while the new focus will be hydrothermally altered host granodiorite. Results of 13 rock samples from the previously trenched Rod and J Group include: 9 samples from the Rod which returned an average grade of 11.2 g/t Au with two high-grade grab samples returning 49.6 and 19.2 g/t Au and 4 samples from the J Group averaged 0.13 g/t Au. High-grade zones occur within broader haloes of lower grade mineralization. In January 2012, **Manson Creek** entered into an option to acquire 100% with **Panarc Resources**.

**Merc International Minerals** substantially expanded their property position in the Indin Lake region during 2011-2012. With the inclusion of the Damoti Lake Gold Project and Colomac mine, Merc International controls the majority of the Indin Lake Greenstone belt. In January 2011, an option agreement to acquire a 100% interest in 15 mining leases and 3 mining claims located within the Indin Lake Greenstone Belt, approximately 210 kilometres north-northwest of Yellowknife, was announced. This was followed by the announcement of the staking of 107 additional mining claims to link the optioned claims.

Several gold deposits and showings lie within this belt, the most significant being the past producing Colomac open pit gold mine. Under the option agreement Merc International acquired the Treasure Island and the Laurie Lake gold showings, the North Inca, Diversified, and Lexindin deposits. In the staking program, a number of gold showings were also acquired including the Fishhook, Andy Lake, West Cass, Knob Lake, JPK, Pop Gold, Swamp Gold, McMeekan Gold, Echo-Indin Gold, Lucky Lake, and Goose Lake showings.

In March, Merc International initiated the Phase 1 drill program. A total of 4319 metres were drilled in 17 holes with 5 drill holes at Treasure Island, 7 drill holes at Diversified and 5 drill holes at North Inca. From the Treasure Island results assay highlights included 12.59 g/t Au over 1.25 metres including 31.1 g/t Au over 0.5 metres from TI11-01. From the Diversified drilling an assay result of note was 7.23g/t Au over 11.75 metres, including 11.38 g/t Au over 7.40 metres from drill hole DV11-02C and from North Inca assay highlights include 6.86 g/t Au over 26.0 metres, including 44.34 g/t Au over 3.45 metres from drill hole NI11-02; Visible gold was reported in eleven of the seventeen Phase 1 holes and all holes intersected gold mineralization.

Following breakup in June, Merc International resumed drilling with the initiation of the Phase 2 program intended to extend known areas of mineralization and identify new gold zones between Diversified and North Inca shafts. Gold mineralization was intersected within and beyond the 1.2 kilometre section of the Leta Arm Corridor. Phase 2 consisted of 26 holes (7610 metres) including 16 holes (4898 metres) at North Inca, 9 holes (2475 metres) at Diversified and 1 hole (237m) at Lexindin. Eleven of the twenty-six holes were reported to contain visible gold mineralization. Two near-surface high-grade zones were intersected in step out holes of the #3 deposit, 400 metres south of Diversified Mine, and extended gold 250 metres north of the North Inca deposit. Highlights from the 26 holes include 65.35 g/t Au over 3.0 metres and 5.20 g/t Au over 12.9 metres including 22.12 g/t Au over 2.85 metres from DV11-09, 1.14 g/t gold over 33.77 metres and 8.84 g/t Au over 5,50 metres including 18.2 g/t Au over 2.44 metres from NI11-06, 6.08 g/t Au over 16.90 metres, including 22.07 g/t Au over 3.44 metres from hole NI11-04, 9.25 g/t Au over 3.73 metres, including 49.60 g/t Au over 0.67 metres from hole NI11-05C; and 14.03 g/t Au over 3.20 metres, including 40.90 g/t Au over 0.50 metres from hole DV11-04B.

A surface sampling and prospecting program was also conducted during the summer, concentrating on six main target areas. Highlights from the six main targeted areas

include:

Echo-Indin: surface sampling reports three assays greater than 30.0 g/t Au.

Zone 4: quartz-carbonate veins assayed up to 8.81 g/t Au.

Zone 8: silicified basalts assayed up to 35.40 g/t Au.

Johnson Island: veins assayed up to 13.85 g/t Au and 7.93 g/t Au.

Zones 1, 2, 6 and 10: anomalous assay results are also reported for surface samples.

JPK Gold Property: iron formation hosted mineralization assayed up to 12.10 g/t Au.

In January, 2012, Merc completed the acquisition of a 100% interest in the past producing Colomac gold mine, from Aboriginal Affairs and Northern Development Canada, within the central part of the belt, bringing the property total to 94,701 hectares. Part of the agreement with the Federal government includes the remediation of small historic exploration sites up to a cost of \$5 million dollars. In late February, Merc announced an initial NI 43-101 Inferred Resource for Colomac of 1.446 million ounces of gold or 42.65 million tonnes of ore with an average grade of 1.05 g/t gold, using a Block Model cut-off grade of 0.6 g/t gold. This includes the five deposits of: Colomac Dyke North, Colomac Dyke Central, Colomac Dyke South, Dyke Lake (Goldcrest North) Goldcrest, Grizzly Bear, and 24/27. No Measured, Indicated Resource or Mineral Reserves of any category were identified in the calculation. The Colomac Dyke deposit was mined intermittently between 1990 and 1997 with a historical production reported as 527,908 ounces (18,100kg). The dyke is mineralized along seven kilometre strike length. The site was remediated and all mining equipment, processing equipment and infrastructure was removed from the site. Merc intends to commence a winter 2012 drill program to expand known zones of mineralization and begin reclamation of historic sites.

**Minerals and Metals Group (MMG) (Now acquired by Minmetals Resources Ltd.)**

continued work at the Izok Lake copper, zinc, lead and silver deposit. The current resource at Izok Lake is reported to be 14.8 million tonnes at 12.8% zinc, 2.5% copper, 1.3% lead and 71 g/t silver. Much of the 2011 program was focused in Nunavut to investigate alternative concentrate transport options and optimize mine throughput for both underground and open pit options. Forty-two diamond drill holes totaling 15,108 metres were completed utilizing two drill rigs. The drill program tested various electromagnetic (EM), magnetic, gravity, and geological targets, in particular to the south of the main deposits in Nunavut. Downhole EM surveys and oriented core measurements were performed on all drill holes. Results of the drilling were encouraging with several new intersections of stringer mineralization and a few narrow 1-2m intervals of zinc-rich, massive sulphides. Significant intercepts include:

- HEN-471 from 228.54m cut 11.26m of 4.07% Cu, 3.73% Zn, and 60 g/t Ag.
- HEN-468 from 301.38m cut 90cm of 30% Zn, 2.06% Pb, and 69 g/t Ag.
- HEN-453 from 209.09m cut 2.45m of 22.8% Zn, 4.48% Pb, and 216 g/t Ag.

A 3D-IP survey was carried out by S.J. Geophysics on favorable stratigraphy extending southwest of the deposits. The survey was successful in seeing structural features to depths

of 400m and emphasized several high chargeability zones. A gravity survey was carried out by Quadra Surveys in order to interpret stratigraphy and define drill targets. Approximately half of the IP survey and a third of the gravity were on claims in the NWT. An area immediately south east of the deposits was mapped in detail and a structural analysis of drill holes south of the Inukshuk Zone was carried out by SRK Consulting. A total of 89 till samples were collected and results are pending for heavy mineral concentrates. MMG's objective is to evaluate all options by mid 2011 and clearly define the scope required to commence the permitting process by the end of 2011.

**Nanika Resources Inc.** attempted to examine and document approximately 55 known mineral showings and occurrences documented in assessment reports and the NTGO minerals showing database (Normin) on their 30 claims (24,166 hectares). The Rivett Lake Property is located approximately 30 kilometres southwest of the Snap Lake Diamond mine and 200 kilometres northeast of Yellowknife. The focus was on VMS base and precious metals and on mafic-hosted Cu-Ni, as well as diamond potential. In 2010, Nanika contracted Special Projects Inc. to complete 5800 line-kilometre, low-level, high-resolution airborne magnetic surveys, with 50-m spaced lines. Three anomalous gold values: 1.3, 2.1 and 5.4 g/t Au were returned from the Hart Lake West showing this year.

**Platinum Group Metals Ltd.** purchased the Providence (Credit Lake) copper-nickel-cobalt property from **Arctic Star Exploration Corporation** (Formerly **Arctic Star Diamond Corp.**) for \$50,000 and a 1% NSR royalty. The property located 44 kilometres southwest of Ekati, includes 13 mineral claims totaling 13,366 hectares that cover the 21 kilometres long mafic to ultra-mafic volcanic belt. Platinum Group's immediate plans for the property are to bring it to lease status and utilize the winter season to review and model all of the extensive project data. The winter road season will also be used to mobilize supplies to the exploration camp for a drilling campaign in the spring and summer 2012.

**Novus Gold Corp.** maintained the REN gold property at Point Lake, approximately 90 kilometres southwest of the formerly producing Lupin gold mine. The property contains several known iron formation-hosted gold showings, including the REN showing, which had been drilled by Texas Gulf, Echo Bay and Westview Resources. Exploration activities at REN in 2010 consisted of 14 drill holes, helicopter borne VTEM (time-domain electromagnetic) and a sampling program. No fieldwork was reported in 2011.

**Seabridge Gold Inc.** has followed the 2010 \$15 million exploration program with a \$16 million exploration project in 2011, at its Courageous Lake property, approximately 240 kilometres northeast of Yellowknife. The Courageous Lake Project consists of 27,263 hectares covering 53 kilometres length of the Courageous Lake greenstone belt. The greenstone belt hosts several past-producing gold deposits in addition to Seabridge Gold's FAT deposit in a rhyolitic to dacitic dome complex. An updated NI 43-101 resource (January 2012) for the Courageous Lake project increased the measured and indicated resource to 18% or nearly 8.0 million ounces of gold. The new model includes a

measured resource of 13.4 million tonnes at 2.53 g/t Au and an indicated resource of 93.9 million tonnes grading 2.28 g/t Au, using a 0.83 g/t Au cutoff. This includes the 52 diamond drill holes totaling approximately 15,000 metres from the 2011 program.

The 2011 exploration program consisted mainly of diamond drilling to meet a number of purposes: upgrade inferred resources in the FAT deposit pit plan with infill drilling; complete geotechnical drilling for pit slope and water management planning; condemnation drilling where facilities are to be located; and test additional targets in the greenstone belt. Noteworthy intersections include 36.3 metres grading 4.14 g/t Au, 19.5 metres grading 4.60 g/t Au, 30.5 metres grading 3.11 g/t Au and 11.3 metres grading 7.34 g/t Au. The program confirmed a significant expansion of measured and indicated resources of Zone 8 within the FAT deposit. Significant drill results from Zone 8 in of the last 12 drill holes reported includes intersections of 15.5 metres grading 5.86g/t Au and 5.0 metres grading 8.21 g/t Au.

In June, Seabridge Gold released the results of an independent Preliminary Economic Assessment. An open pit mining operation with 17,500 tonnes per day operation (6.4 million tonnes per year throughput) was modeled, resulting in a projected 16 year operation. The average annual production of 383,000 ounces of gold will be at a life-of-mine average cash operating cost of US\$599 per ounce recovered (US\$536 in years 1 to 5). Start-up capital costs for the project are estimated at US\$1.26 billion, including a contingency of US\$192 million. The total cost of gold production (including cash operating costs and total capital costs over the life of the mine) is estimated at US\$850 per ounce. The 2011 infill drilling, engineering studies and environmental work are intended to raise the Preliminary Economic Assessment to the level of a Preliminary Feasibility Study for release in early 2012.

**Selwyn Chihong Mining Ltd.** (formerly **Selwyn Resources Ltd.**) is exploring the Howards Pass area of the Mackenzie Mountains. The Selwyn Project is composed of 14 zinc-lead deposits and zones over a strike length of 37.50 kilometres. The bulk of the Selwyn Project is located in eastern Yukon, extending southeast across the border into the Northwest Territories. The global Indicated mineral resources for 2011 are 180.69 million tonnes grading 5.25% zinc and 1.83% lead for a metal content of 20.91 pounds of zinc and 7.33 billion pounds of lead. The Inferred mineral resources for 2011 are 216.04 million tonnes grading 4.47% zinc and 1.38% lead for a metal content of 21.29 billion pounds of zinc and 6.57 billion pounds of lead. Exploration in 2011, consisting largely of drilling in Yukon, was designed to upgrade the inferred mineral resources in the XY Central, XY West and Don deposits to the indicated category. The latest (Sept 12, 2011) NI 43-101 compliant indicated mineral resource for the XY Central deposit 93, 94 and 95 lenses has an Indicated mineral resource of 29,936,000 tonnes grading 6.35% zinc and 2.69% lead at a base case 2.0% zinc cut-off grade. The estimate for the Don deposit is an Indicated mineral resource of 36,901,600 tonnes grading 5.63% zinc and 2.11% lead. The revised mineral resource estimate is based on the addition of 195 drill holes in 2010 and 2011, totalling 68,155.0 metres that were distributed between definition, exploration, and

condemnation drilling. Site preparation and geotechnical work for infrastructure was also undertaken. In the Northwest Territories, road construction and minor sampling were conducted.

**StoneShield Capital Corp.** signed an option agreement for the Risby Copper properties with **Andesite Capital LLC.**, in December 2010. The Risby Copper project, located within the Mackenzie Mountains about 180 kilometres west of Norman Wells, consists of 93 claims totaling approximately 36,033 hectares. The southern claim blocks are located at the northern boundary of the Redstone copper/silver deposit owned by **Copper North Mining Ltd.** (Formerly Western Copper Corp.). The Redstone and Risby Copper properties include many showings with stratabound copper characteristics. Early in the summer, StoneShield Capital conducted community visits in Tulita and Norman Wells and visited the Keele River exploration camp to assess camp conditions and also performed assessment work on five claims in the vicinity of the camp. A second trip based out of the Coates Lake camp, was used to map and sample portions of 29 claims for assessment purposes. In mid-October, StoneShield Capital Corp. announced that it would not be pursuing the option agreement on the Risby Copper property.

**Strategic Metals Ltd.** explored the western Yukon for Carlin-style gold systems. Their Midas Touch project consists of a 100% interest in the Misty claims located in the Northwest Territories and a 100% interest in the Crag, Hag, Nad, Rod, Sceptre, Staff, Stag and Wand mineral claims located in the Mayo Mining District, Yukon Territory. These claims cover 980 km<sup>2</sup> of the Rackla Gold District, where **ATAC Resources Ltd.** has discovered Carlin-type gold mineralization at its Osiris prospect. Strategic Mineral's claims lie within a belt of carbonate-bearing off-shelf stratigraphy that is more than 225 kilometres long and up to 20 kilometres wide. Initial results from more than 12,500 soil and silt geochemical samples (largely collected in Yukon) have returned sizeable geochemical anomalies in a number of areas. Preliminary prospecting has discovered three new zones of strong orpiment/realgar mineralization considered indicative of the Carlin-style mineralization.

**Strongbow Exploration Inc.** continued its evaluation of the 7,642 hectare Nickel King project located in the southeastern corner of the Northwest Territories, approximately 135 kilometres northeast of Stony Rapids, Saskatchewan. The Nickel King Ni-Cu-Co sulphide deposit consists of two stacked, south dipping norite sills, which have been traced over a strike length exceeding 2,600 metres. Metallurgical studies indicate the deposit is amenable to traditional processing techniques and capable of producing a final concentrate with grades of 16.5% Ni, 4.2% Cu and 0.74% Co at recoveries of 78.4% Ni, 89.1% Cu and 63.5% Co. An NI 43-101 compliant (June 2, 2010) resource of 11.11 million tonnes grading 0.4% Ni, 0.10% Cu and 0.018% Co in the indicated category and 33.06 million tonnes grading 0.36% Ni, 0.09% Cu and 0.018% Co in the inferred category has been derived with identified extensions to the Nickel King deposit outside of



the current resource model. No fieldwork was conducted in 2011, but an application for a land use permit was submitted to the Mackenzie Valley Land and Water Board.

**Tamerlane Ventures Inc.** continued their exploration of the Pine Point area, on the southern side of Great Slave Lake. Over \$5 million was spent on engineering, geotechnical drilling, confirmation drilling and freeze ring test holes. This year, the drilling program continued in order to upgrade the 36 historical deposits to the NI 43-101 measured and indicated resource categories. A total of 10 holes consisting of 1,307 metres of drilling were completed on the W-85 deposit; several of the drill holes were used to confirm the margins of the deposit and check for potential extensions. A few highlights of mineralized intersections, reported in November 2012 with true widths, included: 6.45 metres averaging 3.00% Pb and 5.26% Zn from drill hole W85-11-TV10; 14.05 metres averaging 1.35%Pb and 5.74% Zn from drill hole W85-11-TV12; and 7.90 metres averaging 2.56% Pb and 4.88% Zn from drill hole W85-11-TV17. Higher grade intersections from drill holes TV13,14 and 16, which required a different method of analysis, returned significant results including: 18.8 metres averaging 11.15% Pb and 10.57% Zn from drill hole W85-11-TV16 including a 1.3 metre intersection averaging 43.15%pb and 29.2%Zn. Drill Hole W85-11TV13 returned two significant intersections including: 7.4 metres averaging 8% Pb and 14.95% Zn; and 11.2 metres averaging 10.43%Pb and 17.93%Zn. Including historical data, a total of 211 drill holes, 20,925 metres have been drilled in the W-85 deposit. In the NI 43-101 February technical report on the N-204 deposit, in-pit resources were converted from indicated resources to diluted probable reserves. The mineral inventory for N-204 includes diluted probable reserves of 12.8 million tonnes ( 2.6% Zn, 0.7% Pb), and diluted in-pit inferred resources of 1.5 million tonnes ( 2.3% Zn, 0.6% Pb), at a cutoff grade of 1.1% combine Pb + Zn. In addition, the R-190 area has a diluted proven and probable reserve of 7.8 million tonnes (6.26%Zn, 3.01% Pb,) and measured and indicated resources of 8.0 million tonnes (2.26%Zn1.13%Pb). The current plan is to first develop and mine the R190 deposit, which contains reserves of 1,000,027 tonnes at a grade of 11.16% Zn and 5.49% Pb. Reserves and resources from the N-204 deposit will provide an additional 5 years mine life to the existing 8 years currently targeted for the Pine Point Project. Construction of the R-190 facilities to mine and process ore is expected to commence as soon as a project financing package is arranged and closed. An updated technical report released February 17, 2012 covers construction, development and mining and confirms that the Pine Point project is economically feasible.

On July 29, 2008, the Mackenzie Valley Land and Water Board issued Tamerlane a Type "A" land use permit pertaining to the completion and construction of the main mine site at the R-190 deposit location. On April 24, 2009, Tamerlane received notice that the Federal Minister of Indian and Northern Affairs has approved and signed the project's Water License. Agreements have been signed with key First Nation and other aboriginal groups. All permits remain current.

Eighty kilometres north of Yellowknife, **Tyhee Gold Corp.** (Formerly **Tyhee Development Corp.**) advanced the Yellowknife Gold Project at Ormsby and Nicholas Lake by working to obtain production permits, update engineering studies, and focusing on identifying additional resources to supplement potential production. A Developers Assessment Report was filed with the Mackenzie Valley Land and Water Board in May, 2011. A Feasibility Study, building on a Preliminary Feasibility Study completed July 2010 was also started, and engineering studies are ongoing. Currently, the Yellowknife Gold Project is projected to have a positive net present value of US\$66.5 million and internal rate of return of 16.2% under conditions of US\$950 gold. Initial capital costs were forecast to be CAD\$170 million including a CAD\$20 million contingency to construct a 3,000 tonne per day mine and mill complex to produce an average of 108,000 ounces per year at cash costs of US\$546 per ounce. The resource calculations (July 22, 2010) suggest that the Ormsby zone contains 3 million tonnes at 3.41 g/t Au (measured) and 7.9 million tonnes at 3.42 g/t Au (indicated), the Nicholas Lake zone has 1.2 million tonnes at 3.81 g/t Au (measured) and 1.5 million tonnes at 3.32 g/t Au (indicated), the Bruce Lake zone has 0.8 million tonnes at 3.64 g/t Au (indicated) and the Clan Lake Main zone 3 million tonnes at 3.64 g/t Au (indicated). Work including geotechnical drilling continued for environmental and metallurgical processing studies.

**Tyhee Gold Corp.** conducted additional exploration drilling and prospecting on their Clan Lake gold property, 40 kilometres north of Yellowknife and 27 kilometres south of the Ormsby zone. Extension of Clan Lake Main Zone was intersected by drilling 500 metres to the southeast of its previous extent. One of the two gold zones discovered late 2010 was also drilled. The Spud Zone occurs 150 to 300 metres southwest of the Main Zone, and initial drilling on this zone reported encouraging results consisting of 1.74 g/t Au over 32.0 metres including 4.75 g/t Au over 10.5 metres in CL171, 5.29 g/t Au over 4.0 metres in CL170 and 2.52 g/t Au over 6.3 metres in CL173. Additional drilling is planned for 2012 to expand this zone and incorporate it into future resource estimates.

**Viking Gold Exploration Inc.** renewed a mineral lease in their Morris Lake gold property, just south of the former Discovery gold mine. The property and recent results are being re-evaluated in order to determine next steps with joint venture partners. Continued exploration of these claims is subject to the joint venture securing a new land use permit. In 2010, three targets were drill tested in nine holes (1,935 metres). Results included 1.5 metres containing 2.6 g/t Au and 1 metre with 0.8 g/t Au.

**Western Copper and Gold Corporation** (Formerly **Western Copper Corp.**) continued a reconnaissance field program at their Redstone property located 290 kilometres southwest of Norman Wells in the Mackenzie Mountains. This year's field program focused on mapping and prospecting portions of the five mineral leases and 16 claims that make up the property. In October, 2011, Western Copper created two subsidiaries: **Copper North Mining Corp.**, and NorthIsle Copper and Gold Inc. As part of the arrangement, Western Copper transferred the Redstone project, as well as, the Carmacks Copper Project, and \$2

million to Copper North in consideration for common shares. Western Copper then changed its name to Western Copper and Gold Corporation.

**WPC Resources Inc.** has been exploring for gold near Quest Lake, 85 kilometres east of Yellowknife. The 2011 field program consisted a series of drill holes designed follow-up on the 2010 prospecting and sampling of six gold-bearing quartz veins zones. Results from this year's program have not been reported. Gold was encountered in all seven holes drilled in the "A" vein during 2010. The highest values consisting of 6.51 g/t Au over 0.33 metres, 6.33 g/t Au over 0.21 metres, 9.18 g/t Au over 0.32 metres, 8.72 g/t Au over 0.63 metres and 16.00 g/t Au over 0.32 metres. Drilling is planned to continue in the winter 2012.

**Table 2:** Summary of Northwest Territories active exploration projects of precious, base and energy metals 2011

<b>Operator / Partners</b>	<b>Property</b>	<b>Commodity</b>	<b>Drilling</b>	<b>Airborne Geophysics</b>	<b>Ground Geophysics</b>	<b>Sampling and Other Work</b>
Aben Resources Ltd.	Selwyn Recce Gold	Au				7368 soil samples, 688 silt samples, 14 bulk samples
Avalon Rare Metals Inc.	Nechalacho (formerly Thor Lake)	REE	137 ddh (26,203 m)			Bulk sample for Metallurgical testing DAR submitted
Canadian Zinc Corp.	Prairie Creek	Pb-Zn-Ag	30 ddh (5638 m)			DAR submitted
Coltstar Ventures Inc.	Mackenzie Mountains/ Purple Onions	Cu-Fe-/ Zn-Pb-Ag		4400 km Mag survey		Mapping and prospecting/44 claims staked
Darnley Bay Resources Ltd.	Darnley Bay	Ni	1 ddh (242 m)			
Diamonds North	Hepburn	Cu-Ag-Au-Bi			24 line km IP	61 samples
Fortune Minerals Ltd.	NICO	Au-Co-Bi	Geotech ddh			DAR submitted
GGL Resources Corp./ Emerick Resources Corp.	Providence Greenstone Belt	Au/ Cu-Pb-Zn-Ag				319 Till Samples and Prospecting
Manson Creek Resources Ltd	Uptown	Au				Prospecting and sampling (13 samples)
Merc International Minerals Inc.	Damoti Lake/Indin Lake	Au	43 ddh (11,929 m)			Mapping and prospecting/107 claims staked
MMG (Minerals and Metal Group)	Izok Lake Mostly in NU	Cu-Pb-Zn			Grav, IP, EM	Mapping
Nanika Resources Inc.	Rivett Lake	Cu-Pb-Zn-Ag-Au; Cu-Ni				Sampling
Seabridge Gold Inc.	Courageous Lake	Au	48 ddh (ca 15,000 m)			Prelim Economic Assessment
Stoneshield Capital Corp.	Risby Copper	Cu				Sampling and Prospecting
Strategic Metals Ltd.	Midas Touch (Misty Claims)	Au				Stream and soil sampling, Prospecting

**Table 2** continued

<b>Operator / Partners</b>	<b>Property</b>	<b>Commodity</b>	<b>Drilling</b>	<b>Airborne Geophysics</b>	<b>Ground Geophysics</b>	<b>Sampling and Other Work</b>
Tamerlane Ventures	Pine Point	Zn-Pb	10 ddh (1307 m)			
Tyhee Gold Corp.	Clan Lake/ Ormsby/ Nicholas Lake	Au	23 ddh Clan, 13 ddh Ormsby			DAR Submitted
Western Copper Corp. (Now Copper North Mining Corp.)	Coates Lake	Cu				Mapping and prospecting
WPC Resources Inc.	Quest Lake	Au	ddh			Prospecting and trench sampling
Diamonds North Inc.	Hepburn	Cu, Ag,Bi, Au			IP Survey	Prospecting and Sampling

Mag – magnetic, EM - electromagnetic, IP – induced polarization, VLF-EM – Very Low Frequency electromagnetic survey, HLEM – Horizontal loop electromagnetic survey, TEM - time-domain electromagnetic survey, PGE - platinum group elements, ddh-Diamond Drill Hole, Grav – Gravity, VTEM – Vertical TEM, REE – Rare Earth Element

## **FURTHER INFORMATION**

Further information on mining and mineral exploration can be obtained from the following persons:

**Karen Gochnauer**, *District Geologist, Indian & Northern Affairs Canada, Northwest Territories Geoscience Office, P.O. Box 1500, 4601-B 52nd Avenue, Yellowknife NT, X1A 2R3*  
867 669-2637  
[karen\\_gochnauer@gov.nt.ca](mailto:karen_gochnauer@gov.nt.ca)

**Hendrik Falck**, *District Geologist, Indian & Northern Affairs Canada, Northwest Territories Geoscience Office, P.O. Box 1500, 4601-B 52nd Avenue, Yellowknife NT, X1A 2R3*  
867-669-2481  
[hendrik\\_falck@gov.nt.ca](mailto:hendrik_falck@gov.nt.ca)

**Rose Greening**, *NWT Mining Recorder, Indian & Northern Affairs Canada, P.O. Box 1500, 4914 - 50th Street, Yellowknife, NT, X1A 2R3*  
[greeningr@inac.gc.ca](mailto:greeningr@inac.gc.ca)