

**DEVELOPMENT OF THE NEW AFTON COPPER GOLD MINE
ON A FORMER MINESITE IN THE AGRICULTURAL LAND RESERVE
KAMLOOPS, BC**

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ABSTRACT

New Gold Inc. is developing the underground New Afton Copper-Gold Mine on the site of the former Afton open pit mine. The Project is located 10 km west of Kamloops, B.C. in the traditional territory of the Secwepemc Nation. Development of the mine involves construction of a new mill and tailings disposal facility separate from the former mining infrastructure. Because the amount of land to be disturbed fell below the EA threshold, the Project was not a reviewable project under the *Environmental Assessment Act*. Although deemed non-reviewable, the Project's review and approval as a major mine under the *Mines Act* required First Nations and public consultation as well as extensive environmental studies. The review process was coordinated through the regional multi-agency South Central Mine Development Review Committee, a committee of government agencies and First Nations who guided the Terms of Reference and consultation process. The property is located in the ALR such that one focus of the reclamation and closure plan is to return the land to an agricultural potential to support agricultural production.

INTRODUCTION

New Gold Inc. is developing the underground New Afton Copper-Gold Mine on the site of the former Afton open pit mine. The Project is located 10 km west of Kamloops and 350 km northeast of Vancouver, in the Thompson-Nicola Region of the South-Central Interior of British Columbia. New Afton is located in the traditional territory of the Secwepemc Nation, home of the Tk'emlups Indian Band and Skeetchestn Indian Band. The Project lies within the Interior Plateau subdivision of south-central B.C., at about 720 m asl. The area's complex geology, glacial history and continental, semi-arid climate have given rise to a varied regional landscape.

The Project is well-positioned with respect to modern and efficient transportation, utility, and business support infrastructure. Electricity, water, natural gas, highways, and rail all traverse the Project area. The fast growing City of Kamloops (population 80,000), the centre for commerce in south central British Columbia, currently supports an active mining region which includes the Highland Valley Copper Mine as well as numerous mine contractors and suppliers.

The New Afton mineral deposit contains a mineral resource of 65.7 million tonnes grading 1.02% copper, 0.77 gram/tonne gold, and 2.59 gram/tonne silver, yielding approximately 680 million kilograms of copper and 45.4 million grams of gold. New Gold Inc. is developing the Project as a mechanized underground bulk mining operation with a 12-year mine life with production commencing in late 2009.

Prior to the arrival of early Canadian prospectors, the New Afton site was used by aboriginal people as evidenced by the discovery of several stone artifacts within the Project area. In 1978, Teck Corporation officially opened the Afton Mine, which produced until 1991. Operations involved open pits, waste rock dumps, a tailings pond and a processing facility which, for a brief period, included a copper smelter. DRC Resources Corporation re-staked the Afton property in 1999 and conducted extensive exploration between 1999 and 2003, demonstrating an extension of the Afton orebody at depth. New Gold Inc. completed a N.I. 43-101 compliant Feasibility Study in mid-2007. The company applied for a *Mines Act* Permit in January 2007 and was granted the Permit on October 30, 2007, allowing commencement of mine construction (New Gold Inc., 2007; Province of British Columbia, 2007).

As this is a former mine site, much of the Project area has been greatly altered such that the original natural undulating grasslands and numerous small, alkaline waterbodies formed on till-covered drumlinoid terrain have been replaced by features such as rock dumps, open pits, and compacted borrow areas. The dominant waterbodies are now due to mining-related impoundments. The Project's location on a site with historic mining activity provides the opportunity to minimize the environmental footprint of the operation and build on the experience of past operators to design effective land reclamation strategies.

The New Afton Mine includes a new mill and tailings disposal facility separate from the former mining infrastructure. The waste rock from the underground operation will be minimal and will be deposited in the bottom of the existing Afton Pit which will be allowed to flood at closure. Tailings will be deposited in the southeast of the mining lease area and in the adjacent Pothook Pit.

Production is scheduled to commence at the end of the 24 month construction schedule. Construction of the mine will require a peak workforce of up to 550 people, and once production commences in 2009, a full time workforce of about 250 will annually mine and process up to 4 million tonnes of ore over a 12-year mine life.

THE MINE REVIEW PROCESS

During the scoping study phase of the New Afton Project, New Gold Inc. sought to establish clarity on how the project would be reviewed and granted approval. A valid *Mines Act* Permit, issued to Afton Operating Corporation, existed for the site and much of the proposed development encompasses lands which have been previously disturbed by mining. Government's reference to the site as a brownfield¹ was intended to acknowledge past operations, although related reclamation was well advanced. Reclamation completed by the previous operator supported grazing and wildlife uses. The key question was: What is required in light of the fact that the proposed mine is on a former mine site? In August 2005, the B.C. Environmental Assessment Office (EAO) reviewed the Project scope. The EAO asked the following questions to determine the reviewable status:

¹ Brownfield: The term brownfield as used in the context of a mine indicates the presence of past mining operations and the landscape and effects of those operations and facilities independent of liability status. In B.C. a brownfield minesite may be substantially restored to support natural ecological functions.

- (i) Was an existing *Mines Act* Permit in place?
- (ii) Was the site an existing facility that had not permanently ceased operations or been abandoned?
- (iii) Will production capacity be 75,000 tonnes or more per year?
- (iv) Will modification result in disturbance of (i) at least 750 ha of land that was not previously permitted for disturbance, and (ii) an area of land that was not previously permitted for disturbance that is at least 50% of the area of land that was previously permitted for disturbance at the existing facility?

While the answers to the first three questions were affirmative, the project did not meet the conditions as set out in question (iv), because it was projected to result in substantially less new land disturbance than the stated thresholds. Hence, it was concluded that the New Afton Project was not a reviewable project under the *Environmental Assessment Act* (Environmental Assessment Office, 2005). It was determined, however, that the review would proceed as a major mine under the *Mines Act* and would be co-ordinated by the Ministry of Energy, Mines and Petroleum Resources (the “Ministry”). Other significant permits required included Waste Discharge Permits under the *Environmental Management Act* and a Water Licence under the *Water Act*. Since the Project area is within the Agricultural Land Reserve (ALR) and falls under the *Agricultural Land Commission Act* (ALC); an application also had to be made for approval for non-farm use.

In early 2006, when the Project commenced review, the Ministry had just initiated a requirement for such projects to require a detailed Terms of Reference approved by the applicable Regional Mine Development Review Committee (RMDRC). New Afton was the first project in B.C. to implement this requirement, and proceeded down this path of defining the scope and content of the Terms of Reference.

The Ministry’s review process was coordinated through the multi-agency South Central Mine Development Review Committee (the “Committee”). This Committee had the benefit of involving agency representatives from provincial, federal, and local governments with local knowledge, along with First Nations, in guiding the Project Terms of Reference.

The Committee approved the Project Terms of Reference in August, 2006, following six months of development, which included a public review and comment period and an open house (New Gold Inc., 2006). New Gold Inc. submitted the Mine Permit Application to the RMDRC on January 12, 2007. A 30-day formal review period ensued, during which public consultation and review took place, and more formal consultation commenced with the Kamloops Division of the Secwepemc Nation as represented by the Tk’emlups Indian Band and Skeetchestn Indian Band. At the conclusion of the review, the Committee prepared a Recommendation Report for submission to the Chief Inspector of Mines for a permit decision. On October 30, 2007, the Chief Inspector issued *Mines Act* Permit M-229 authorizing construction of the New Afton Mine.

In August and September, 2007, the Agriculture Land Commission Regional Commissioners visited the Project site as part of an application to have the ALR lands within the Mining Lease designated for non-

farm use within the ALR. The ALC subsequently approved the application after being satisfied that a comprehensive post-mining closure plan would re-establish suitable agriculture capability for the site.

New Gold Inc. and the Kamloops Division of the Secwepemc Nation, as represented by the Tk'emlups Indian Band and Skeetchestn Indian Band, signed a Participation Agreement in March, 2008 (New Gold Inc., 2008). Implementation of the Agreement will realize substantial economic, educational, employment, and social benefits for all parties over the life of the mine and for many years into the future.

Once the environmental studies for the Project were well-advanced and a draft Application for the Mine Permit prepared, the Canadian Environmental Assessment Agency (CEAA) coordinated a screening of the Project by the federal agencies. The screening determined that there were no federal triggers.

In summary, the steps in the *Mines Act* Mine Permit Application Review Process were generally parallel to the EAO major project review process, namely the establishment of a project description and approved terms of reference; First Nation, agency and public consultation; and submission of a formal Application for review and approval.

ENVIRONMENTAL ISSUES AND GAP ANALYSIS

Although the Project occurs on a former mine site and did not require an *Environmental Assessment Act* review, environmental baseline studies were required. The studies undertaken considered both the natural and anthropogenic landscapes. The two primary landscape types, as shown on Figure 1, superimposed on the existing land ownership, are:

- areas extensively disturbed (reconfigured and/or reclaimed) as a result of past mining activities and infrastructure development; and
- undisturbed landforms which are similar to those that existed prior to the development of the original Afton Mine and consist of Ponderosa Pine – bunchgrass vegetation interspersed by discontinuous alkaline waterbodies and ephemeral drainage altered by grazing land use.

Prior to the development of the Project Terms of Reference, New Gold Inc. and its consultants undertook a review of the site environmental issues and conducted a gap analysis of biophysical information for the site (Rescan Environmental Services Ltd, 2006). The issues assessment and gap analysis, based on 124 researched references, assisted in the design and effort level for new baseline field studies. This process ensured that the assessment of the Project effects on the environment acknowledged current values and past mining history, and it enabled subsequent study effort to be effectively informed and focused on the key issues, including: conservation of water in a semi-arid landscape; identification and management of listed animal and plant species; heritage resources; long-term productive capacity of ALR lands; invasive plants; air quality - in particular, fugitive dust management; and final closure and reclamation.

The gap analysis determined that a comprehensive major mine review in 2006 would involve a substantially larger scope for previous study components, as well as new studies not previously undertaken when the original Afton Mine was permitted in 1978. These included: groundwater modelling, ecosystem mapping, a metal leaching and acid-rock drainage assessment, an archaeological

impact assessment, a soil capability assessment, a socio-economic impact assessment, and a visual impact assessment.

ENVIRONMENTAL ASSESSMENT STUDIES

The Terms of Reference for the *Mines Act* Permit Application guided environmental studies for the Project. The studies included: climate studies, air quality, meteorology; noise; emissions analysis; surficial geology, topography, terrain, and soils; surface water quality and quantity; groundwater quality and quantity; hydrological modelling for water balance management; pit lake bathymetry; aquatic biological resources including fish and fish habitat, wetlands, and physical limnology; terrestrial ecosystems and vegetation; invasive plants; wildlife, including species at risk; land status and use; land capability; archaeology; metal leaching and acid rock drainage; Kamloops Lake water pipeline assessment; socio-economic profiling; and impact assessment of all environmental components.

All baseline studies were implemented in accordance with provincial data collection guidelines, where



Figure 1: New Afton Landscape Types

applicable, and generally accepted scientific procedures. In accordance with Permit M-229 requirements and approved management plans, several monitoring programs are continuing and include: surface and groundwater quality and quantity, air quality (dustfall measurements), metal leaching and acid rock drainage kinetic tests (humidity cells and leach pads), and wildlife observations.

A number of features of the Project environmental setting are worthy of note as they are important considerations in the design of environmental management programs, including those which will be implemented during operations and as part of post-closure and reclamation. Environmental baseline studies were undertaken on the Project site between April and December, 2006.

Meteorology and Air Quality: The semi-arid Project area has an average annual evaporation rate exceeding precipitation rates by about 340 mm annually. Dust is the main air quality concern and specific measures will be implemented to reduce the potential for dust emissions on the New Afton site.

Hydrology: The Project design will ensure that there is no surface water runoff from the site and that all groundwater on the site will collect in the Afton Pit and underground mine workings after closure; hence, there will be no surface discharge from the site during or after operations. The groundwater modelling predicts that all seepage will remain on the site draining to the Afton pit. Surface and groundwater quality and quantity monitoring will occur during mining and after closure until the reclamation objectives have been met.

Fish: The Mining Lease area does not contain any fish populations or fish habitat.

Wildlife: Seventy wildlife species have been encountered including: 10 mammals, 53 birds, 4 herptiles, 1 reptile, and 2 bats. Two toad species are listed as at risk and will require specific management plans.

Vegetation: Eighty-seven plant species were identified although no rare ecological plant communities were confirmed. Four species of invasive plants and noxious weeds will require specific management plans.

Archaeology: Two new sites were encountered during the Archaeological Impact Assessment. Recognizing that parts of the Mining Lease unaltered by past mining and infrastructure have moderate archaeological potential, a Chance Find Recovery Procedure has been implemented to respond to any new discoveries.

Metal Leaching (ML) and Acid Rock Drainage (ARD): Studies undertaken in accordance with the Provincial guidelines for assessment and prediction of metal leaching and acid rock drainage potential determined that the tailings storage facility is highly unlikely to generate ARD. All waste rock, most of which has no ML or ARD concern, will be placed within the Afton Pit to ensure confinement and control.

FIRST NATIONS

The Tk'emlups Indian Band and the Skeetchestn Indian Band were initially contacted by the Company in February, 2006, to introduce the Company to the Bands and present information on the New Afton Project. Since then, over two dozen meetings have taken place pertaining to information on the Project and the Bands' concerns and needs related to the development and operations. During the First Nations communication process, issues, values, and questions were raised by both the Tk'emlups Indian Band and Skeetchestn Indian Band. The Bands actively reviewed the environmental baseline studies and the mine components and provided comments on the Project Terms of Reference.

In September 2006, Letters of Intent (LOIs) were signed reflecting agreements between New Gold Inc. and the Tk'emlups Indian Band and the Skeetchestn Indian Band. These documents focus on sharing information, partnerships, and fostering a relationship between each Band and the Company within which issues, concerns, and needs can be addressed as they arise and mutual goals realized. An initial New Afton First Nations Committee ("NAFNC"), comprising members from the First Nations and the Company, was established with the goal of meeting regularly throughout the mine life to review the LOIs and activities arising from it.

Following the issuance of *Mines Act* Permit M-229 enabling New Gold Inc. to commence construction of the mine, the Company continued to meet regularly with both bands in order to facilitate all groups in achieving their mutual goals. The discussions culminated on March 18, 2008 with signing of a Participation Agreement between the parties and the establishment of a Joint Implementation Committee between the Company and First Nations to oversee the execution of the Agreement.

A number of conditions of *Mines Act* Permit M-229 directly address Secwepemc interests and needs. One of these involves the establishment of the New Gold Environmental Monitoring Board (NGEMB). The Monitoring Board provides advice to the Chief Inspector on environmental management and monitoring, reclamation, and closure activities of the New Afton Mine. The Board is chaired by a representative of the Ministry and operates within Terms of Reference and Operating Procedures established by the Chief Inspector in consultation with the Board. The NGEMB consists of five members comprising representatives from the Ministry of Energy, Mines and Petroleum Resources, Ministry of Environment, Tk'emlups Indian Band, Skeetchestn Indian Band, and New Gold Inc. The activities of the Board which had its inaugural meeting in April, 2008 are supported by the Company.

LAND OWNERSHIP, INTERESTS, AND RECLAMATION

A key requirement of the provincial agencies to enable New Gold Inc. to advance the permitting of the New Afton Project was a complete understanding of all land ownership and interests within the site that may be affected by the Project. The Ministry of Energy, Mines and Petroleum Resources, as the Crown's statutory authority overseeing reclamation of past mining lands, also needed to be satisfied that any and all liabilities attached to lands required by the New Afton Mine Permit, would be transferred and upheld as part of surface ownership transactions between New Gold Inc. and third parties.

Early in the development of New Afton, DRC Resources Corporation, and subsequently New Gold Inc established a comprehensive mineral tenure position encompassing the lands needed for development. A detailed survey of surface land ownership and rights-of-way was undertaken and formed an integral aspect of mine plan design, reclamation planning, and interest-based negotiations. In addition to lands within the traditional territory of the Secwepemc Nation, key lands and land authorizations requiring purchase or attention in advancing the mine included: Crown-granted mineral claims, fee simple lands owned by Teck-Cominco Ltd., Crown land, Sugarloaf Ranch lands, ALR land, grazing leases, *Mines Act* Permit M-112, provincial highway right-of-way, Canadian Pacific Railway right-of-way, oil pipeline right-of-way, B.C. Hydro transmission line right-of-way, natural gas pipeline right-of-way, Teck-Cominco and third party access agreements, and adjoining subsurface mineral rights. The surface land status of the New Afton Project area is shown in Figure 2.

Teck-Cominco Ltd., through Afton Operating Corporation, holds *Mines Act* Reclamation Permit M-112 over the former Afton Mining leases. Significant reclamation has occurred on the site and many lands now support cattle grazing and wildlife values. Up to the end of 2004, a total of 439 ha of land had been re-contoured and re-seeded out of a total disturbance of 679 ha (Afton Operating Corporation, 2005). Much of the land had achieved the reclamation objectives. There were approximately 20 ha of non-reclaimed disturbed lands and approximately 66 ha of reclaimed disturbed lands were well on their way to achieving the objectives but required more time for vegetation growth, improvements in soil capability, or management of invasive plants. New Gold Inc. agreed to take on full liability for the reclamation of these lands, satisfying the Ministry's requirements, to enable the New Afton project to proceed.

DEVELOPING A VISION FOR POST MINE CLOSURE

Reclamation objectives for the Project are part of the *Mines Act* Permit conditions. A prominent land use in the area is cattle grazing on a landscape dominated by grasslands. As the land is in the ALR, a focus is to return land capability for agricultural production. Open grasslands are also an important habitat for species at risk, and parts of the area will be suited for wildlife use. The final end land use will be to develop grasslands which can be used for grazing. The final reclamation plan will also include wildlife considerations such as appropriate fencing and the development of shelter areas for various birds and small mammals. Native plant species will enter, with time, areas that are less managed and access to wetlands for herptiles will be a feature of wildlife management.

Soil and till salvage materials will be moved, stockpiled, and stored on the site during the construction and operation phases to be used for final reclamation. This will include soils to be salvaged and conserved from previously reclaimed areas as well as areas not previously disturbed. Soil management and reclamation plans have been developed which provide a prescription on how the soils will be handled, spread, and monitored to ensure successful reclamation.

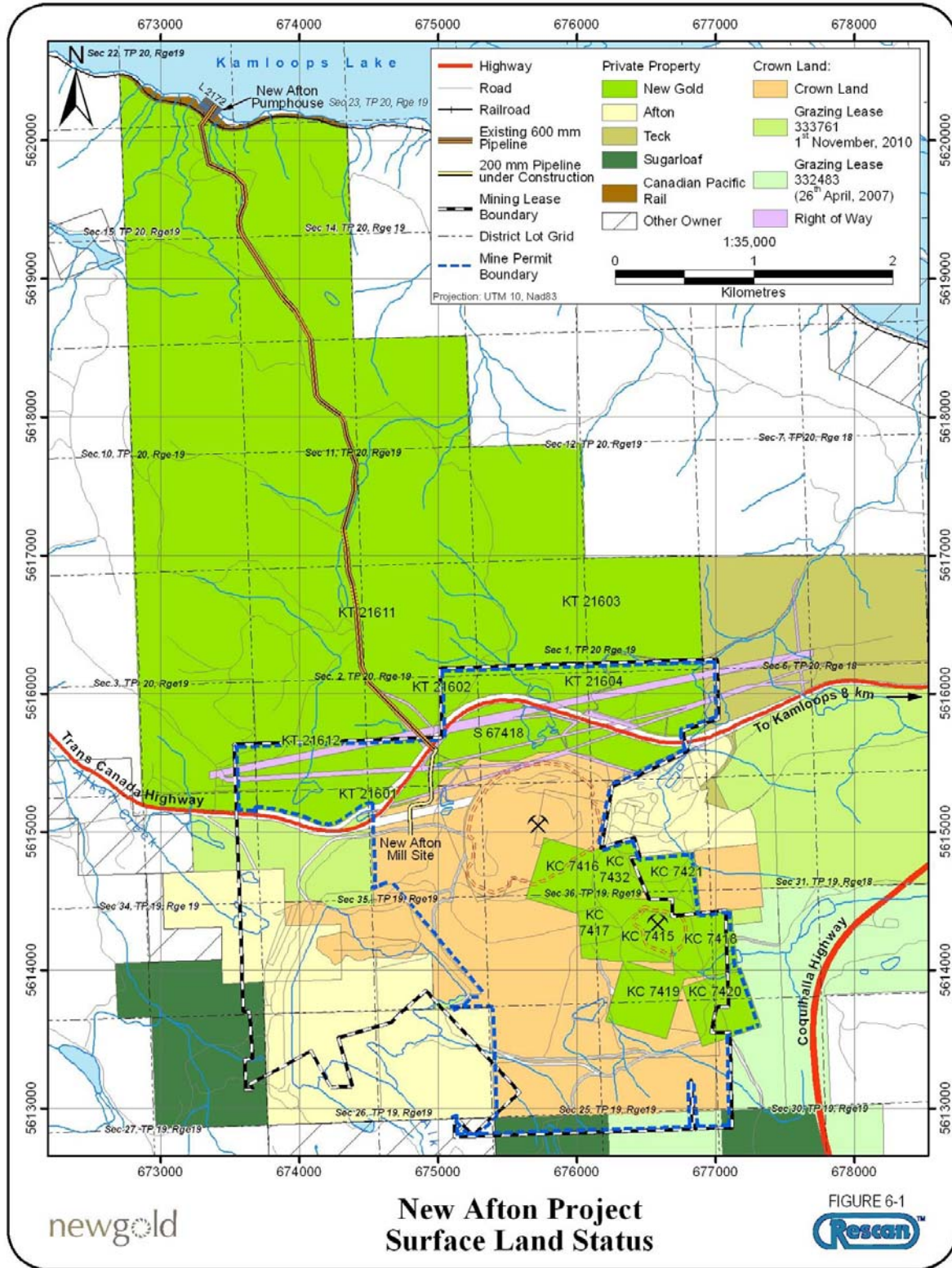


Figure 2: New Afton Project Surface Land Status

The Pothook Pit will be filled with tailings from the mine operation, allowed to consolidate and the surface reclaimed. Upon closure, the plant facilities will be removed and the tailings storage facility closed. The reclamation program will see a total area of 154 ha of land reclaimed and nearly 600,000 m³ of soil and till salvaged and re-applied as rooting medium for vegetation. A number of features of the post mine closure environment will be the focus of effort to establish the long-term mine legacy:

- Surface and groundwater containment - The New Afton mine site will be operated to achieve a zero surface water discharge and groundwater containment within the Mine Permit area.
- Control of wind-blown and water soil erosion - Sufficient till and soil will be stockpiled during construction and operations to enable aggressive reclamation post-closure. These stockpiled materials will be fertilized and seeded with a grass/legume mixture suited to the dry climate to prevent wind and water erosion while stockpiled and will be again seeded following their use in reclamation. The tailings dam faces will be stabilized with xeric-tolerant vegetation and soil binders to prevent wind-blown and water erosion. The roots of the established vegetation will anchor the dam surface materials and add organic matter to promote a sustainable, self seeding, vegetative surface. Other exposed surfaces will also be seeded with a dryland grass/legume mixture to minimize wind and/or water erosion.
- Restoration of agricultural capability through grazing land use without reliance on irrigation inputs - The tailings facility surface will be reclaimed to support grazing land use and/or hay production. This will involve the application of a soils cover. The soils will be spread, cultivated, and seeded with a dryland mix which will provide a good vegetative cover that will be suited to grazing and hay production without irrigation. The Project area has a semi-arid climate and the use of dryland species will be a positive step to a self sustaining system.
- Restoration of wildlife habitat and maintenance of habitat types for listed species - Brush and rocks will be placed in various locations for wildlife habitat and shelter. Native plants will encroach onto reclaimed areas further promoting wildlife habitat and a sustainable ecosystem.
- Utilization of indigenous species, including those of cultural significance to First Nations (M-229 condition) - These will be planted as much as possible. The close relationship with First Nations has provided this opportunity to identify and plan for the inclusion of indigenous species.

CONCLUSIONS

New Gold Inc is successfully developing the New Afton copper gold mine near Kamloops, B.C. The New Afton Project is contained almost entirely on lands which have been subject to historic mining and mineral exploration. The Company's extensive environmental studies ensure that the environmental management plans developed will be effective for this dry interior landscape. The water management plans address concerns raised in relation to water conservation, as there will be no surface discharge from the site and groundwater potentially affected by the project will also be confined to the site.

Development of the New Afton Mine on a former mine site certainly has had its unique challenges, key among these being the identification of the myriad of land owners and interests to be accommodated in development plans. Review of the New Afton Mine under the major mine review process of the *Mines Act* did not lessen the breadth of study scope, however, it did benefit the project by allowing local-based

government regulators to work closely with New Gold Inc. and its representatives to ensure studies were well targeted.

The Participation Agreement between New Gold Inc. and the Secwepemc Nation represented by the Tk'emlups Indian Band and Skeetchestn Indian Band will be a positive force in shaping the future legacy of the Project.

Development of the New Afton Project will positively benefit Kamloops, the Thompson Nicola Region, and British Columbia. New Gold Inc. and its team of consulting engineers and scientists feel confident that the mine will be built, operated, and de-commissioned in a safe and environmentally sound manner.

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