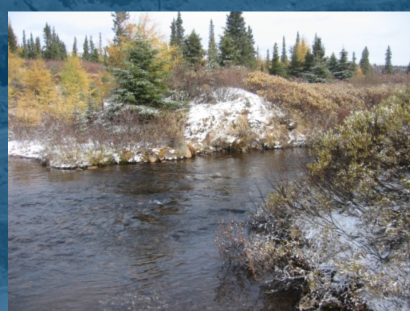
Water Management Plan - Howse

CONCEPTUAL ENGINEERING FOR HOWSE WATER MANAGEMENT PLAN



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Prepared by: Patrick Scholz, Eng., M. Eng.
(Hydrology)

Abdelmounem Benlahcen, géo., M.Sc., Ph.D.
(Hydrogeology Section 4)

Geneviève Beaudoin-Lebeuf, Eng.
(Water Treatment Section 3)

Andrew Peach, P. Geo., EP.
(Monitoring Section 9)

Reviewed by: Marie-Hélène Paquette, Eng. M. Env.

Anh-Long Nguyen, Eng. M.Sc.

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1.0 INTRODUCTION

1.1 Context

Howse Minerals Canada Ltd (HML) plans to mine iron ore within the Howse deposit (Direct-Shipping Ore Howse Property Project) located near the border between the provinces of Quebec and Newfoundland and Labrador, approximately 25 km north of the community of Schefferville, Quebec. One open pit is planned and the anticipated mining period is from 2016 to 2024. Two waste dumps, one overburden stockpile and one topsoil stockpile are also planned for the site (see Map 1 in Appendix B). No tailings will be generated in this area since the majority of the ore will only be crushed and screened on-site, with the ore then being directly shipped for secondary processing.

The Howse property sits on three different watersheds leading to Pinette Lake, Burnetta Creek and Goodream Creek (see Map 2 in Appendix B). The water management strategy aims to manage surface run-off water and pit dewatering water with less impact possible on these three watersheds. In order to maintain a good water quality around Howse property, run-off water on site and dewatering water from the pit will all be managed through several Sedimentation ponds before being released to the environment. In order to address local stakeholders concerns, no water will be discharged into Pinette Lake, even after sedimentation through a pond. The infrastructures planned for water management are the following:

- Run-off from surrounding area on the south-west side of the site will be collected by a ditch leading to Sedimentation pond no. H1 and then diverted to Burnetta Creek;
- Run-off on the east part of the Waste Rock Dump 1, on Waste Rock Dump 2, on the overburden stockpile and on the crushing and screening plant area will be collected by ditches leading to Sedimentation pond no. H2 and then diverted to Goodream Creek;
- Run-off on the west part of Waste Rock Dump 1 and on the topsoil stockpile will be collected by ditches leading to Transfer pond no. 1. The water in the transfer pond will then be pumped to existing Timmins 4 Sedimentation pond 3 and then diverted to Goodream Creek;
- Water from pit dewatering will be diverted to a ditch on the south-west side of the overburden stockpile leading to Sedimentation pond H2 and then diverted to Goodream Creek. The portion of the ditch receiving the dewatering water along the pit will be waterproofed to avoid infiltration of water directly back into the pit;
- Surface runoff in the Howse pit will be diverted to Sedimentation pond H3 and then diverted to Burnetta Creek.

1.2 Content

This technical note summarizes the conceptual design of the Howse project water management infrastructures. First, hydrological base data will be presented. Comments on water quality and information on hydrogeology will then be discussed. The Water Management Plan concept will be presented and options studied before the selection of the preferred option will be discussed. Design of ditches, ponds and water balances will be presented. Potential impacts on natural watersheds will be presented. Finally, the data that need to be collected before the next phase of engineering will be discussed.

Intensity-Duration-Frequency data are presented in Appendix A, maps and drawings are presented in Appendix B and Design criteria are presented in Appendix C. Water quality results from Timmins 4 project are presented in Appendix D.

2.0 HYDROLOGICAL DATA

2.1 Hydrological Data

2.1.1 Meteorological Data Sources

Data recorded at Environment Canada meteorological stations, located close to the Howse mine site, was used to develop a data set representative for the Howse mine site. Data from the following stations was used:

Table 2-1: Environment Canada Meteorological Stations

Station		Latitude North	Longitude West	Elevation [m]	Available Data
Number	Name				
7117825	Schefferville A	54°48'00"	66°49'00"	521.8	1948-2010
7117823	Schefferville A	54°48'19"	66°48'19"	520.9	2012-present
7117827	Schefferville	54°48'00"	66°48'00"	517.2	2005-present
704BC70	Fermont	52°48'00"	66°05'00"	594.4	1976-2004

The Schefferville stations, called Schefferville hereafter, are located approximately 24 km South-East from Howse. Fermont is located approximately 240 km South from Howse. Data from this station was used during the period between October 1993 and December 1995, to fill in some missing data from Schefferville.

2.1.2 Temperature

Average monthly temperature data was computed based on daily data from the Schefferville station for the period of 1949 to 2013 (65 years) and is presented in Table 2-2. During the period between October 1993 and December 1995, no temperature data is available for Schefferville. To fill this gap, data from Fermont was used, with an adjustment of -1.6 C corresponding to the average temperature difference between both stations during their period of concomitant data (July 1976 to September 1993).

Schefferville monthly temperature is above freezing during the months of May to September. July is the warmest month with an average temperature of 12.7 C and the coldest month is January with an average temperature of -23.3 C.

Table 2-2: Schefferville Monthly Average Temperature (1949-2013)

Month	Average Temperature [°C]
Jan	-23.3
Feb	-21.7
Mar	-15.3
Apr	-6.9
May	1.5
Jun	8.8
Jul	12.7
Aug	11.3
Sep	5.9
Oct	-0.9
Nov	-9.0
Dec	-18.5
Year	**-4.6**

An average temperature colder by a degree or two is expected for the Howse mine site as it is located at an elevation approximately 140 m higher than Schefferville.

2.1.3 Precipitation

A daily total precipitation data series, including rainfall and snowfall, was obtained for the period of 1949 to 2013 (65 years). During the period between October 1993 and December 1995, no precipitation data is available for Schefferville. To fill this gap, data from Fermont was used. First cumulated precipitation data from both stations, during their period of concomitant data (July 1976 to September 1993, and January 1996 to December 2013), was compared on a double mass curve. As both stations recorded similar amounts of precipitation, without any jump in the double mass curve, data from Schefferville was filled with data from Fermont, corrected by a factor of 0.96, the ratio of cumulated precipitations between both stations over their concomitant period. Due to the proximity between Howse and Schefferville, the obtained precipitation series is assumed representative for the Howse mine site.

As shown in Table 2-3, the average annual precipitation during the period of 1949-2013 is 782 mm. July is the wettest month averaging 101 mm of precipitation, and February is the driest month with 37 mm of precipitation.

Table 2-3: Monthly Total Precipitation (1949-2013)

Month	Total Precipitation [mm]
Jan	45
Feb	37
Mar	45
Apr	50
May	52
Jun	73
Jul	101
Aug	96
Sep	91
Oct	75
Nov	68
Dec	49
Year	**782**

Annual precipitation varied between 523 mm in 1953 and 1038 mm in 1983. However, over the 65 years period (1949-2013) of available precipitation data, annual precipitation remained relatively stable (Figure 2-1).

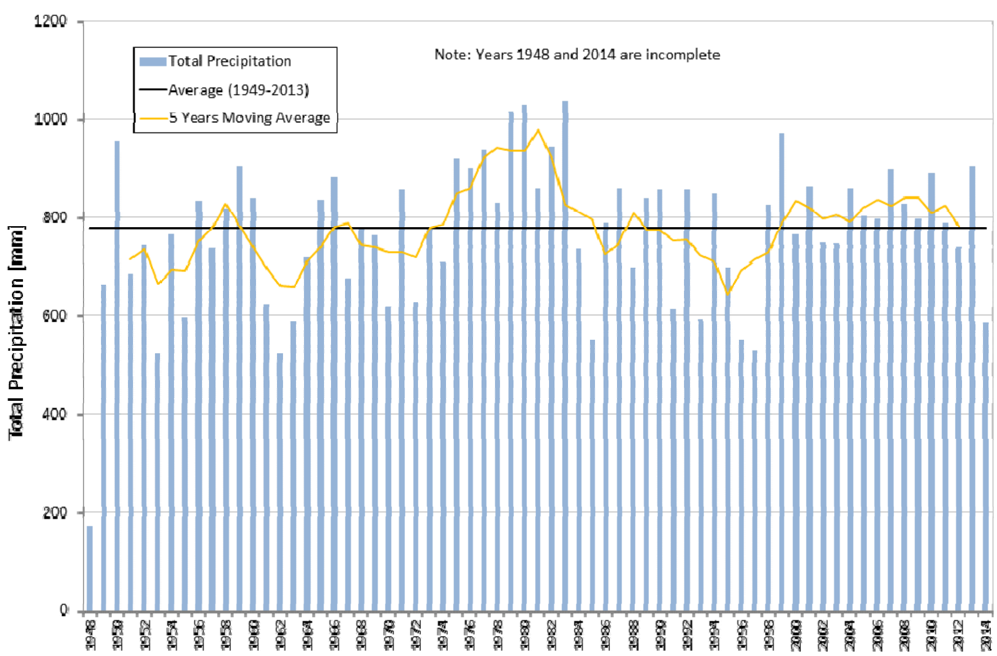

Figure 2-1: Total Precipitation (1948-2014)

A frequency analyses was performed, using the Pearson type 3 probability distribution with the method of moments, to determine annual precipitation for different return periods presented in Table 2-4:

Table 2-4: Annual Precipitation for Different Return Periods

Return Period [year]	Total Precipitation [mm]
1000	1130
100	1050
50	1030
25	994
10	942
5	891
2	787

2.1.4 Rain

Daily rainfall data is available for the period of 1948-1993 from the Schefferville station. To extend the data set to 65 full years (1949-2013), rainfall was derived from total precipitation. Comparing the average annual recorded rainfall with the average annual derived rainfall, during the period 1949-1992, it was determined that precipitation falling during days with an average temperature higher than 1.2 °C would fall in the form of rain. Average monthly rainfall values are presented in the following table:

Table 2-5: Average Monthly Rainfall (1949-2013)

Month	Rainfall [mm]
Jan	0
Feb	0
Mar	0
Apr	5
May	28
Jun	69
Jul	101
Aug	96
Sep	81
Oct	28
Nov	3
Dec	0
Year	**411**

Rainfall hyetographs can be derived from intensity-duration-frequency (IDF) curves. Environment Canada developed an IDF curve for Schefferville based on annual rainfall data for the period 1965-1992. It is assumed that the shape of this curve is representative of rainfall in the Schefferville and Howse area.

To transform the annual IDF curve into spring and summer-fall IDF curves, the following steps were followed. First, the spring season was assumed to happen between May 15th, the approximate date when the average air temperature is over 2 °C, and June 10th, the approximate date when the snow cover is completely melted. Then, frequency analyses were performed for daily spring and daily summer-fall rainfalls presented respectively in Table 2-6 and Table 2-7. In both cases, the Pearson type 3 probability distribution with the method of moments was adopted. Then, daily rainfall values were transformed into 24 h rainfall, by applying a correction factor of 1.13 (WMO, 2009). Then, spring and summer-fall IDF curves were obtained by using the shape of the annual IDF curves and the ratio between annual and seasonal 24 h rainfall for each return period considered. Because it was found that annual values for the 24 h rainfall were larger than the computed summer-fall 24 h rainfall, annual values were retained for summer-fall rainfalls. Finally, daily hyetographs were constructed for different return periods between 2 and 100 years. The central part of these hyetographs is presented in Figure 2-2 and Figure 2-3.

Table 2-6: Spring Rainfall Depth for Different Return Periods

Duration	Return Period [year]					
	2 years	5 years	10 years	25 years	50 years	100 years
	Spring Rainfall Depth [mm]					
5 min	1.4	2.6	3.3	4.3	5.0	5.7
10 min	2.0	3.4	4.3	5.5	6.3	7.1
15 min	2.3	3.9	4.9	6.2	7.1	8.0
30 min	2.8	4.7	5.9	7.4	8.5	9.5
1 h	3.8	5.9	7.3	9.0	10.1	11.3
2 h	5.0	7.5	9.0	10.9	12.2	13.4
6 h	8.4	12.3	14.7	17.5	19.5	21.4
12 h	10.9	16.5	20.0	24.3	27.3	30.2
24 h	13.8	21.8	26.9	33.1	37.5	41.8

Table 2-7: Summer-Fall Rainfall Depth for Different Return Periods

Duration	Return Period [year]					
	2 years	5 years	10 years	25 years	50 years	100 years
	Summer-Fall Rainfall Depth [mm]					
5 min	3.7	5.8	7.2	9.0	10.3	11.6
10 min	5.2	7.7	9.4	11.4	13.0	14.5
15 min	6.1	8.8	10.6	12.9	14.6	16.3
30 min	7.5	10.7	12.8	15.5	17.4	19.4
1 h	10.1	13.5	15.8	18.7	20.8	22.9
2 h	13.4	17.1	19.6	22.7	25.0	27.3
6 h	22.3	28.0	31.8	36.5	40.0	43.5
12 h	29.0	37.7	43.4	50.6	56.0	61.4
24 h	36.8	49.7	58.3	69.1	77.1	85.0

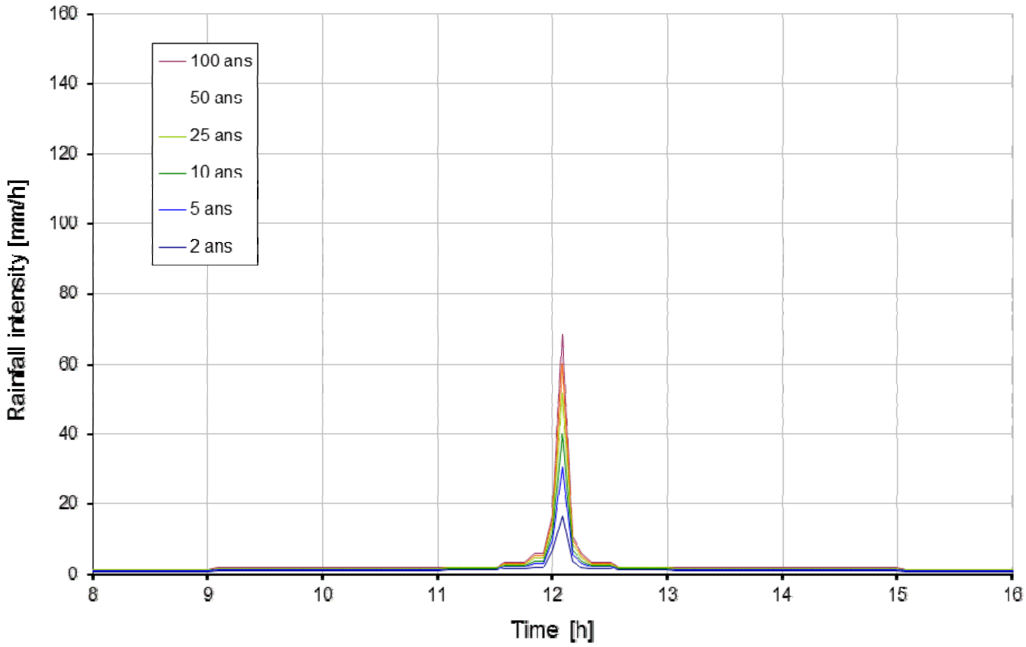

Figure 2-2: Spring Rainfall Hyetographs

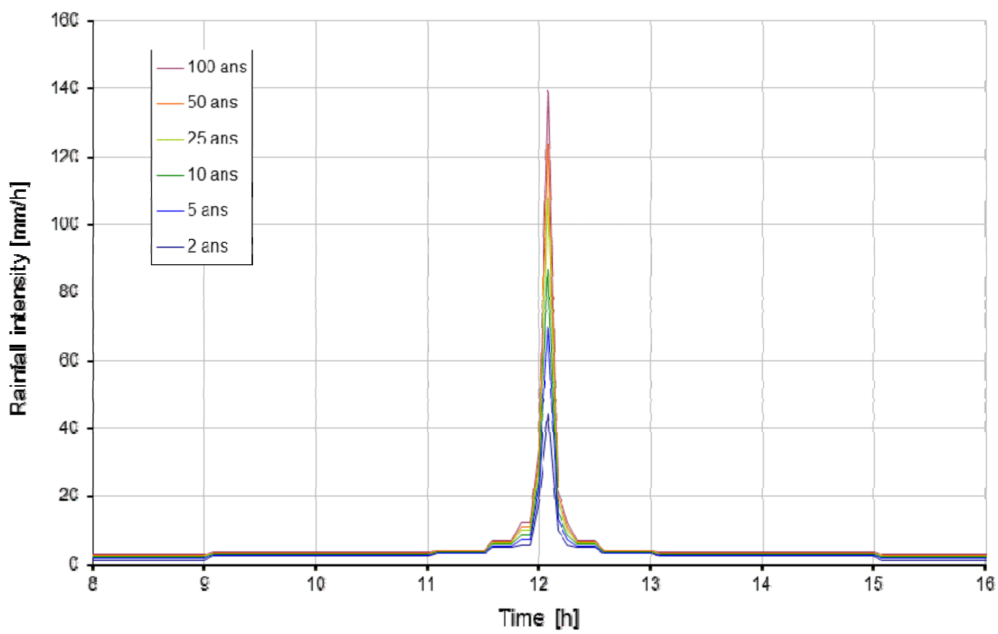

Figure 2-3: Summer-Fall Rainfall Hyetograph

2.1.5 Snow

Daily snowfall data is also available for the period of 1948-1993 from the Schefferville station. To extend the data set to 65 full years (1949-2013), snowfall was derived from total precipitation, by considering only precipitations that happened when the average daily temperature was lower than 1.2 °C. Average monthly snowfall values are presented in the following table:

Table 2-8: Average Monthly Snowfall (1949-2013)

Month	Snowfall [mm]
Jan	45
Feb	37
Mar	44
Apr	45
May	24
Jun	4
Jul	0
Aug	1
Sep	10
Oct	47
Nov	65
Dec	49
Year	**370**

On average, during the period 1949-2013, precipitation in the form of snow represented approximately 47 % of total precipitation.

Snow on the ground data is also available from the Schefferville station for years 1955 to 1993 and 2013 to 2014. Historical annual maximum snow cover depth varied between 43 cm in 1958 and 190 cm in 1977. A frequency analysis, using the Pearson type 3 probability distribution and the method of moments, was performed on snow cover depth to determine the values corresponding to different return periods. To compute the amount of water produced by snowmelt, snow density needs to be assessed. Snow density varies with time and from one year to another. According to Maidment (1993), typical values for settled snow density are 2 to 3 mm of water equivalent/cm of snow. Based on experience with other projects in the same area, a snow cover density of 2.5 mm of water equivalent/cm of snow was estimated for Howse. Those results are shown in Table 2-9.

Table 2-9: Maximum Annual Snow Cover Depth for Different Return Periods

Return Period [year]	Snow Cover [cm]	Snow Cover [mm]
2	100	250
5	128	320
10	144	360
25	163	408
50	175	438
100	187	468

It was determined that snow cover would melt between approximately 20 and 60 days, with an average around 35 days. The average melting time of 35 days was adopted to select a typical snow cover melting sequence, as illustrated for a 25 years return period snow cover on the following figure:

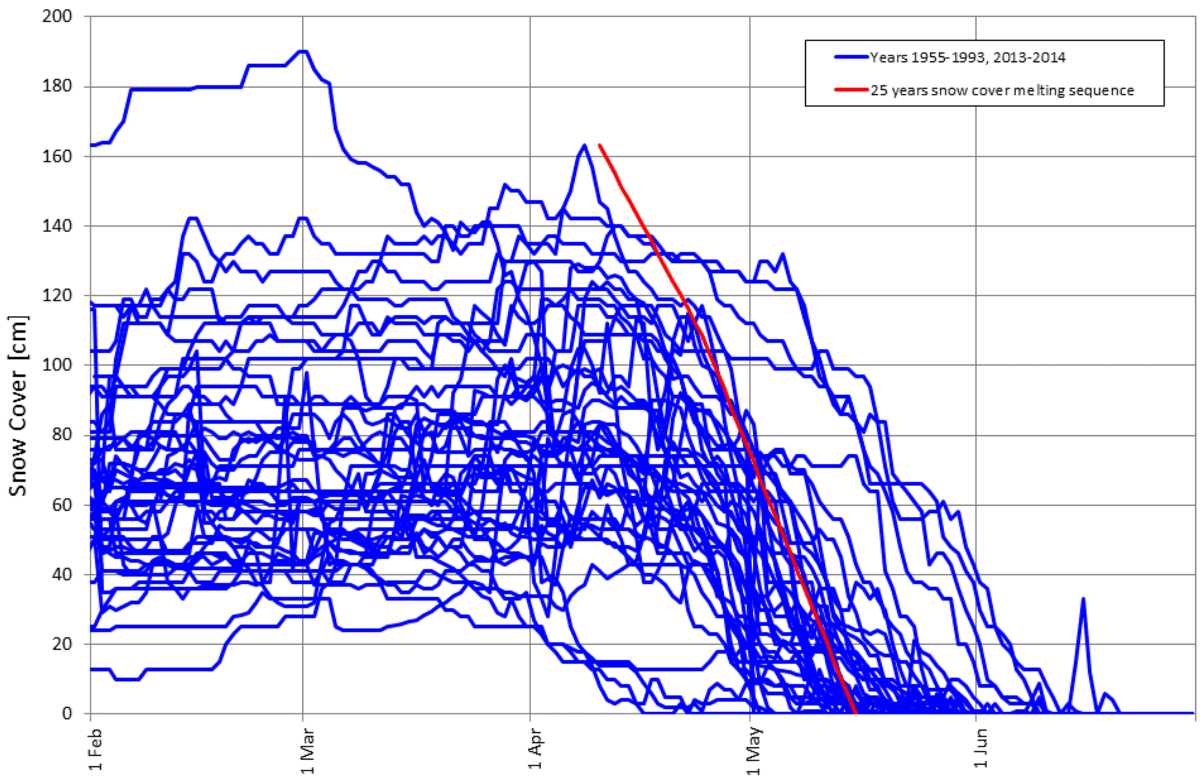

Figure 2-4: Snow Cover Melting Sequence

2.1.6 Lake Evaporation and Evapotranspiration

Some monthly lake evaporation data is available for the Schefferville meteorological station. This data was compiled from measurements made during the period 1951 to 1980 (Rollings, 1997). This data was compared with the Churchill Falls lake evaporation data from HML (2014) and with potential evapotranspiration computed using the Thornthwaite equation (Maidment, 1993).

The yearly lake evaporation from Churchill Falls (288 mm) is approximately 9 % lower than lake evaporation values for Schefferville (318 mm), and Schefferville annual computed potential evapotranspiration (393 mm) is approximately 24 % higher than lake evaporation values for Schefferville (318 mm). Lake evaporation data from Rollings (1997) was selected as the most representative data set for Howse. Monthly Lake Evaporation data from the three collecting points are presented in Table 2-10:

Table 2-10: Monthly Lake Evaporation

Month	Schefferville Rollings (1997) Adopted for Howse [mm]	Schefferville Thornthwaite Equation [mm]	Churchill Falls HML (2014) [mm]
Jan	0.0	0.0	0.0
Feb	0.0	0.0	0.0
Mar	0.0	0.0	0.0
Apr	0.0	0.0	0.0
May	0.0	24.5	0.0
Jun	104.0	96.4	99.0
Jul	98.0	123.3	105.4
Aug	70.0	100.2	83.7
Sep	46.0	48.9	0.0
Oct	0.0	0.0	0.0
Nov	0.0	0.0	0.0
Dec	0.0	0.0	0.0
Year	**318.0**	**393.2**	**288.1**

Evapotranspiration is another component of the hydrological cycle that needs to be estimated, in particular for water balance computations. Based on experience with other similar projects, evapotranspiration is assumed to be equal to 35 % of lake evaporation for the Howse mine site.

2.1.7 Infiltration and Runoff

When water, in the form of rainfall or snowmelt, reaches the ground, part of it might infiltrate the ground, if it is not frozen or already saturated with water, and part of it will be runoff.

To obtain relatively accurate values of infiltration and runoff volumes, hydrological modeling of one or more representative watersheds in the Howse area should be undertaken. However, such modelling requires a large amount of data, typically a minimum of five complete years of stream flow data, to perform a proper model calibration.

Another way to estimate infiltration and runoff is to use a runoff coefficient. This coefficient should be representative of average conditions, when used for water balance computations, or it should be representative of conditions during a particular flood, when used for the design of hydraulic structures like ditches, culverts, and sedimentation basins.

Available data to estimate runoff coefficients for Howse are:

- Hydrometric data recorded on small creeks on the Howse mine site (GH, 2011, GH 2014a);
- Values estimated for larger watersheds (Rollings, 1997);
- Typical values sited in the literature (MTQ, 2006).

The hydrometric data collected during one summer campaigns is representative of the conditions during this particular summer. However, they don't permit statistical analyses and the derivation of values for different return periods because the duration of the campaigns was too short. For this reason, this data was not considered in the present study.

Based on regional analyses, runoff and precipitation maps are available for Labrador (Rollings, 1997). According to these maps, for the Howse area, the mean annual total precipitation is in the order of 800 mm, a number similar to the 782 mm obtained in section 2.1.3, and the mean annual runoff is in the order of 650 mm. The ratio of these numbers leads to an annual runoff coefficient of approximately 0.8.

Typical runoff coefficient values cited in the literature are given for peak flow function of soil type, watershed slope and land use. For example, gravel roads and roadsides, or a cultivated soil with a medium porosity, and a watershed slope between 3 and 8 % would have a peak flow runoff coefficient between 0.4 and 0.6.

For Howse, the following assumptions were made:

- A runoff coefficient of 1.0 is assumed for water balance computations for the winter months, between October and April, due to frozen ground, and for the month of May, when most of the snowmelt occurs and the ground is saturated with water;
- A runoff coefficient of 0.4 is used for water balance computations during the summer months between June and September;
- A runoff coefficient of 1.0 is assumed during spring floods combining snow melt and spring rainfall, and for 100 year return period floods;
- A runoff coefficient of 0.5 is assumed for the 25 year return period summer-fall flood.

3.0 EFFLUENT QUALITY, TYPE AND TREATMENT STRATEGY

3.1 Effluent Quality

Water quality analytical results sampled at the current mining operation Timmins 4 were used to evaluate the expected water quality that could be observed on the Howse property since they are located close to each other. The water quality results from Sedimentation ponds B and C (sampling COA-SW11 and COA-SW12) were reviewed since they are the most representative of the effluent that is expected on the Howse property. The water quality results taken from Sedimentation ponds B and C are presented in Appendix D (HML, 2014c).

The water is of good quality and generally meets the requirements of the Certificate of Approval (CofA) (GNL, 2012) for all parameters except for suspended solids, where the concentration in the water tested is slightly above 30 mg/L. The Certificate of Approval is based on the Metal Mining Effluent Regulations (MMER) 2002 (Government of Canada, 2002). The concentration of total iron, which is not currently regulated by the MMER, was tested once and the result was high. This parameter should be closely monitored in the future, but it is assumed that iron is present as a suspended solid form and should settle out in the Sedimentation pond, thus possibly lowering the concentration to an acceptable limit. It is important to note that the MMER is currently under review and iron could be included in its next edition.

Consequently, for the purpose of this study, and assuming that any effluent collected on the Howse DSO property will have a similar water quality as observed on the Timmins 4 site, the main parameters of concern is assumed to be limited to suspended solids.

3.2 Type of Effluent

There are three types of effluent that will need to be managed on the Howse DSO property:

1) **Natural site runoff:** The main parameter of concern with the natural site runoff will be suspended matter, specifically during heavy rainfall event and snowmelt event. It is assumed that suspended solids will mainly consist of silt, sand and grit.

2) Runoff from Overburden and Waste Rock dump: The overburden at the Howse DSO property is expected to be mainly composed of silt, sand and gravel. The waste rock is expected to be composed of fine rock particles. The waste rock is also expected to be non-acid generative. The main parameter of concern is assumed to be with fine suspended matter.

3) Pit Dewatering: The pit dewatering water will consist mainly of groundwater that infiltrate into the pit, as well as surface runoff that flows into the pit:

   a. Groundwater: The groundwater is expected to be of similar quality to the natural site runoff. The groundwater pumped from the wells around the pit is expected to have very little suspended solids.

   b. Sump Water: The main parameter of concern in the sump water from the pit is assumed to be limited to only fine suspended matters. Total suspended solids of the sump water are expected to be high due to the mining activity in the pit.

   The sump water could also be contaminated with ammonia, nitrate, and diesel coming from un-exploded explosive residues, and oil and hydrocarbon spills from the machinery. In order to minimize the load of ammonia and nitrate that could migrate into the sump water, proper explosive management should be implemented. The objective of the explosive management will be the leaching of ammonia and nitrate from the explosive into the water column. The explosive management could include the following:

I. Proper selection of a water resistant based emulsion explosive.

II. Monitoring blasting performance based on explosive quantities, blast design and surface water quality.

III. Proper explosive handling in combination with proper spillage control in order to promptly remove explosive spills around the blastholes.

IV. Proper blast design to minimize incomplete detonation of explosive.

To manage any oil and hydrocarbon spills from the machinery, once a spill is detected, it will be promptly contained and removed through the use of absorbing pads. Furthermore, to manage any diesel that could be present in the sump water, an oil/water separator system could be used to remove the diesel before the surface runoff is transferred to the sedimentation pond

3.3 Treatment Strategy

Sedimentation ponds are proposed on the Howse DSO property to manage and remove the suspended solids before the water is returned to the natural receiving streams. All the Sedimentation ponds are sized to provide the required settling area to allow for the smallest design particle size to settle out in the pond.

The Sedimentation ponds will not be lined with any impervious material to prevent or reduce water infiltration into the ground. Ammonia and nitrate residues are expected in effluent water, but at such a low concentration that it should not require any specific treatment. Effluent monitoring will be conducted on a regular basis and specific treatment will be considered if ammonia and nitrate blasting residues concentration are above the criteria. The only parameter of concern is suspended matters. Consequently, if some of the runoff water does infiltrate into the ground, it will not have a negative impact on the water quality of the underlying groundwater.

An allowance of 0.5 m is provided at the bottom of the Sedimentation pond for sediment storage. The frequency at which the sediments will need to be removed from the pond and properly managed following all applicable regulations during the life of the mine will be evaluated in the next phase of the project.

If runoff water from the overburden, waste rock dumps, or the pit exhibit water quality issues other than suspended solids, such as color issues due to the presence of colloidal particles, it will be possible to add the necessary equipment to dose treatment chemicals, such as a coagulant, upstream of the corresponding sedimentation ponds. The treatment chemicals will help destabilize the colloidal particles and help it co-precipitate out with the resulting floc formed by the addition of a coagulant.

Please refer to sections 6 and 7 for more details on the design of the Sedimentation ponds planned for the Howse DSO project.

4.0 HYDROGEOLOGY

For this conceptual water management plan, the dewatering rate of the Howse pit was first estimated based on dewatering historical data of other similar mines in the area and using few conservative assumptions.

An overview of the historical mine dewatering at Knob Lake during previous mining operations is given in Stubbins & Munro (1965). The studied mines included Wishart, Gagnon, French and Ruth mines, where the dewatering was very much depth correlated and increased with the mine pit floor depth. The Table 4-1 summarizes these results. The range of the dewatering rates varied from 16,874 to 86,547 m^3/d for those old mines. Obviously, this wide range of dewatering rates is due to several factors for which data are unavailable, such as pit dimensions, hydraulic conductivities of the geological units, fault zones, proximity to the water bodies, permafrost presence, and mining and dewatering operations.

Other new dewatering simulations were conducted for two new future mines, Timmins 3 and LabMag, located about 5 km to the northeast and south of the Howse deposit respectively. The results are summarized in the Table 4-1. The dewatering simulation results for these two closer mines are in the same order of magnitude to the ones recorded for Wishart and Gagnon mines (dewatering rate between 13,000 and 23,000 m^3/d).

The hydraulic conductivities of the iron ore units at the Howse deposit estimated from pumping tests by Geofor 2014 were very close to the ones determined for Timmins 3 and LabMag deposits. This similarity suggests that the dewatering rate of the Howse pit would be in the same order of magnitude of the dewatering rates of those two closer mines.

Based on these observations, a flow rate of 23,000 m^3/d with a safety factor of 50%, representing a total dewatering rate of about 34,500 m^3/d was considered a conservative value for the Howse deposit, and therefore it was used for a preliminary design criteria.

Recent results of the groundwater flow modeling for the Howse deposit (SNC-Lavalin, January 2015) showed in fact that the dewatering rate range obtained was very close to the one for Timmins 3 and LabMag sites. The dewatering rates were estimated to be 13,950 m^3/d for a base case dewatering scenario considering a safety factor of 1.5. This flow rate may reach higher values, ranging from 17,740 to 31,035 m^3/d, with slightly higher hydraulic conductivities of geological units surrounding the pit and of the recharge rate.

Consequently, the dewatering rate for the design criteria was maintained at 34,500 m^3/d.

Considering that the water table at the Howse deposit was generally between 64 and 90 m in depth (Geofor, 2015 and Golder, 2014), it will be expected during the first years of mining operations that the dewatering rate will be lower than the rate estimated for the final pit. During this period, dewatering will be limited to water accumulated in the pit basically from direct precipitations and infiltration through the unsaturated geological units until the pit floor reaches the water table. After, dewatering rate will increase gradually with pit floor depth and reach its maximum rate at its final depth.

Table 4-1: Summary of Hydrogeological Data

Type of Data	Mine Site	Floor Depth (m)	Dewatering (m^3/d)	Data References
Historical data of DSO mines	Wishart	69	16,874	Stubbins, J. B. and P. Munro. 1965. Historical information on mine dewatering of DSO (Knob Lake). The Canadian Institute of Mining and Metallurgy Bulletin, 58:814-822.
	Gagnon	83	20,412	
	French	116	84,370	
	Ruth	144	86,547	
Simulation results on new mines	Timmins 3	80	12,960	Groupe Hémisphères, march 2010. Hydrological and hydrogeological study: survey season 2009, DSOP. Final technical report.
	LabMag	150	22,262	SNC-Lavalin, in preparation. Hydrogeology and mine pit dewatering modeling - LabMag site. New Millenium Iron – TATA Steel
Assumption	Howse	160	34,500(*)	--
(*) Including a safety factor of 50%				

The water management infrastructures have been designed based on the conservative dewatering flow assumption presented in this section.

5.0 DESIGN CRITERIA FOR WATER MANAGEMENT INFRASTRUCTURES

A summary of the design criteria is presented in the following table. The complete Design Criteria document is in Appendix C.

Table 5-1: Design Criteria of the Planned Water Management Infrastructures

Type of criteria	Criteria	Value	Comments
Location criteria	Buffer zone between infrastructures and Irony Mountain	500 m	--
	Buffer Strip between infrastructures and water course and wetlands	Minimum of 15 m	--
Environmental Criteria	Alteration of Pinette Lake	No alteration of Pinette Lake water quality is accepted	No surface water from Howse mine site can be discharged to Pinette Lake, even after treatment through a Sedimentation pond.
	General location of infrastructures	Avoid building infrastructures on wetlands whenever possible.	--
	Quality of run-off water and dewatering water	The only issue is assumed to be total suspended solids	See section 3 for discussion on this issue.
	Pond and ditches waterproofing	No waterproofing	See section 3 for discussion on this issue.
Hydrological criteria	Source of meteorological Data	Schefferville A meteorological station	Intensity-Duration-Frequency data used for Infrastructure design is presented in Appendix A
Ditches design criteria	Ditch longitudinal slopes	Minimum 0,5%	--
	Ditch transversal slopes	2H:1V	--
	Ditch excavation	Minimize volume of excavation	--
	Return period of design flow	100 years	--
Ponds design criteria	Infiltrations	No infiltrations are considered	Pond bottom and sides assumed frozen during spring freshet.
	Dead storage for sediment	0.5 m	The frequency at which the sediments will need to be removed from the pond during the life of the mine will be evaluated in the next phase of the project. If sediment removal will be required, it will be managed according to all applicable regulations
	Vertical distance between dike crest and spillway invert	1 m	--
	Pond outflow structure	Permeable rockfill dike	--

Type of criteria	Criteria	Value	Comments
	Ice cover during design flood	0.5 m	The Sedimentation ponds will naturally drain by gravity at the end of fall. Thus, there will be no significant build-up of ice cover during winter. Sedimentation pond H3 receives water continuously from pit dewatering operation, even during winter. Thus, it is assumed that a 1 m ice cover will remain at the peak of spring flood.
	Return Period of design flood for emergency spillway	100 years	According to Canadian Safety Dam recommendation for Significant Dam Class.
	Return period of design flood for pond routing and sedimentation	25 years	--
	Design flood for pond routing and sedimentation	The worst of either : A 24 hours summer-fall 25 year return period rainfall; or Combinations of a 24-hour 25 year return period rainfall with the melting of a 25 year return period snowpack over 30 days.	--
Sedimentation criteria	Design flow	Average 24 hour inflow during the peak of the design flood	--
	Specific gravity of particle to settle	2.7	--
	Design particle size to settle for Sedimentation pond no. H1 (receive run-off on natural ground)	0.1 mm (100 microns)	Particle size selected assuming run-off on natural sandy ground. Pond designed to ensure a minimum residence time of approximately 5 h and that the minimal sedimentation area is available.
	Design particle size to settle for Sedimentation ponds no. H2 and H3 (receive dewatering water and site and pit run-off)	0.01 mm (10 microns)	Particle size selected according to assumed particle size analysis for overburden and waste rock.
	Length to width ratio of the Sedimentation ponds	Minimum 3 to 1	--

6.0 WATER MANAGEMENT STRATEGY

The adopted water management strategy is based on the following concepts:

- Minimize impacts on environment;
- Use existing infrastructures as much as possible;
- Clean and contaminated water separation;
- Water treatment for suspended sediments;

Impacts on the environment need to be minimized by avoiding construction in sensitive areas such as wetlands as much as possible and by minimizing flow variations in existing natural creeks. Another way to mitigate impacts on the environment is to use existing infrastructures, like Timmins 4 Sedimentation pond 3, as much as possible. Separation of clean water, collected by diversion ditches, from contaminated water, collected by collection ditches, allows for specific water treatment before release towards existing streams. Water treatment mainly consists of removing suspended sediments by the means of Sedimentation ponds (refer to section 3 for comments on water quality).

The following section 6.1 describes the proposed site layout and Section 6.2 presents alternatives layouts that were also considered.

6.1 Proposed Site Layout

The site layout is presented on Map 1 (Appendix B). The layout was designed to minimize impacts on the natural watersheds on which the project will be constructed and to distribute the pit runoff and the pit dewatering water in the most suitable watershed. Map 2 (Appendix B) shows the natural watershed limits and Map 3 (Appendix B) presents the modified watershed boundaries. The future infrastructures watersheds are shown on Map 4 (appendix B) and on Table 6-1.

Table 6-1 : Planned Infrastructures Watershed Area

Infrastructure	Watershed area
Sedimentation pond no. H1	50 ha
Sedimentation pond no. H2	181 ha
Transfer pond	52 ha
Howse pit	81 ha

Water management infrastructures consist in a drainage network made of ditches, four Sedimentation ponds, including the existing Timmins 4 Sedimentation pond 3, and one transfer pond. Drawing 622834-40DD-0001 (Appendix B) shows the detailed plan view of ditches and ponds. The following figure schematically describes the water management plan infrastructures and water fluxes between them.

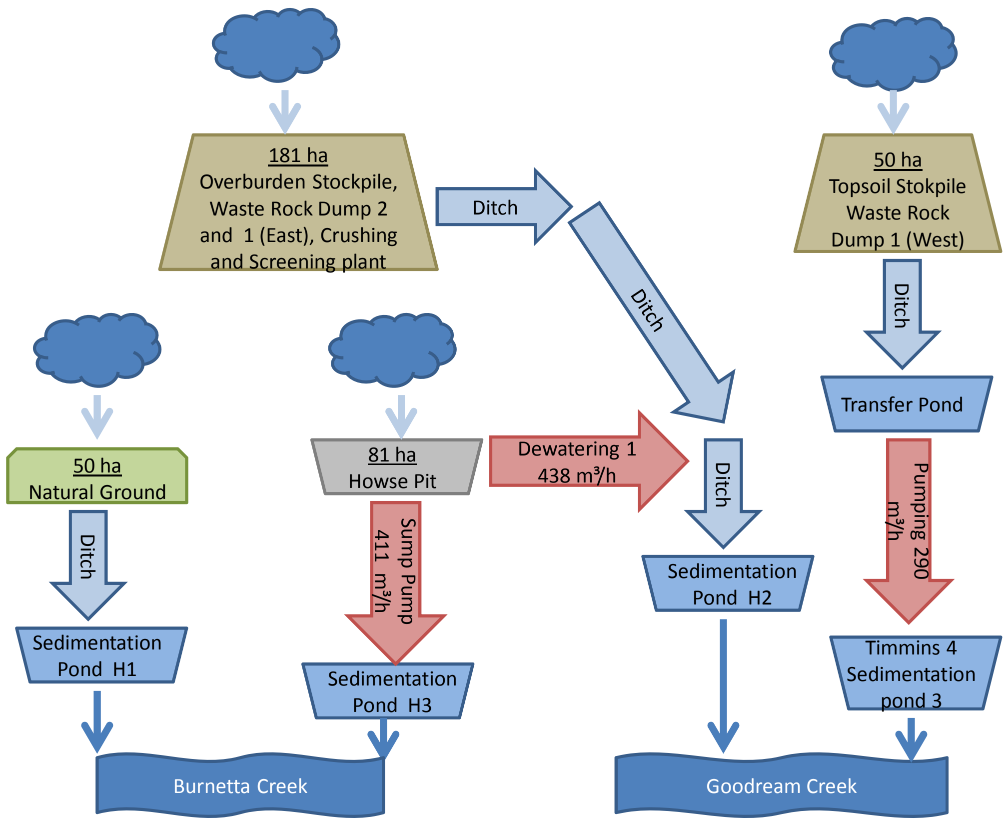

Figure 6-1: Water Management Plan Schematic

6.2 Considered Options

Several options were analyzed before selecting the approach presented in Map 1 (Appendix B). The following sections present a short description of these options and the reasons why they were not selected for the present stage of the project.

6.2.1 Use of Existing Timmins 4 Sedimentation Pond 3 for Treatment of Pit Runoff and Dewatering Water

The opportunity of using the existing Timmins 4-Sedimentation pond-3 to discharge run-off or dewatering water from Howse property was evaluated. However, according to design criteria selected for the preparation of the Howse water management plan, this existing pond is not large enough to allow for an acceptable sedimentation considering the additional flow from Howse pit dewatering. The pond would have to be enlarged or treatment with chemical aids would be necessary.

6.2.2 Turning the Transfer Pond into a Sedimentation Pond

Another option is the possibility to turn the transfer pond into a Sedimentation pond and discharge treated water to Pinette Lake despite the stakeholders concern. The goal of this option would be to maintain the actual Pinette lake watershed size in order to minimize possible impacts on lake level and fish habitat. This option was not selected because it is against the stakeholders' will; it would require an additional effluent to monitor, and there would always be a risk of discharging red water in Pinette Lake in case of a flood event exceeding the design criteria.

6.2.3 Treatment of Pit Runoff and Dewatering Water in Sedimentation Pond H3

Another option is the possibility to treat pit runoff and pit dewatering water in Sedimentation pond H3, then release the treated water into Burnetta Creek. The capacity of Burnetta Creek to receive such relatively large additional flow was assessed by Groupe Hémisphère (GH, 2014b) who concluded that Burnetta Creek could not support it without major erosion.

6.2.4 Comparison of Options

The adopted water management strategy is the option having the least impacts on Goodream Creek and Burnetta Creek in terms of global incremental watersheds area changes. The use of Timmins-4 Sedimentation pond 3 to treat water from the Transfer pond allows for the release of some water into the intermittent part of Goodream Creek. This limits the risk of drying completely the intermittent part of the creek, from which most of the actual runoff will be intercepted by a collection ditch (see Map 3 and 4 in Appendix B).

The adopted water management strategy also has the least impacts on the fish habitat in Goodream Creek. The dewatering water from the pit area should have less suspended solid and no dissolved contaminants compared to the sump water. By sending the dewatering water to Goodream Creek, there will be no impact on the fish habitat since there are no dissolved contaminants in this water. The sump water from the pit has an higher risk of containing dissolved contaminants, such as ammonia and nitrate. The receiving Burnetta Creek has no fish habitat upstream from Burnetta Lake.

The following table summarizes existing watersheds incremental area variations for the different water management options:

Table 6-2: Existing Watershed Area Variations

Receiving Water Body	Drainage area variation for the selected option	Drainage area variation if Timmins 4-Sedimentation pond 3 was used to manage dewatering and run-off water from Howse pit	Drainage area variation if water from Transfer Pond was discharged in Pinette Lake	Drainage area variation if pit runoff and pit dewatering was discharged in Burnetta Creek (*)
Goodream Creek	+ 22 ha	+ 100 ha	+ 48 ha	+22
Burnetta Creek	+ 39 ha	- 40 ha	+ 37 ha	+39
Pinette Lake	- 61 ha	- 61 ha	- 4 ha	-61
(*) For this option, the variation of the drainage area is the same as the selected option. However, the pit dewatering would be discharged in Burnetta Creek instead of Goodream Creek.				

6.3 Summary of Designed Infrastructures

The following sections describe the different infrastructures designed for this project.

6.3.1 Sedimentation Pond H1

Sedimentation pond H1 (see Drawing 622834-4000-40DD-0006 in Appendix B) is used to treat runoff water from the natural area located on the south-west side of Howse pit. This pond will be located on the west side of Howse pit and treated water will be discharged into Burnetta Creek. The pond will be located in a natural slope of about 5% and the downstream side of the pond will have to be confined with a dike. Section 7.2 summarizes the design of Sedimentation pond H1.

6.3.2 Transfer Pond

The Transfer pond (see Drawing 622834-4000-40DD-0004 in Appendix B) is necessary to collect contaminated runoff water from a 52 ha area flowing naturally in Pinette Lake watershed, before pumping this water into existing Timmins 4 Sedimentation pond 3 for treatment. The Transfer pond will be built in a depression located on the south side of the topsoil stockpile. It will be completely excavated with no dike. Section 7.3.4 summarizes the design of the Transfer pond.

6.3.3 Sedimentation Pond H2

Sedimentation pond H2 (see Drawing 622834-4000-40DD-0005 in Appendix B) will receive runoff from a 181 ha area, including the overburden stockpile, waste rock dump 2, part of waste rock dump 1, and water pumped from the peripheral well used for Howse pit dewatering. This pond will be located on the north-west side of the overburden stockpile, in a natural slope, and the downstream side of the pond will have to be confined with a dike. Treated water will be discharged into Goodream Creek. Section 7.3.5 summarizes the design of Sedimentation pond H2.

6.3.4 Sedimentation Pond H3

Sedimentation pond H3 (see Drawing 622834-4000-40DD-0006 in Appendix B) will be used for the treatment of the sump water that will be pumped out of the pit. Both Sedimentation ponds H1 and H3 will release treated water into Burnetta Creek using the same outflow ditch. Sedimentation pond H3 will be located in a natural slope of about 5% and the downstream side of the pond will have to be confined with a dike. Section 7.3.6 summarizes the design of Sedimentation pond H3.

6.3.5 Timmins 4 Sedimentation pond 3 (Existing)

Timmins 4 Sedimentation pond 3 is an existing Sedimentation pond located on the east side of Howse project. It will be used to receive pumped water from the Transfer pond.

6.3.6 Ditches

There is one diversion ditch collecting natural runoff, flowing from the south-west towards the mine pit, and conveying this water into Sedimentation pond H1 for treatment. A network of collection ditches is used to collect contaminated runoff from the whole mine site, including Haul Road, Crushing and Screening Plant, Topsoil Stockpile, part of Waste Rock Dump 1, Waste Rock Dump 2, and Overburden Stockpile. The collected contaminated water is conveyed into Sedimentation pond H2 for treatment. Ditches plan view is presented on Drawing 622834-4000-4GGD-0001-0001 and Map 2 (Appendix B), and ditches profiles are presented on Drawings 622834-4000-40DD-0002 and 622834-4000-40DD-0003 (Appendix B).

It was chosen to include the relatively small wetland area located between the Overburden Stockpile and Waste Rock Dump 2 in the area collected by the collection ditches and treated it into Sedimentation pond 2. This decision was based on the facts that:

- It will not be possible to avoid the contamination of this area due to its close location between two stockpiles;
- It would be technically difficult to cross the outlet of this area with the collection ditch necessary to collect runoff from Waste Rock Dump 2.

6.3.7 Inlet and Outlet Structures

The water inlet structures of Sedimentation ponds H1 and H2 will be designed to promote an even distribution of the flow over the pond width (see Drawing 622834-4000-40DD-0005 in Appendix B). Ditches will be widened at the Sedimentation pond entrance, and water will flow into the pond via an impervious ditch section with the use of a HDPE plastic membrane. This impervious section will avoid the formation of preferential channels at the pond entrance.

For Sedimentation pond H3, an inlet distribution pipe will be used to distribute the pumped water from the pit over the entire width of the pond.

The outflow structure for all Sedimentation ponds will be made of a permeable rockfill dike sized to avoid any spill over the emergency spillway during the 25-yr sedimentation design flood (see Drawing 622834-4000-40DD-0005 in Appendix B). The emergency spillway will be integrated within the rockfill in a way allowing for the passage of vehicles.

The outlet structure of existing Timmins 4 Sedimentation pond 3 will have to be modified into a permeable rockfill dike and an emergency spillway similar to those for Sedimentation ponds H1, H2, and H3. This is necessary to ensure the good functioning of the pond with the additional pumped discharge from the Transfer pond, based on the same design criteria as the new ponds.

Downstream of the permeable rockfill dike, treated water from the Sedimentation ponds will be collected and conveyed toward the receiving stream with ditches. These ditches will have a small longitudinal slope to ensure low flow velocities at the entrance of the receiving streams. If needed, energy dissipation measures could also be put in place at the entrance of natural streams to avoid unwanted disturbance to the existing creeks.

6.3.8 Dikes Construction Material

For the present project stage, it is assumed that the dikes on the downstream side of Sedimentation ponds H1, H2 and H3 will be built with compacted material, using overburden available on site (cut and fill). The suitability of this material for construction will be confirmed in the next phase of engineering, based on more detailed sieve analysis of the material and its percentage of fines. Permeable rockfill dike and riprap will be built using non-acid generating material.

7.0 WATER MANAGEMENT INFRASTRUCTURE DESIGN

The methodology, design criteria and detailed design of each infrastructure is presented in the next sections.

7.1 Ditches

Ditches are used to collect runoff water and convey it into sedimentation basins before being released towards existing natural streams.

7.1.1 Methodology

Ditches peak discharge is computed using the rational method:

$$Q = \frac{CIA}{360}$$

Where:

Q: Peak discharge [m^3/s].

C: Runoff coefficient [-].

I: Rainfall intensity corresponding to the watershed time of concentration [mm/h].

A: Drainage area [ha].

Ditches dimensions are determined using the Manning equation:

$$Q = \frac{1}{n} A R^{2/3} S^{1/2}$$

Where:

Q: Peak discharge [m^3/s].

n: Manning's coefficient [s/$m^{1/3}$].

A: Flow area [m^2].

R: Hydraulic radius [m]. R = A/P, where P is the wetted perimeter [m].

S: Ditch slope [%].

7.1.2 Design Criteria

The following design criteria were adopted for the ditches:

- A design flood return period of 100 years;
- A runoff coefficient of 1.0;
- A trapezoidal section is adopted. Typically ditches will be 1.5 m deep, have a 1.0 m base width, and 2H:1V side slopes;
- Ditches will be protected against erosion with a layer of riprap. If the required riprap layer exceeds 0.5 m, a gabion mattress will be used to replace the riprap;
- A Manning's n coefficient between 0.028 and 0.037 is used function of riprap mean diameter;
- A minimum longitudinal slope of 0.5 % is adopted;
- Culverts used for road crossings are assumed to be made of corrugated steel with an inlet projecting from fill.

7.1.3 Results

Ditches location is presented on drawing 622834-4000-40DD-0001. The following table summarizes ditches and culvert characteristics:

Table 7-1: Ditches and Culvert Characteristics

		CD1	CD2	CD3	CD4	CD5	CD6	CD7	CD8	CD9	CD10	DD1
Drainage area	[ha]	33.9	19.0	15.0	5.7	11.9	116.0	4.0	2.8	52.5	175.7	49.7
Return period	[year]	100	100	100	100	100	100	100	100	100	100	100
Runoff coefficient	[-]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Peak discharge	[m³/s]	2.6	3.6	1.6	0.9	1.8	6.2	0.7	0.4	3.7	9.2	3.8
Culvert type				Corrugated								
Culvert inlet type				Projecting from fill								
Number of culverts	[-]			1								
Diameter	[mm]			1600								
Channel lateral slope	H: 1V	2	2	2	2	2	2	2	2	2	2	2
Channel base width	[m]	1.0	1.0	1.0	1.0	1.0	1.5	1.0	1.0	1.0	3.0	1.0
Channel depth	[m]	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Max channel longitudinal slope	[%]	12.0%	10.9%	5.7%	1.3%	0.5%	5.9%	9.1%	13.0%	5.1%	2.2%	5.7%
Min channel longitudinal slope	[%]	0.5%	0.5%	1.1%	0.8%	0.5%	0.9%	0.7%	0.8%	0.6%	0.5%	0.8%
Maximum flow depth	[m]	0.82	0.98	0.52	0.38	0.62	0.98	0.40	0.29	0.90	1.06	0.87
Minimum freeboard - Design	[m]	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Minimum freeboard - Actual	[m]	0.68	0.52	0.98	1.12	0.88	0.52	1.10	1.21	0.60	0.44	0.63
Maximum flow velocity	[m/s]	3.79	3.92	2.71	1.49	1.29	3.68	2.57	2.53	3.20	2.89	3.31
Minimum riprap D_{50}	[mm]	Gabion	Gabion	250	100	50	Gabion	200	200	Gabion	250	Gabion
Minimum riprap depth	[mm]	Mattress	Mattress	500	300	300	Mattress	400	400	Mattress	500	Mattress

Note that in the above table, the actual minimum freeboard corresponds to the ditch section with the minimum longitudinal slope, and maximum flow velocity and riprap or gabion mattress protection correspond to the ditch section with the maximum longitudinal slope.

7.2 Transfer Basin

A transfer basin is necessary to collect runoff water that cannot be drained with ditches directly into sedimentation basin H2. In spite, this water is collected in a Transfer basin then pumped into ditch CD5. Drawing 622834-4000 40DD-0004 presents the location of the Transfer basin.

7.2.1 Methodology

Flood routing computations were used to determine the Transfer basin volume and pumping capacity. A larger volume was selected, based on site configuration, to minimize the required pumping capacity.

7.2.2 Design Criteria

The following design criteria were adopted for the Transfer basin:

- A design flood return period of 25 years was selected. A spring flood and a summer-fall flood were compared. A runoff coefficient of 0.5 was assumed for the summer-fall flood. For the spring flood, a runoff coefficient of 1.0 was assumed considering a frozen or water saturated ground. The spring flood, composed of a 24 h spring rainfall, occurring the last day of the melting of a 25 years snow cover over a 35 days period, resulted in the largest Transfer basin volume;
- The spring flood adopted equals to 33.1 mm of rain plus 407.5 mm of snowmelt, for a total of 440.6 mm over a 35 days period;
- A square basin, with a minimum depth of 5.0 m, and 3H:1V side slopes was adopted;
- The pump intake was assumed to be located 0.5 m above the basin bottom elevation;
- No backwater allowed in the ditches;
- No evaporation is considered during floods;
- No ice accumulation is assumed at the bottom of the basin during a spring flood because the basin will be empty at the start of winter;
- No infiltration is considered.

7.2.3 Results

A 6.5 m deep, square basin, with a top side length of 100 m, 3H:1V side slopes, and a pumping capacity of 290 m^3/h are required to contain the 25 years design flood (Table 7-2). No emergency spillway is required as the basin is entirely built in excavation. If a flood more important than the design flood occurs, water will accumulate in the basin and incoming ditches before overflowing towards Pinette Lake.

Table 7-2: Transfer Basin Characteristics

		Transfer basin
Drainage area	[ha]	52
Basin top length	[m]	100
Basin top width	[m]	100
Basin depth	[m]	6.5
Basin side slopes	H:1V	3
Basin volume	[m³]	21 300 (1)
Outlet type		Pumping station

(1) Between basin bottom and CD1 ditch invert elevations.

The following figure presents the design flood routing, through the Transfer basin, during a three days period centered on the 24h spring rainfall happening during the last day of a 35 days snow melt.

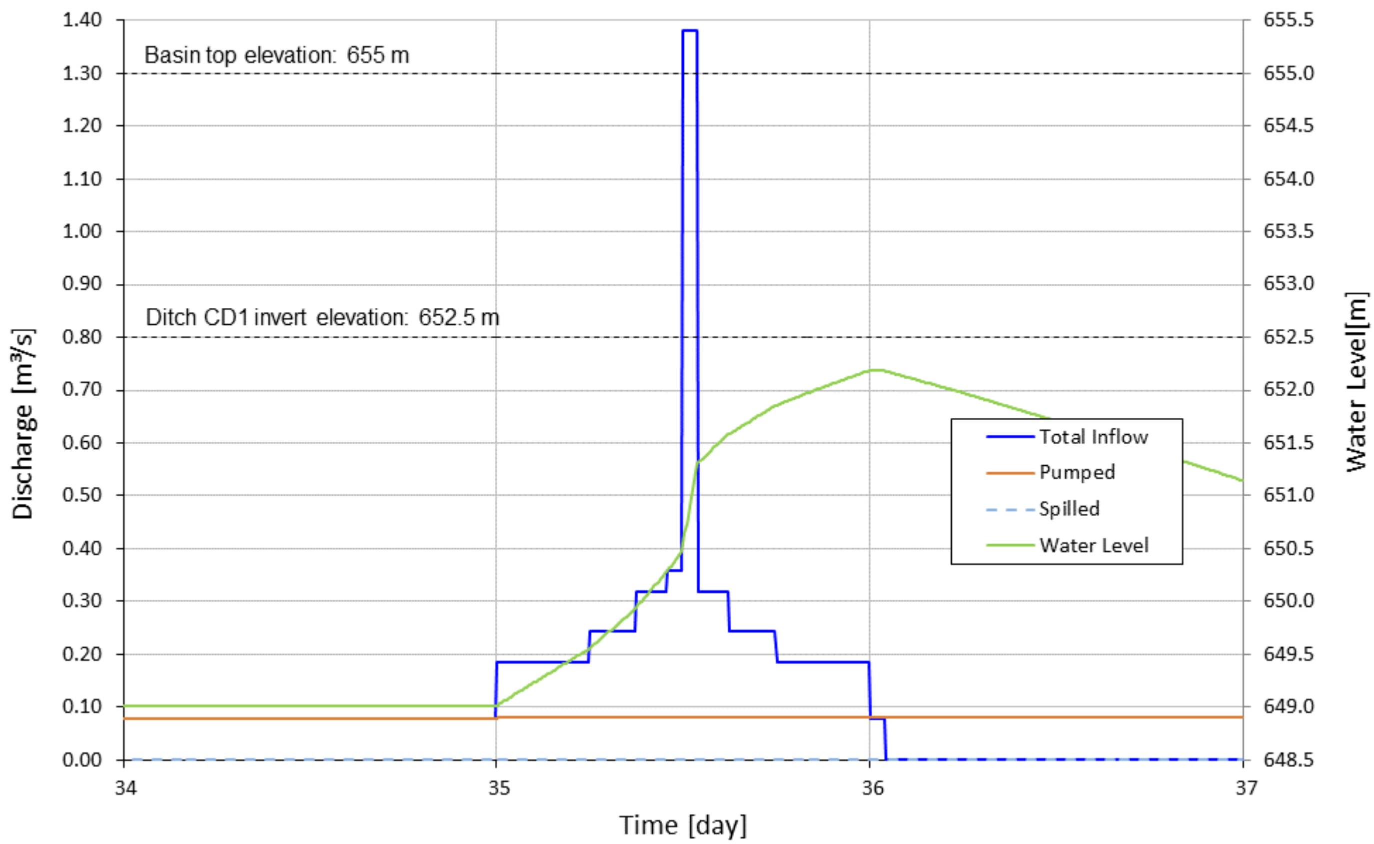

Figure 7-1: 25 Years Flood Routing through the Transfer Basin

7.3 Sedimentation Ponds

Sedimentation ponds are used to treat runoff water by reducing their content of total suspended solids before releasing the treated water in an existing natural stream.

7.3.1 Methodology

First, the minimum basin area necessary for the proper settling of the design particles is computed based on the sedimentation basin inflow and Stokes law:

$$A_{min} = a\,\frac{Q}{V_s}$$

Where:

A_{min}: Minimum sedimentation basin area [m^2]. To be conservative, the sedimentation basins bottom area was selected to be equal or larger than Amin.

a: Safety factor for particle shape being different than perfect spheres: a = 1.2.

Q: Design discharge [m^3/s].

V_s: Settling velocity [m/s].

$$V_s = \frac{(d_s - d_f)g}{18v} D^2$$

Where:

d_s: Sediment density: d_s = 2700 kg/m^3.

d_f: Fluid density. For water at 4°C, d_f = 1000 kg/m^3.

g: Gravity: 9.81 m/s^2.

v: Fluid viscosity. For water at 4°C, v = 0.00157 kg/m*s.

D: Particle diameter [m].

Then, flood routing computations are used to determine the sedimentation basin volume and outlet capacity for the design flood. The adopted outlet, for all Sedimentation ponds, is a permeable dike made of rockfill. This choice was based on the good resistance to freezing of such rockfill dikes. Rockfill dikes discharge capacity was computed based on Rollings (1997) as follows:

$$Q = h * L * V$$

Where:

Q: Discharge [m^3/s].

h: Hydraulic head [m].

L: Rockfill dike length [m].

V: Flow velocity [m/s].

$$V = n * W * \sqrt{m} * {i_{eff}}^{0.54}$$

Where:

n: Porosity [-].

W: Williamson coefficient = 5.243.

m: Hydraulic mean radius [m].

i_{eff}: Effective hydraulic gradient [-].

With:

$$m = \frac{e * d}{6 * rsae}$$

Where:

e: Void ratio [-]. Note that n = e/(1+e).

d: Nominal particle diameter [m].

rsae: Relative particle surface area efficiency [-].

And:

$$i_{eff} = 0.8 * A_r^{-3/2} * \left(\frac{h}{H}\right)^{1.4}$$

Where:

A_r: Embankment aspect ratio [-].

H: Rockfill dike height [m].

With:

$$A_r = \frac{1}{H} * \left(B_u + B_c + \frac{B_d}{2}\right)$$

Where:

B_u: Base length of the upstream part of the rockfill dike [m].

B_c: Base length of the central part of the rockfill dike [m].

B_d: Base length of the downstream part of the rockfill dike [m].

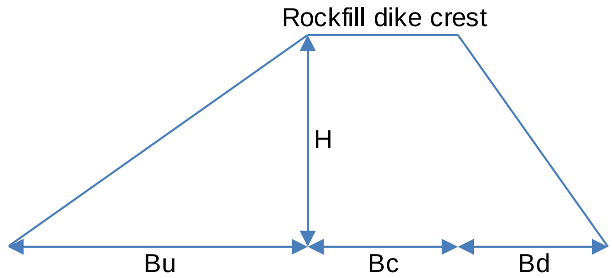

Figure 7-2: Rockfill Dike Cross-Section Sketch

7.3.2 Design Criteria

The following design criteria were adopted for the sedimentation basins:

- A design flood return period of 25 years was selected. A spring flood and a summer-fall flood were compared. A runoff coefficient of 0.5 was assumed for the summer-fall flood. For the spring flood, a runoff coefficient of 1.0 was assumed considering a frozen or water saturated ground. The spring flood, composed of a 24 h spring rainfall, occurring the last day of the melting of a 25 years snow cover over a 35 days period, resulted in the largest sedimentation basins volumes;
- The spring flood adopted equals to 33.1 mm of rain plus 407.5 mm of snowmelt, for a total of 440.6 mm over a 35 days period;
- A rectangular shape, with a length to width ratio of 4, and 3H:1V side slopes were adopted;
- A design particle size of 0.01 mm was adopted for sedimentation basins H2 and H3 used to treat runoff water from the mine site, and a design particle size of 0.1 mm was adopted for sedimentation basin H1 used to treat runoff water from natural ground;
- Design discharge for sedimentation is the average inflow during the 24 h rainfall;
- A permeable rockfill dike section was adopted as outlet. The bottom of the rockfill is located 0.5 m above the basin bottom elevation. This dead storage is used to collect sediments, and it is assumed frozen during the flood routing computations involving spring floods;
- A void ratio of 1.0 (corresponding to a porosity of 0.5), a nominal diameter of 0.2 m, and a relative surface area efficiency of 1.8 were assumed for the rockfill stones;
- Rockfill dike side slopes are 3H:1V, and the dike crest, Bc, is 4.0 m wide;
- An emergency spillway was designed to safely pass a 100 years flood. A trapezoidal weir, assuming a discharge coefficient of 0.35, and side slopes of 10H:1V to allow traffic when the spillway is not in use, was adopted;
- Evaporation is not considered during floods;
- No infiltration is considered for the new ponds.

7.3.3 Existing Timmins 4 Sedimentation Pond 3

Timmins 4 Sedimentation pond 3 is an existing Sedimentation pond located on the east side of Howse project (Map 1).

This Sedimentation pond has a top length of approximately 195 m, a top width of approximately 75 m, and a depth of 4.0 m. Water is conveyed into the pond by two ditches, draining approximately 82 ha, located on the upstream end of the pond. An outlet, made of a corrugated steel culvert with a 0.9 m diameter and an invert elevation of 660.6 m, is located on the downstream end of the pond. Treated water flows out of the pond through the spillway. Then, it is directed towards Goodream creek through a small ditch.

To test the capacity of the existing pond, flood routing computations were performed considering natural runoff from the 82 ha watershed plus the constant discharge from the pumping of pit dewatering (1438 m^3/h, see Section 4.0) and pit runoff (411 m^3/h). It was found that this pond does not meet the minimum area requirements for sedimentation (10 600 m^2 available versus 19 300 m^2 required), and the minimum available freeboard during the design flood (0.14 m) is too small to protect the surrounding dike against wave erosion. For these reasons, it was decided to use the existing pond with a modified outlet structure for the treatment of water pumped from the transfer pond, build a new Sedimentation pond, H3, for pit runoff, and treat pit dewatering in Sedimentation pond H2.

The modified outlet structure is a combination of a permeable rockfill dike, 30 m wide and 2.0 m high, and a trapezoidal weir spillway, with a 15 m wide crest and 1V:10H side slopes for allowing traffic when the spillway is not in use. The following table presents the existing Sedimentation pond characteristics when used to treat water pumped from the Transfer pond.

Table 7-3: Timmins 4 Sedimentation Pond 3 Characteristics

		Existing Timmins 4 sedimentation 3
Drainage area	[ha]	82
Design discharge	[m³/s]	0.52
Time of residence	[h]	16.3
Minimum required area	[m²]	10 500
Basin bottom area	[m²]	10 600
Basin top length	[m]	195
Basin top width	[m]	75
Basin depth	[m]	4.0
Basin side slopes	H:1V	2
Basin volume	[m³]	36 200 (1)
Outlet type		Rockfill dike
Outlet width	[m]	30
Spillway type		Trapezoidal weir
Spillway crest length	[m]	15

(1) Between pond bottom and spillway invert elevations.

The following figure presents the design flood routing, through the existing Timmins 4 Sedimentation 3 pond, during a three days period centered on the 24h spring rainfall happening during the last day of a 35 days snow melt.

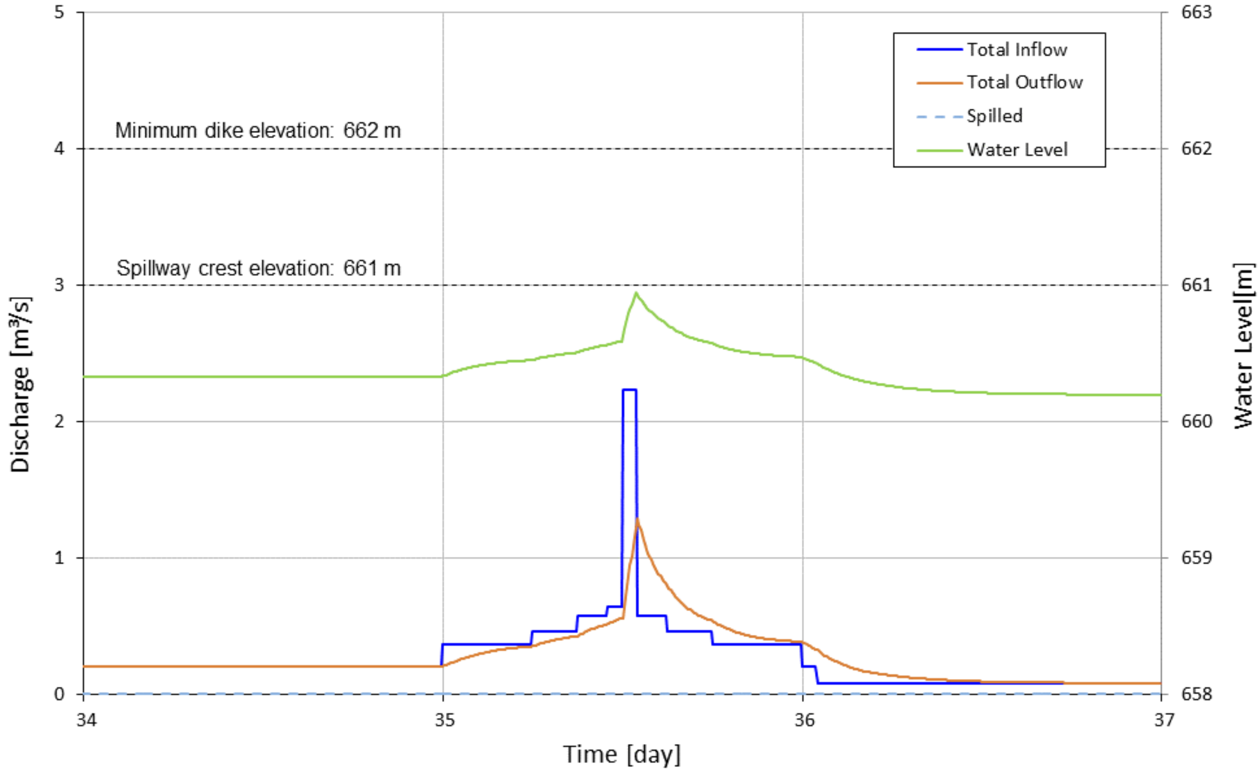

Figure 7-3: 25 Years Flood Routing through Timmins 4 Sedimentation Pond 3

7.3.4 Sedimentation Pond H1

Sedimentation pond H1 (drawing 622834-4000-40DD-0006) is used to treat water collected by a diversion ditch. This ditch is used to collect runoff water from an area of approximately 50 ha located on the south side of the mine pit. Because this water will not be in contact with the mining site, a sedimentation design particle size of 0.1 mm was adopted, resulting in a relatively small minimum area required for proper sedimentation. In this case, the Sedimentation pond dimensions were selected to ensure a residence time of approximately 5 h for the design discharge. The adopted pond dimensions are 160 m long by 40 m wide by 3.0 m deep. All characteristics of sedimentation pond H1 are presented in Table 7-4.

A 10 m wide permeable rockfill dike is necessary to adequately pass the 25 years return period sedimentation design flood without any spill over the emergency spillway. An emergency spillway made of a trapezoidal weir with a 10 m wide crest, located 1.0 m below the elevation of the dike lowest point will be necessary to protect adequately the dikes from a 100 years return period flood.

Table 7-4: Sedimentation Pond H1 Characteristics

		Sedimentation pond H1
Drainage area	[ha]	50
Design discharge	[m³/s]	0.27
Time of residence	[h]	4.9
Minimum required area	[m²]	100
Basin bottom area	[m²]	3 100
Basin top length	[m]	160
Basin top width	[m]	40
Basin depth	[m]	3.0
Basin side slopes	H:1V	3
Basin volume	[m³]	8 400 (1)
Outlet type		Rockfill dike
Outlet width	[m]	10
Spillway type		Trapezoidal weir
Spillway crest length	[m]	10

(1) Between pond bottom and spillway invert elevations.

The following figure presents the design flood routing, through Sedimentation pond H1, during a three days period centered on the 24h spring rainfall happening during the last day of a 35 days snow melt.

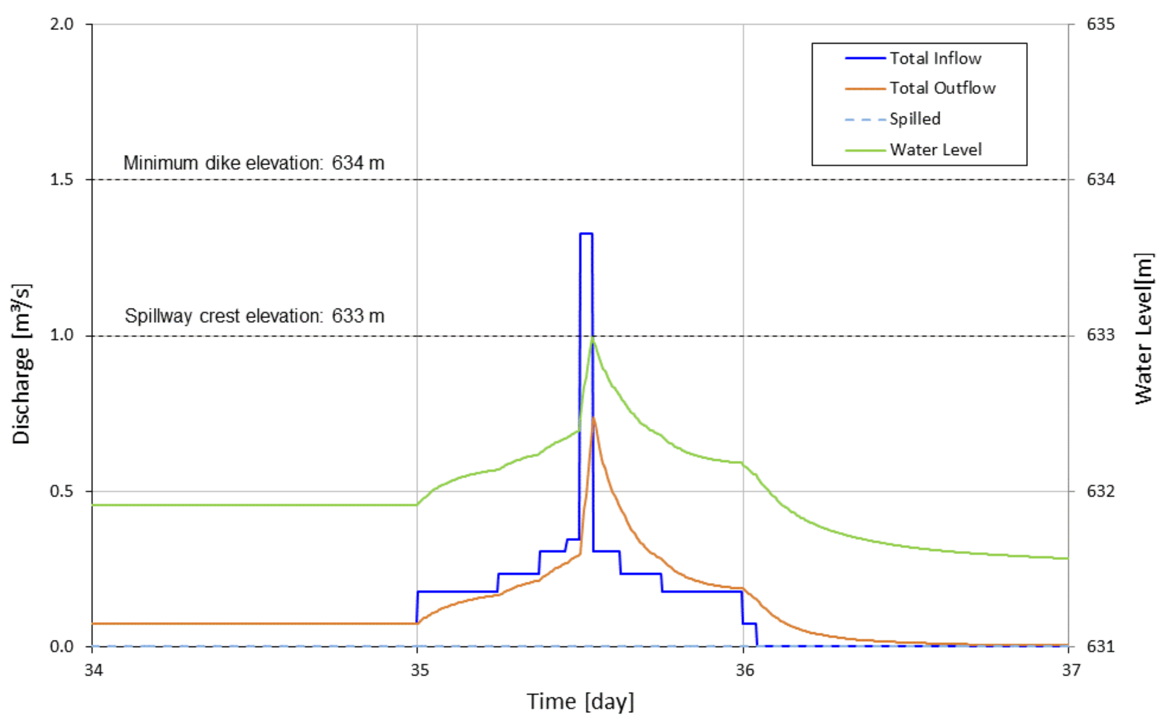

Figure 7-4: 25 Years Flood Routing through Sedimentation Pond H1

7.3.5 Sedimentation Pond H2

Sedimentation pond H2 (drawing 622834-4000-40DD-0005-00) is used to treat runoff water from the Howse mine site, including the overburden stockpile and the waste rock dumps, and pit dewatering water (1438 m^3/h, see section 4.0). This water is collected by a network of collection ditches covering an area of approximately 181 ha. Because this water will be in contact with fine rock particle on the mine site, a sedimentation design particle size of 0.01 mm was adopted, resulting in a relatively large minimum area required for proper sedimentation.

The adopted Sedimentation pond H2 dimensions are: 420 m long by 105 m wide by 4.0 m deep. A 10 m wide permeable rockfill dike is necessary to adequately pass the 25 years return period sedimentation design flood without any spill over the emergency spillway. An emergency spillway made of a trapezoidal weir with a 40 m wide crest, located 1.0 m below the elevation of the dike lowest point, will be necessary to protect adequately the dikes from a 100 years return period flood. Characteristics of Sedimentation Pond H2 are described in Table 7-5.

Table 7-5: Sedimentation Pond H2 Characteristics

		Sedimentation pond H2
Drainage area	[ha]	181
Design discharge	[m³/s]	1.36
Time of residence	[h]	18.4
Minimum required area	[m²]	27 600
Basin bottom area	[m²]	32 100
Basin top length	[m]	420
Basin top width	[m]	105
Basin depth	[m]	4.0
Basin side slopes	H:1V	3
Basin volume	[m³]	109 600 (1)
Outlet type		Rockfill dike
Outlet width	[m]	10
Spillway type		Trapezoidal weir
Spillway crest length	[m]	40

(1) Between pond bottom and spillway invert elevations.

The following figure presents the design flood routing, through Sedimentation pond H2, during a three days period centered on the 24h spring rainfall happening during the last day of a 35 days snow melt.

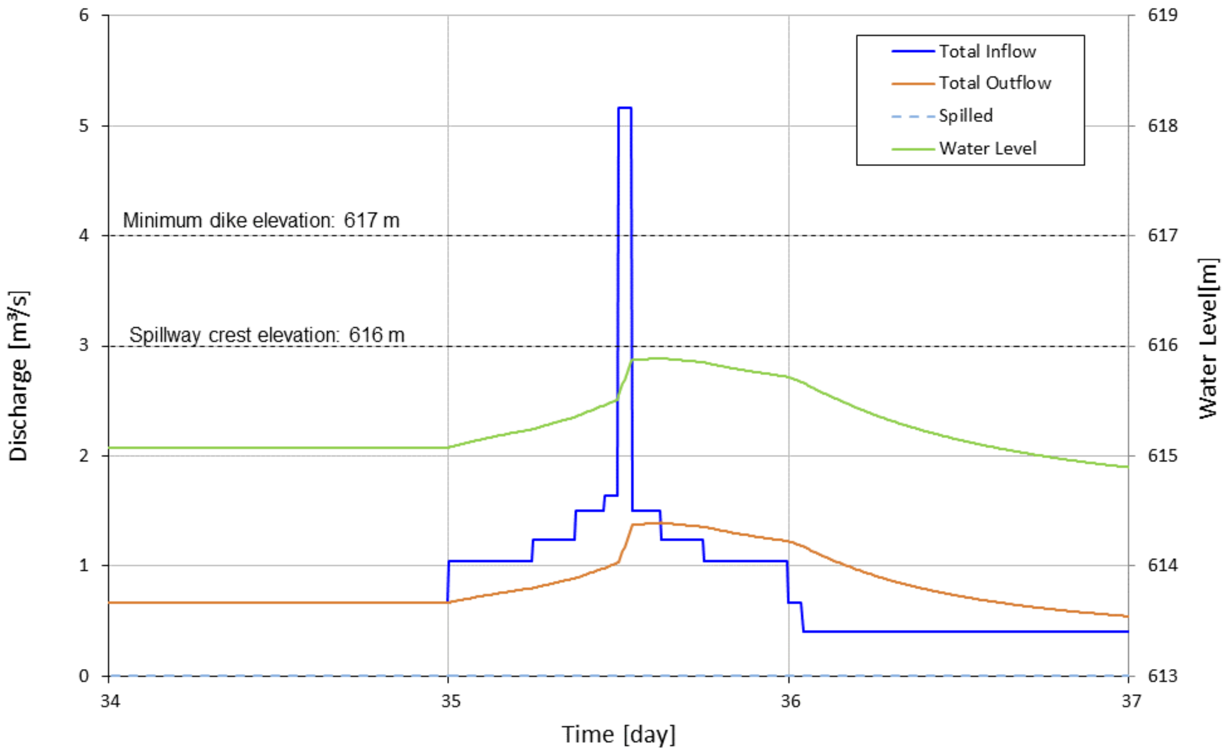

Figure 7-5: 25 Years Flood Routing through Sedimentation Pond H2

7.3.6 Sedimentation Pond H3

Sedimentation pond H3 (drawing 622834-4000-40DD-0006) is used to treat the mine pit runoff water that is pumped from the pit into the pond. Because this water will be in contact with small rock particles on the mine site, a sedimentation design particle size of 0.01 mm was adopted. This pond receives pumped pit runoff, direct precipitations on its own area, and runoff from a small area of approximately 4 ha.

It was estimated that a 411 m^3/h pumping capacity was necessary, to pump runoff water out of the mine pit, based on the following assumptions:

- Snow is assumed to accumulate during the months of October to April and completely melt during the month of May.
- It is assumed that pumping can only happen during the summer months. Therefore, inflow from October to May is pumped out of the mine Pit in May

The adopted pond dimensions are 160 m long by 40 m wide by 2.5 m deep. A 10 m wide permeable rockfill dike is necessary to adequately pass the 25 years return period sedimentation design flood without any spill over the emergency spillway. An emergency spillway made of a trapezoidal weir with a 5 m wide crest, located 0.8 m below the elevation of the dike lowest point will be necessary to protect adequately the dikes from a 100 years return period flood. Table 7-6 presents all characteristics of Sedimentation Pond H3.

Table 7-6: Sedimentation Pond H3 Characteristics

		Sedimentation pond H3
Drainage area	[ha]	4
Design discharge	[m³/s]	0.13
Time of residence	[h]	13.9
Minimum required area	[m²]	2 700
Basin bottom area	[m²]	3 600
Basin top length	[m]	160
Basin top width	[m]	40
Basin depth	[m]	2.5
Basin side slopes	H:1V	3
Basin volume	[m³]	7 700 (1)
Outlet type		Rockfill dike
Outlet width	[m]	10
Spillway type		Trapezoidal weir
Spillway crest length	[m]	5

(1) Between pond bottom and spillway invert elevations.

The following figure presents the design flood routing, through Sedimentation pond H3, during a three days period centered on the 24h spring rainfall happening during the last day of a 35 days snow melt.

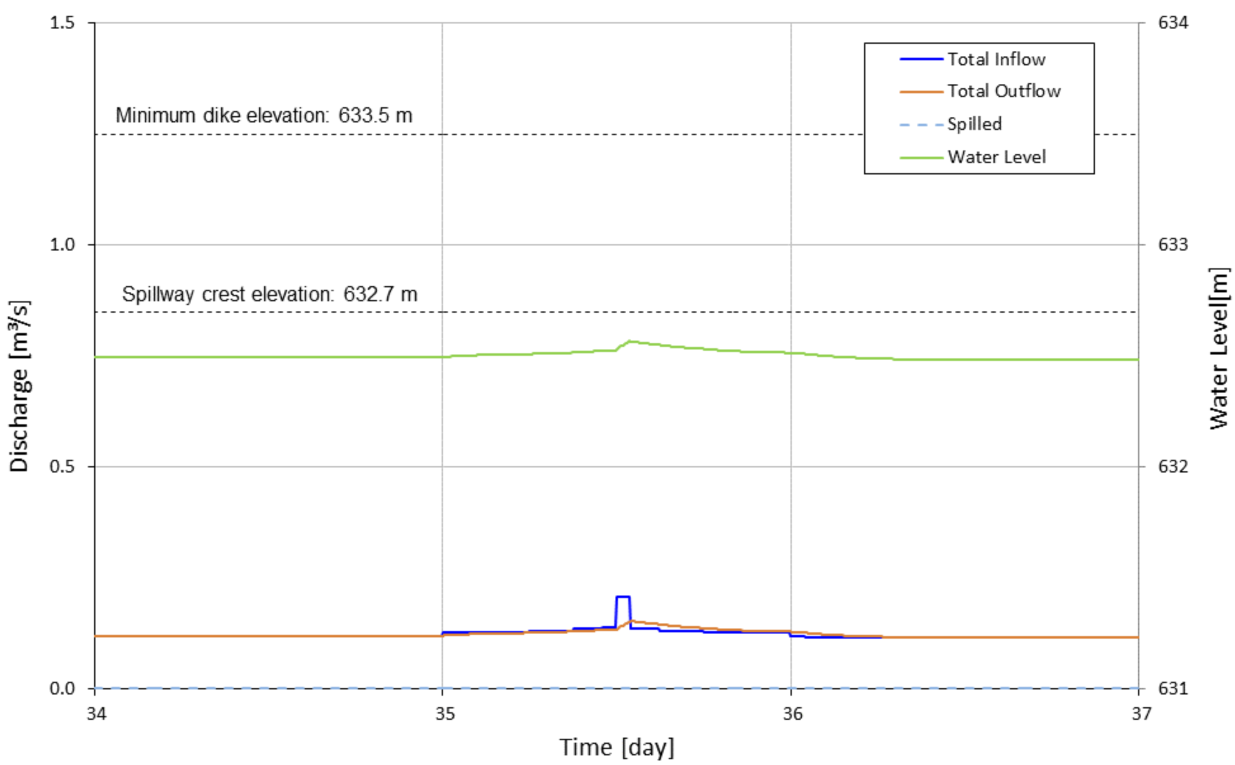

Figure 7-6: 25 Years Flood Routing through Sedimentation Pond H3

7.4 Water Management Infrastructures Main Characteristics Summary

The following Table summarizes the main characteristics of the transfer basin and Sedimentation ponds:

Table 7-7: Transfer Basin and Sedimentation Ponds Characteristics

Basins characteristics summary table

		Transfer basin	Existing Timmins 4 sedimentation 3	Sedimentation pond H1	Sedimentation pond H2	Sedimentation pond H3
Drainage area	[ha]	52	82	50	181	4
Design discharge	[m³/s]		0.52	0.27	1.36	0.13
Time of residence	[h]		16.3	4.9	18.4	13.9
Minimum required area	[m²]		10 500	100	27 600	2 700
Basin bottom area	[m²]		10 600	3 100	32 100	3 600
Basin top length	[m]	100	195	160	420	160
Basin top width	[m]	100	75	40	105	40
Basin depth	[m]	6.5	4.0	3.0	4.0	2.5
Basin side slopes	H:1V	3	2	3	3	3
Basin volume	[m³]	21 300 (2)	36 200 (1)	8 400 (1)	109 600 (1)	7 700 (1)
Outlet type		Pumping station	Rockfill dike	Rockfill dike	Rockfill dike	Rockfill dike
Outlet width	[m]		30	10	10	10
Spillway type			Trapezoidal weir	Trapezoidal weir	Trapezoidal weir	Trapezoidal weir
Spillway crest length	[m]		15	10	40	5

(1) Between pond bottom and spillway invert elevations.

(2) Between basin bottom and CD1 ditch invert elevations.

Other key water management infrastructures characteristics:

- Transfer pond pumping capacity: 290 m³/h (Section 7.2);
- Mine pit sump pump capacity: 411 m³/h (Section 7.3.6);
- The ditches typical dimensions are: 1.0 m base width, 1.5 m deep, with lateral slopes of 2H:1V. Exceptions are ditch CD-6 which with a 1.5 m base width and ditch CD-10 which a 3.0 m base width. The location of all ditches is presented on Drawing 622834-4000-4GGD-0001-00 (Appendix B);
- Ditches are protected against erosion with riprap or gabions if the required riprap layer exceeds 0.5 m;
- Ponds emergency spillways have 10H:1V lateral slope to allow traffic when they are not in use.

8.0 WATER BALANCE

Water balance computations were made for an average year representative of average hydrological conditions.

8.1 Methodology and Assumptions

Monthly average values for snowfall, rainfall, lake evaporation and evapotranspiration are presented in Section 2.1. These values were used with the considered drainage areas to determine the corresponding monthly average volumes of water. The following assumptions were made:

- Snow is assumed to accumulate during the months of October to April and completely melt during the month of May.
- It is assumed that pumping can only happen during the summer months. Therefore, inflow from October to May is pumped out of the Transfer basin or mine Pit in May.
- Actual evapotranspiration could be limited by water availability in the ground during the summer months. For this reason, actual evapotranspiration is computed as being the minimum between net runoff and evapotranspiration.
- A runoff coefficient of 1.0 is assumed for the months of October to May to take into account frozen or saturated ground conditions. A runoff coefficient of 0.4 is assumed for the months of June to September. The resulting average annual runoff coefficient of 0.8 is comparable to that of larger watershed in the area (Rollings, 1997).

8.2 Water Management Infrastructures

Water balance computations were made for an average year for Howse mine Pit (77 ha), Timmins 4 Sedimentation pond 3, and the proposed future Transfer basin (52 ha) and Sedimentation ponds H1 (50 ha), H2 (181 ha), and H3 (4 ha), all presented in Table 8-1 to Table 8-6:

Table 8-1: Average Year Monthly Water Balance – Howse Mine Pit

Month	Snowfall [m³]	Rainfall [m³]	Infiltration [m³]	Net Runoff [m³]	Evapo-transpiration [m³]	Inflow [m³]	Inflow [l/s]
Jan	34 462	0	0	0	0	0	0.0
Feb	28 326	81	0	81	0	81	0.0
Mar	34 234	297	0	297	0	297	0.1
Apr	34 978	3 682	0	3 682	0	3 682	1.4
May	18 168	21 585	0	295 997	0	295 997	110.5
Jun	2 779	53 407	33 712	22 474	22 474	0	0.0
Jul	0	77 980	46 788	31 192	26 411	4 781	1.8
Aug	424	73 552	44 386	29 591	18 865	10 726	4.0
Sep	7 493	62 248	41 845	27 897	12 397	15 500	6.0
Oct	36 134	21 854	0	21 854	0	21 854	8.2
Nov	50 224	2 033	0	2 033	0	2 033	0.8
Dec	37 886	127	0	127	0	127	0.0
Year	**285 109**	**316 845**	**166 730**	**435 223**	**80 147**	**355 076**	**11.3**

Table 8-2: Average Year Monthly Water Balance – Transfer Basin

Month	Snowfall [m³]	Rainfall [m³]	Infiltration [m³]	Net Runoff [m³]	Evapo-transpiration [m³]	Inflow [m³]	Inflow [l/s]
Jan	23 452	0	0	0	0	0	0.0
Feb	19 277	55	0	55	0	55	0.0
Mar	23 297	202	0	202	0	202	0.1
Apr	23 803	2 506	0	2 506	0	2 506	1.0
May	12 364	14 689	0	201 432	0	201 432	75.2
Jun	1 891	36 344	22 941	15 294	15 294	0	0.0
Jul	0	53 067	31 840	21 227	17 973	3 253	1.2
Aug	289	50 054	30 205	20 137	12 838	7 299	2.7
Sep	5 099	42 361	28 476	18 984	8 436	10 548	4.1
Oct	24 590	14 872	0	14 872	0	14 872	5.6
Nov	34 178	1 383	0	1 383	0	1 383	0.5
Dec	25 782	86	0	86	0	86	0.0
Year	**194 022**	**215 619**	**113 463**	**296 178**	**54 542**	**241 636**	**7.7**

Table 8-3: Average Year Monthly Water Balance – Sedimentation Pond H1

Month	Snowfall [m³]	Rainfall [m³]	Infiltration [m³]	Net Runoff [m³]	Evapo-transpiration [m³]	Inflow [m³]	Inflow [l/s]
Jan	22 512	0	0	0	0	0	0.0
Feb	18 504	53	0	53	0	53	0.0
Mar	22 363	194	0	194	0	194	0.1
Apr	22 849	2 405	0	2 405	0	2 405	0.9
May	11 868	14 100	0	193 359	0	193 359	72.2
Jun	1 816	34 888	22 022	14 681	14 681	0	0.0
Jul	0	50 940	30 564	20 376	17 253	3 123	1.2
Aug	277	48 048	28 995	19 330	12 324	7 006	2.6
Sep	4 895	40 663	27 335	18 223	8 098	10 125	3.9
Oct	23 604	14 276	0	14 276	0	14 276	5.3
Nov	32 808	1 328	0	1 328	0	1 328	0.5
Dec	24 749	83	0	83	0	83	0.0
Year	**186 246**	**206 978**	**108 916**	**284 308**	**52 356**	**231 952**	**7.4**

Table 8-4: Average Year Monthly Water Balance – Sedimentation Pond H2

Month	Snowfall [m³]	Rainfall [m³]	Infiltration [m³]	Net Runoff [m³]	Evapo-transpiration [m³]	Pit dewatering [m³]	Inflow [m³]	Inflow [l/s]
Jan	80 828	0	0	0	0	1 069 500	1 069 500	399.3
Feb	66 438	189	0	189	0	966 000	966 189	399.4
Mar	80 295	697	0	697	0	1 069 500	1 070 197	399.6
Apr	82 039	8 636	0	8 636	0	1 035 000	1 043 636	402.6
May	42 613	50 627	0	694 247	0	1 069 500	1 763 747	658.5
Jun	6 519	125 263	79 069	52 713	52 713	1 035 000	1 035 000	399.3
Jul	0	182 898	109 739	73 159	61 946	1 069 500	1 080 713	403.5
Aug	995	172 514	104 105	69 403	44 247	1 069 500	1 094 656	408.7
Sep	17 576	146 000	98 145	65 430	29 077	1 035 000	1 071 354	413.3
Oct	84 750	51 257	0	51 257	0	1 069 500	1 120 757	418.4
Nov	117 797	4 768	0	4 768	0	1 035 000	1 039 768	401.1
Dec	88 861	297	0	297	0	1 069 500	1 069 797	399.4
Year	**668 709**	**743 146**	**391 058**	**1 020 797**	**187 982**	**12 592 500**	**13 425 314**	**425.7**

Table 8-5: Average Year Monthly Water Balance – Sedimentation Pond H3

Month	Snowfall [m³]	Rainfall [m³]	Infiltration [m³]	Net Runoff [m³]	Evapo-transpiration [m³]	Howse Pit pumped runoff [m³]	Inflow [m³]	Inflow [l/s]
Jan	1 566	0	0	0	0	0	0	0.0
Feb	1 288	4	0	4	0	0	4	0.0
Mar	1 556	14	0	14	0	0	14	0.0
Apr	1 590	167	0	167	0	0	167	0.1
May	826	981	0	13 454	0	324 070	337 524	126.0
Jun	126	2 428	1 532	1 022	1 022	0	0	0.0
Jul	0	3 545	2 127	1 418	1 201	4 781	4 998	1.9
Aug	19	3 343	2 018	1 345	858	10 726	11 213	4.2
Sep	341	2 829	1 902	1 268	564	15 500	16 204	6.3
Oct	1 642	993	0	993	0	0	993	0.4
Nov	2 283	92	0	92	0	0	92	0.0
Dec	1 722	6	0	6	0	0	6	0.0
Year	**12 959**	**14 402**	**7 579**	**19 783**	**3 643**	**355 076**	**371 216**	**11.8**

Table 8-6: Average Year Monthly Water Balance – Timmins 4 Sedimentation 3 (Existing with Modified Outlet)

Month	Snowfall [m³]	Rainfall [m³]	Infiltration [m³]	Net Runoff [m³]	Evapo-transpiration [m³]	Pumping from Transfer pond [m³]	Inflow [m³]	Inflow [l/s]
Jan	36 547	0	0	0	0	0	0	0.0
Feb	30 041	85	0	85	0	0	85	0.0
Mar	36 306	315	0	315	0	0	315	0.1
Apr	37 095	3 905	0	3 905	0	0	3 905	1.5
May	19 268	22 891	0	313 910	0	220 536	534 446	199.5
Jun	2 948	56 639	35 752	23 835	23 835	0	0	0.0
Jul	0	82 699	49 619	33 080	28 009	3 253	8 324	3.1
Aug	450	78 004	47 072	31 381	20 007	7 299	18 674	7.0
Sep	7 947	66 015	44 377	29 585	13 147	10 548	26 985	10.4
Oct	38 320	23 176	0	23 176	0	0	23 176	8.7
Nov	53 263	2 156	0	2 156	0	0	2 156	0.8
Dec	40 179	134	0	134	0	0	134	0.1
Year	**302 363**	**336 020**	**176 821**	**461 563**	**84 998**	**241 636**	**618 201**	**19.6**

8.3 Impacts on Natural Watersheds

The Howse project is located on the upstream part of Goodream Creek, Burnetta Creek, and Pinette Lake watersheds. The construction of this project will have impacts on these natural watersheds, in terms of drainage area and flow pattern, due to:

- Surface water drainage system, collecting runoff water and releasing it at particular points into the existing creeks (Goodream Creek and Burnetta Creek);
- Pumping of water from the Transfer Pond into Timmins 4 Sedimentation pond 3. Then releasing this water into Goodream Creek;
- Pumping of water from the Mine pit into Sedimentation pond H3. Then releasing this water into Burnetta Creek;
- Pumping of water from pit dewatering, resulting in an additional amount of water (coming from deep water tables) released into Goodream Creek.

In the following sections, water balance computations results for the existing natural conditions and the future modified conditions are presented for Goodream Creek, Burnetta Creek, and Pinette Lake watersheds.

8.3.1 Goodream Creek

The drainage area difference between the existing (316 ha) and the modified (353 ha) Goodream Creek watershed at the junction with Timmins 4 Sedimentation pond 3 outflow is 37 ha (see maps 10 and 11). This represents an increase of approximately 3 % of the existing drainage area at this point, resulting in additional runoff downstream from Timmins 4 Sedimentation pond 3.

Water collected in the transfer pond will be pumped into Timmins 4 Sedimentation pond 3 for treatment. Then, this water will be released into Goodream Creek downstream from Timmins 4 Sedimentation pond 3. At this location, Goodream Creek is mainly considered an intermittent Creek but still a fish habitat (HML, 2014). The upstream part of Goodream Creek watershed, located east from Timmins 4 Sedimentation pond 3, will not be affected by the

Project. Water flowing from this part of the watershed will ensure a minimum flow in the upstream portion of Goodream Creek.

The following table presents estimated monthly natural inflow values, corresponding to an average year representative of average hydrological conditions, for Goodream Creek at a point corresponding to the junction with Timmins 4 Sedimentation pond 3 outflow.

Table 8-7: Goodream Creek Natural Inflow at Junction with Timmins 4 Sedimentation Pond 3 Outflow (316 ha)

Month	Snowfall [m³]	Rainfall [m³]	Infiltration [m³]	Net Runoff [m³]	Evapo-transpiration [m³]	Inflow [m³]	Inflow [l/s]
Jan	141 337	0	0	0	0	0	0.0
Feb	116 175	330	0	330	0	330	0.1
Mar	140 404	1 219	0	1 219	0	1 219	0.5
Apr	143 454	15 101	0	15 101	0	15 101	5.8
May	74 514	88 527	0	1 213 971	0	1 213 971	453.2
Jun	11 399	219 038	138 262	92 175	92 175	0	0.0
Jul	0	319 818	191 891	127 927	108 319	19 608	7.3
Aug	1 739	301 660	182 040	121 360	77 371	43 989	16.4
Sep	30 733	255 297	171 618	114 412	50 844	63 568	24.5
Oct	148 195	89 629	0	89 629	0	89 629	33.5
Nov	205 982	8 337	0	8 337	0	8 337	3.2
Dec	155 384	520	0	520	0	520	0.2
Year	**1 169 316**	**1 299 476**	**683 811**	**1 784 981**	**328 709**	**1 456 273**	**46.2**

The following table presents estimated monthly modified inflow values after construction of the water management infrastructures, corresponding to an average year representative of average hydrological conditions, for Goodream Creek at the junction with Timmins 4 Sedimentation pond 3 outflow.

Table 8-8: Goodream Creek Modified Inflow at Junction with Timmins 4 Sedimentation Pond 3 Outflow (301 ha)

Month	Snowfall [m³]	Rainfall [m³]	Infiltration [m³]	Net Runoff [m³]	Evapo-transpiration [m³]	Pumping from Transfer pond [m³]	Inflow [m³]	Inflow [l/s]
Jan	134 445	0	0	0	0	0	0	0,0
Feb	110 510	314	0	314	0	0	314	0,1
Mar	133 557	1 160	0	1 160	0	0	1 160	0,4
Apr	136 459	14 364	0	14 364	0	0	14 364	5,5
May	70 880	84 210	0	1 154 772	0	220 536	1 375 308	513,5
Jun	10 843	208 356	131 520	87 680	87 680	0	0	0,0
Jul	0	304 222	182 533	121 689	103 037	3 253	21 905	8,2
Aug	1 655	286 950	173 163	115 442	73 598	7 299	49 143	18,3
Sep	29 234	242 848	163 249	108 833	48 364	10 548	71 016	27,4
Oct	140 968	85 258	0	85 258	0	0	85 258	31,8
Nov	195 937	7 931	0	7 931	0	0	7 931	3,1
Dec	147 806	495	0	495	0	0	495	0,2
Year	**1 112 294**	**1 236 107**	**650 465**	**1 697 937**	**312 679**	**241 636**	**1 626 893**	**51,6**

(1) The drainage area of 301 ha corresponds to Goodream Creek modified drainage area at the junction with Timmins 4 Sedimentation pond 3 outflow (353 ha) from which the drainage area of the Transfer pond (52 ha) was subtracted.

Spring monthly maximum flow in Goodream Creek, at a point corresponding to the junction with Timmins 4 Sedimentation pond 3, will increase by approximately 13 %.

The drainage area difference, between the existing (1091 ha) and the modified (1157 ha) Goodream Creek watershed, at the junction with H2 outflow, is 67 ha (see Maps 5 and 6 in Appendix B). This represents an increase of approximately 6 % of the existing drainage area at this point, resulting in additional runoff downstream from Sedimentation pond H2.

Pit dewatering will be treated in Sedimentation pond H2, adding a constant discharge into Goodream Creek downstream from Sedimentation pond H2 as well. At this location, Goodream Creek is considered a permanent watercourse with fish habitat (HML, 2014a). The ditch planned on the south-east part of the Howse Project will intercept natural drainage flowing towards Goodream Creek. However, the release of water pumped from the Transfer pond into Timmins 4 Sedimentation pond 3 will ensure some water will be kept in this section of the creek.

Dewatering water is assumed to reach 34 500 m^3/d at the final pit floor depth. Measurements in the boreholes within the Howse ore body indicate that the water table is relatively deep below the ground surface (between 64 m and 88 m in November, 2013). This indicates that, at the beginning, dewatering will be mainly limited to pit runoff water and/or infiltration through the walls of the pit. The maximum pumping rate will occur when the deep water table is reached, and it will depend on the thickness and duration of mining of each lift. Then, the maximum impact on Goodream Creek will likely occur during a short period of time at the end of Howse pit exploitation.

The following table presents estimated monthly natural inflow values, corresponding to an average year representative of average hydrological conditions, for Goodream Creek at a point corresponding to the junction with Sedimentation pond H2 outflow.

Table 8-9: Goodream Creek Natural Inflow at Junction with H2 Outflow (1091 ha)

Month	Snowfall [m³]	Rainfall [m³]	Infiltration [m³]	Net Runoff [m³]	Evapo-transpiration [m³]	Inflow [m³]	Inflow [l/s]
Jan	488 280	0	0	0	0	0	0.0
Feb	401 352	1 141	0	1 141	0	1 141	0.5
Mar	485 057	4 213	0	4 213	0	4 213	1.6
Apr	495 595	52 169	0	52 169	0	52 169	20.1
May	257 424	305 835	0	4 193 929	0	4 193 929	1 565.8
Jun	39 380	756 713	477 656	318 437	318 437	0	0.0
Jul	0	1 104 882	662 929	441 953	374 213	67 740	25.3
Aug	6 009	1 042 152	628 896	419 264	267 295	151 969	56.7
Sep	106 173	881 981	592 892	395 262	175 651	219 611	84.7
Oct	511 970	309 641	0	309 641	0	309 641	115.6
Nov	711 609	28 802	0	28 802	0	28 802	11.1
Dec	536 807	1 796	0	1 796	0	1 796	0.7
Year	**4 039 656**	**4 489 325**	**2 362 373**	**6 166 607**	**1 135 596**	**5 031 011**	**159.5**

The following table presents estimated monthly modified inflow values, corresponding to an average year representative of average hydrological conditions, for Goodream Creek at the junction with Sedimentation pond H2 outflow.

Table 8-10: Goodream Creek Modified Inflow at Junction with H2 Outflow (1105 ha [(1)])

Month	Snowfall [m³]	Rainfall [m³]	Infiltration [m³]	Net Runoff [m³]	Evapo-transpiration [m³]	Pit dewatering [m³]	Pumping from Transfer pond [m³]	Inflow [m³]	Inflow [l/s]
Jan	494 591	0	0	0	0	1 069 500	0	1 069 500	399,3
Feb	406 539	1 156	0	1 156	0	966 000	0	967 156	399,8
Mar	491 326	4 267	0	4 267	0	1 069 500	0	1 073 767	400,9
Apr	502 000	52 843	0	52 843	0	1 035 000	0	1 087 843	419,7
May	260 751	309 787	0	4 248 131	0	1 069 500	220 536	5 538 167	2 067,7
Jun	39 888	766 493	483 829	322 553	322 553	1 035 000	0	1 035 000	399,3
Jul	0	1 119 161	671 497	447 664	379 049	1 069 500	3 253	1 141 369	426,1
Aug	6 087	1 055 620	637 024	424 683	270 750	1 069 500	7 299	1 230 732	459,5
Sep	107 546	893 379	600 555	400 370	177 921	1 035 000	10 548	1 267 997	489,2
Oct	518 587	313 643	0	313 643	0	1 069 500	0	1 383 143	516,4
Nov	720 806	29 175	0	29 175	0	1 035 000	0	1 064 175	410,6
Dec	543 745	1 819	0	1 819	0	1 069 500	0	1 071 319	400,0
Year	**4 091 864**	**4 547 344**	**2 392 905**	**6 246 304**	**1 150 273**	**12 592 500**	**241 636**	**17 930 168**	**568,6**

[(1)] The drainage area of 1105 ha corresponds to Goodream Creek modified drainage area at the junction with H2 outflow (1157 ha) from which the drainage area of the Transfer pond (52 ha) was subtracted.

Goodream Creek spring monthly maximum flow, at the junction with Sedimentation pond H2 outflow, will increase by approximately 30 %, which is evaluated as a low magnitude impact by Groupe Hémisphère (GH, 2014b).

8.3.2 Burnetta Creek

The drainage area difference, between the existing (81 ha) and the modified (214 ha) Burnetta Creek watershed at the junction with H1 and H3 outflow, is 133 ha (see Maps 7 and 8 in Appendix B). This represents an increase of approximately 164 % of the existing drainage area at this point, resulting in additional runoff downstream from junction with Sedimentation ponds H1 and H3 outflow.

The mine pit runoff will be pumped into Sedimentation pond H3. Then, this treated water will be released into Burnetta Creek. Burnetta Creek does not host any fish habitat upstream from Burnetta Lake, which is located much downstream from the water release point (HML, 2014a). It is an intermittent creek with a relatively small natural flow.

The following table presents estimated monthly natural inflow values, corresponding to an average year representative of average hydrological conditions, for Burnetta Creek at a point corresponding to the junction with Sedimentation ponds H1 and H3 outflow.

Table 8-11: Burnetta Creek Natural Inflow at Junction with H1 and H3 Outflow (81 ha)

Month	Snowfall [m³]	Rainfall [m³]	Infiltration [m³]	Net Runoff [m³]	Evapo-transpiration [m³]	Inflow [m³]	Inflow [l/s]
Jan	36 252	0	0	0	0	0	0.0
Feb	29 798	85	0	85	0	85	0.0
Mar	36 013	313	0	313	0	313	0.1
Apr	36 795	3 873	0	3 873	0	3 873	1.5
May	19 112	22 706	0	311 373	0	311 373	116.3
Jun	2 924	56 181	35 463	23 642	23 642	0	0.0
Jul	0	82 031	49 218	32 812	27 783	5 029	1.9
Aug	446	77 373	46 692	31 128	19 845	11 283	4.2
Sep	7 883	65 482	44 019	29 346	13 041	16 305	6.3
Oct	38 011	22 989	0	22 989	0	22 989	8.6
Nov	52 833	2 138	0	2 138	0	2 138	0.8
Dec	39 855	133	0	133	0	133	0.0
Year	**299 919**	**333 305**	**175 392**	**457 832**	**84 311**	**373 521**	**11.8**

The following table presents estimated monthly modified inflow values, corresponding to an average year representative of average hydrological conditions, for Burnetta Creek at the junction with Sedimentation ponds H1 and H3 outflow.

Table 8-12: Burnetta Creek Modified Inflow at Junction with H1 and H3 Outflow (137 ha [(1)])

Month	Snowfall [m³]	Rainfall [m³]	Infiltration [m³]	Net Runoff [m³]	Evapo-transpiration [m³]	Pumping from Pit [m³]	Total Inflow [m³]	Inflow [l/s]
Jan	61 404	0	0	0	0	0	0	0.0
Feb	50 472	144	0	144	0	0	144	0.1
Mar	60 999	530	0	530	0	0	530	0.2
Apr	62 324	6 561	0	6 561	0	0	6 561	2.5
May	32 373	38 461	0	527 413	0	324 070	851 482	317.9
Jun	4 952	95 161	60 068	40 045	40 045	0	0	0.0
Jul	0	138 946	83 367	55 578	47 060	4 781	13 300	5.0
Aug	756	131 057	79 088	52 725	33 614	10 726	29 837	11.1
Sep	13 352	110 915	74 560	49 707	22 089	15 500	43 117	16.6
Oct	64 383	38 939	0	38 939	0	0	38 939	14.5
Nov	89 489	3 622	0	3 622	0	0	3 622	1.4
Dec	67 507	226	0	226	0	0	226	0.1
Year	**508 012**	**564 560**	**297 083**	**775 489**	**142 808**	**355 076**	**987 757**	**31.3**

(1) The drainage area of 137 ha corresponds to Burnetta Creek modified drainage area at the junction with H1 and H3 outflow (214 ha) from which the drainage area of the mine pit (77 ha) was subtracted.

After the construction of sedimentation ponds H1 and H3, a relatively large area of Burnetta Creek watershed will be diverted. Rather than flowing naturally into Burnetta Creek some distance downstream from the junction with H1 and H3 outflow, runoff from the diverted area will be collected then released punctually. Consequently, spring monthly maximum flow will increase of approximately 170 %, which corresponds to a very high magnitude impact according to the scale used by Groupe Hémisphère (GH, 2014b).

However, the impact of the Howse project construction on Burnetta Creek is decreasing when the distance downstream from junction with H1 and H3 outflow is increasing. When a point located approximately 650 m downstream from the junction with H1 and H3 outflow is considered, the drainage area difference between actual and future conditions is only 39 ha. At this point, spring monthly maximum flow will increase by approximately 20 %, which corresponds to a low magnitude impact. Therefore, to keep the impact magnitude of Howse construction on Burnetta Creek low, this creek will need to be protected against erosion on a distance of approximately 650 m downstream from junction with H1 and H2 outflow as a mitigation measure.

8.3.3 Pinette Lake

Pinette Lake watershed will be reduced by 61 ha following Howse project construction. This difference represents 25 % of the existing Pinette Lake watershed (237 ha) at the lake outlet (see Map 9 in Appendix B).

The following table presents estimated monthly natural inflow values, corresponding to an average year representative of average hydrological conditions, for Pinette Lake outlet.

Table 8-13: Pinette Lake Outlet Natural Inflow (237 ha)

Month	Snowfall [m³]	Rainfall [m³]	Infiltration [m³]	Net Runoff [m³]	Evapo-transpiration [m³]	Inflow [m³]	Inflow [l/s]
Jan	106 070	0	0	0	0	0	0.0
Feb	87 186	248	0	248	0	248	0.1
Mar	105 370	915	0	915	0	915	0.3
Apr	107 659	11 333	0	11 333	0	11 333	4.4
May	55 921	66 437	0	911 055	0	911 055	340.1
Jun	8 554	164 382	103 762	69 175	69 175	0	0.0
Jul	0	240 016	144 009	96 006	81 291	14 715	5.5
Aug	1 305	226 389	136 616	91 078	58 065	33 013	12.3
Sep	23 064	191 594	128 795	85 863	38 157	47 706	18.4
Oct	111 216	67 264	0	67 264	0	67 264	25.1
Nov	154 584	6 257	0	6 257	0	6 257	2.4
Dec	116 612	390	0	390	0	390	0.1
Year	**877 542**	**975 225**	**513 183**	**1 339 584**	**246 688**	**1 092 896**	**34.7**

The following table presents estimated monthly modified inflow values, corresponding to an average year representative of average hydrological conditions, for Pinette Lake outlet.

Table 8-14: Pinette Lake Outlet Modified Inflow (176 ha)

Month	Snowfall [m³]	Rainfall [m³]	Infiltration [m³]	Net Runoff [m³]	Evapo-transpiration [m³]	Inflow [m³]	Inflow [l/s]
Jan	78 725	0	0	0	0	0	0.0
Feb	64 709	184	0	184	0	184	0.1
Mar	78 205	679	0	679	0	679	0.3
Apr	79 904	8 411	0	8 411	0	8 411	3.2
May	41 504	49 309	0	676 180	0	676 180	252.5
Jun	6 349	122 004	77 012	51 341	51 341	0	0.0
Jul	0	178 138	106 883	71 255	60 334	10 922	4.1
Aug	969	168 024	101 396	67 597	43 096	24 502	9.1
Sep	17 118	142 200	95 591	63 727	28 320	35 407	13.7
Oct	82 544	49 923	0	49 923	0	49 923	18.6
Nov	114 731	4 644	0	4 644	0	4 644	1.8
Dec	86 548	290	0	290	0	290	0.1
Year	**651 307**	**723 806**	**380 881**	**994 231**	**183 090**	**811 141**	**25.7**

The decrease of Pinette Lake inflow is relatively important. According to Groupe Hémisphère (GH, 2014b) an inflow decrease is beneficial, from an ecosystemic perspective, because an oligotrophic lake like Pinette Lake could benefit from a longer water renewal time.

As a follow-up measure, a field survey will be planned for the summer of 2015 to characterize Pinette Lake natural outflow, and to determine if lowering the water level would have a significant impact on fish habitat. If necessary, following the field survey, the water management plan could be updated.

9.0 ENVIRONMENTAL MONITORING PLAN

The environmental monitoring program will consist of three main types of sampling: Real-time monitoring, Effluent Monitoring (sedimentation pond discharge), and Water Chemistry Analysis of Groundwater, Surface Water of Natural Water Courses and Drainage Ditches.

The environmental monitoring program will be planned in accordance with the following protocols and regulations: Environmental Control Water and Sewage Regulations (2003); Protocols Manual for Real Time Water Quality Monitoring in Newfoundland and Labrador (2013); Metal Mining Effluent Regulations (Canada).

The Environmental Monitoring Plan has been developed based on preliminary information, and should be considered a conceptual design only. The Environmental Monitoring Plan is subject to change based on the final site plan, consultations, site visits, and feasibility. The monitoring plan presented in this section and on map 12 is organized to be easily integrated to the TSMC DSO overall monitoring plan.

9.1 Real-time water quality/quantity monitoring

The environmental monitoring program will provide effective real-time monitoring at the Howse Property Project Site (the Site) in accordance with the Canada-Newfoundland Water Quality Surveys Agreement. Real-time Water Quality (RTWQ) monitoring provides continuous water quality data, which can provide a better insight to the effect the mining operations are having on receiving waters than traditional grab samples alone.

Typical parameters measured by RTWQ stations are: temperature, pH, specific conductivity, dissolved oxygen and turbidity, which can be used to further calculate additional parameters such as total dissolved solids (TDS) and percent saturation. Additional sensors may be added to provide supplementary measured parameters, if needed. Water quantity data can also be measured by RTWQ stations (i.e., discharge, using stage height and velocity data).

Three monitoring stations currently exist within the area of interest and consideration will be given to implementing them into the environmental monitoring program for the site. The provincial and federal government will be responsible for the installation or relocation of real-time monitoring stations, as well as data collection and maintenance, as part of the Environment Canada/Government of Newfoundland and Labrador’s Real-time Water Quality Monitoring Program.. The stations and their intended use in the environmental monitoring program are listed below.

9.1.1 IHH1

Hydrometric station IHH1 monitors Burnetta Creek, downstream of the proposed sedimentation ponds H1 and H3. This station currently only monitors water quantity and requires that manual readings be taken. Water quality should also be monitored at this location, to provide insight on any contaminates of concern present in Burnetta Creek caused by the discharge from Sedimentation Ponds H1 and H3 or other mining influences. The proposed surface water monitoring HSW1 located at IHH1 station will fulfill this function (see Table 9-4).

9.1.2 IHH3

Hydrometric station IHH3 is located at an intermittent stream flowing to Pinette Lake. This station is located downstream of the site and water quality in this stream may be impacted by the mining operations at the Howse Property Project Site. Currently IHH3 also requires that manual readings of stage height and velocity be taken. Surface water sampling for quality parameter is already taken with sampling location COA SW13, part of Timmins 4 project. This sampling should continue with the Howse project, to provide insight on any contaminates of concern which may be entering into Pinette Lake from the Site.

9.1.3 NF03OB0040

RTWQ monitoring station NF02OB0040 (Goodream Creek 2 km Northwest of Timmins 6) is already part of the Real-time Water Quality Monitoring Program in Newfoundland and Labrador. It is currently located upstream of Sedimentation Pond H2. This monitoring station could be moved downstream of the sedimentation pond in order to monitor contamination from both the Howse Property Project Site, and the HML DSO 3 site. If it is determined that the relocation of the monitoring station is not feasible or beneficial to the monitoring of both project sites, an additional monitoring station will be installed in Goodream Creek somewhere downstream of the Sedimentation Pond H2 discharge point, ideally close to Triangle Lake where road access is available.

9.2 Effluent Monitoring

Effluent Discharge Criteria (EDC) parameters are usually tested weekly from the effluent grab samples. Acute Lethality Test (ALT) parameters are only required to be tested monthly. An overview of the effluent monitoring schedule, including monitoring locations is presented in Table 9-1.

Table 9-1: Effluent Monitoring Schedule

Monitoring Location	Parameters	Frequency
1. Sedimentation Pond H3 discharge into Burnetta Creek 2. Sedimentation Pond H2 discharge into Goodream Creek 3. Sedimentation Pond H1 discharge into Burnetta Creek 4. Timmins 4 – Sedimentation Pond 3 discharge into Goodream Creek	EDC (excluding ALT) See Table 9-2 for specific parameters and limits.	Weekly (minimum of 24 hours apart)
	ALT (conducted as per Environment Canada's Environmental Protection Service reference method EPS/1/RM-13 Section 5 or 6)	Monthly (minimum of 15 days apart)

Monitoring locations were chosen to ensure all effluent diverted to receiving waters is monitored regularly. All measured parameters will be compared to the Effluent Discharge Criteria specified by the Certificate of Approval from the Government of Newfoundland and Labrador. The expected parameters and concentrations are presented in Table 9-2 below, but may change after the Certificate of Approval is received.

Table 9-2: Effluent Discharge Criteria (EDC)

Parameter	Maximum Authorized Monthly Mean Concentration	Maximum Authorized Concentration in a Composite Sample	Maximum Authorized Concentration in a Grab Sample
Arsenic	0.50 mg/L	0.75 mg/L	1.00 mg/L
Copper	0.30 mg/L	0.45 mg/L	0.60 mg/L
Lead	0.20 mg/L	0.30 mg/L	0.40 mg/L
Nickel	0.50 mg/L	0.75 mg/L	1.00 mg/L
Zinc	0.50 mg/L	0.75 mg/L	1.00 mg/L
TSS	15.00 mg/L	22.50 mg/L	30.00 mg/L
Radium 224	0.37 Bq/L	0.74 Bq/L	1.11 Bq/L
pH	Allowable Range 5.5 – 9.0 units		
ALT	Toxic pass		

Sampling frequency decrease or increase depending on the results of previous consecutive tests, as specified by the Certificate of Approval. The expected conditions leading to sampling frequency changes are outlined in Table 9-3 below.

Table 9-3: Changes in sampling/testing frequency

Parameter	Test results	New testing frequency
Arsenic	Parameter's monthly mean concentration in the effluent is less than 10% of the maximum authorized mean concentration for the 12 months immediately preceding the most recent test	Once per calendar quarter
Copper		
Lead		
Nickel		
Zinc		
Radium 224	Concentration of radium 226 is less than 0.037Bq/L in 10 consecutive tests	

Parameter	Test results	New testing frequency
ALT	Effluent is not determined to be acutely lethal over a period of 12 consecutive months.	
pH	Parameter testing frequency cannot be reduced.	
TSS	Parameter testing frequency cannot be reduced.	

The Department of Environment and Conservation will be notified in writing at least 30 days in advance of a reduction in the frequency of testing for any parameter. If during the next testing event, these test results are no longer met for a certain parameter, the parameter must be tested at the original frequency shown in Table 9-3.

If ALT determines that any sample is acutely lethal, a grab sample must be collected from the final discharge point of the failing site. An ALT must be performed, and an aliquot of the failing sample must be analyzed for the parameters in Table 9-3. Samples should then be collected twice per month until three consecutive tests determine that the effluent is no longer acutely lethal. After the third consecutive non-acutely lethal test, the ALT's must be conducted following the original testing frequency.

If three consecutive ALT's are performed and the results determine the effluent is acutely lethal, a Toxicity Identification Evaluation (TIE) must be performed to determine the specific toxin causing the problem. A report outlining the measures to prevent or reduce the toxin must then be submitted to the Director within 60 days of the third consecutive failed test.

Flow measurements at the effluent discharge of each sedimentation pond will be monitored through the installation of a Parshall flume located in the ditches downstream of the permeable rockfill dikes of the pond. A reading of the measurement from the Parshall flume will be taken at the same time when a water sample is collected.

9.3 Water Chemistry Analysis (Surface and Groundwater)

In addition to the real-time monitoring system and effluent monitoring, groundwater and surface water grab samples will be collected four times per year and analyzed by a laboratory that has been certified by the Canadian Association for Environmental Analytical Laboratories. Monitoring locations and parameters to be tested are presented in Table 9-4. As the monitoring program continues, it may be appropriate to relocate, add, or remove monitoring locations as needed.

Table 9-4: Water Chemistry Analysis Program

Sample Type	Station number	Monitoring Locations	Parameters
Surface Water	HSW1	Burnetta Creek, downstream of Sedimentation Pond H1/H3	General Parameters: temperature, dissolved oxygen (DO), nitrate + nitrite, nitrate, nitrite, pH, TSS, colour, sodium,
	HSW2	Burnetta Creek, upstream of Sedimentation Pond H1/H3	

Sample Type	Station number	Monitoring Locations	Parameters
	HSW3	Goodream Creek, Downstream of Sedimentation Pond H2	potassium, calcium, sulphide, magnesium, ammonia, alkalinity, sulphate, chloride, turbidity, reactive silica, orthophosphate, phenolics, carbonate (CaCO2), hardness (CaCO3), bicarbonate, TPH <u>Metals Scan</u>: aluminium, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, molybdenum, mercury, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, radium, vanadium, zinc.
	HSW4	Goodream Creek, Northeast of Waste Rock Dump 2	
	COA SW12 (Timmins)	North of Timmins 4, Sedimentation Pond 3 (COA SW12 from Timmins Site)	
	HSW5	GDR3 stream between Overburden Stockpile and Waste Rock Dump 2	
	HSW6	GDR4 stream Northeast of Timmins 4, Sedimentation Pond 3	
	HSW7	GDR2 stream flowing into Goodream Creek, Northeast of Sedimentation Pond H2	
	HSW8	Drainage ditch North of Overburden Stockpile	
	COA SW8 (Timmins)	Goodream Creek, Northeast of Overburden Stockpile (COA SW8 - Timmins Site)	
	COA SW13	Stream North of Pinette Lake (COA SW13 -Timmins Site)	
	HSW9	Drainage ditch North of Waste Rock Dump 2	
	HGW1	Northwest of Howse Pit	
	HGW2	East of Overburden Stockpile and Goodream Creek	
Groundwater	HGW3	West of Overburden Stockpile	
	COA GW5 (Timmins)	Southeast of Timmins 4, Sedimentation Pond 3 (COA GW5 -Timmins Site)	
	HGW3	West of Howse Pit	
		TSS analysis not required for groundwater samples. TPH analysis to be performed on sedimentation pond samples.	

Groundwater will be accessed using monitoring wells. Monitoring wells location will be selected not only to obtain groundwater samples, but also to monitor the depth to groundwater and fluctuation of the water table and changes in groundwater flow direction that could be caused by pit dewatering, changes in surface drainage, and permafrost melting. The installation of additional monitoring wells may be required if it is discovered that the current wells are not suitable for the purposes of groundwater sampling/monitoring based on hydrogeologic/geologic data, well depth, and well condition. Monitoring wells will be chosen and installed in areas that may be impacted by potential mine influences and also in areas that will allow background sample collection. A minimum of one monitoring well will be required as a reference well up-gradient within each watershed of concern and away from all potential mine influences.

The number of surface water sampling sites required and their locations was determined based on the hydrological and geological characteristics of the area, the characteristics of the expected contaminants, anthropologic influences, and ease of access. Sampling sites are to be established downstream of contamination points, and reference sites will also be established upgradient of potential contamination points.

9.4 Quality Assurance / Quality Control (QA/QC)

QA/QC samples will be taken regularly to ensure proper field and laboratory techniques have been followed and to ensure the integrity of the results. A minimum of 10% of the samples submitted will be QA/QC samples, such as field duplicates, split samples, trip blanks, and/or field blanks. Before each sampling event, discussions with the laboratory analyzing the samples will help determine the QA/QC protocols to be followed.

10.0 DISCUSSION

10.1 Data Needed for Next Phase of Engineering

The following tasks should be performed in the next phase of engineering to optimize the water management infrastructure layout presented in this document, to optimize the infrastructures size, and to refine the characterization of the expected effluent quality on Howse property:

- Actualize H2 pond design with final hydrogeological modeling, which should confirm pit dewatering flow. Actual design is based on a conservative assumption;
- Perform particle size distribution analysis of the overburden and waste rock expected at the Howse property;
- Perform settling test to assess the settling rate of the suspended solids from surface runoff coming from the waste rock dump, the overburden, and the pit dewatering water at Timmins 4;
- Timmins 4 Sedimentation pond 3 sedimentation capacity should be checked once more data on sediment size distribution is available;
- Perform a complete water quality assessment, including total and dissolved metals, chloride, sulfate, pH, alkalinity, ammonia, nitrate, etc., once per week or every 2 weeks on the following samples:
  - Surface runoffs on the Timmins 4 property coming from the waste rock pile and overburden pile;
  - Pit surface runoffs and pit dewatering water from the Timmins 4 property.
- Perform a wind analysis to determine wind setup and wave run-up and validate the minimum freeboard for all the ponds build with a dike;
- Design outlet channels for sedimentation ponds H1, H3, and H2, and bring all ponds inlet structures to the level of engineering required for the next phase of the project.

10.2 Geotechnical Infrastructure Design

Presently, no waterproofing measures are planned at the bottom of the sedimentations ponds because the only expected environmental issue is the amount of total suspended solid. However, depending on the nature of the soil on which ponds H1 and H3 will be built, a sealing material may be required to avoid leakage of the water back into the pit, as these ponds will be located beside the pit. If the till in place is made of about 10-15% fine particles, the ponds would be impervious enough and this would not be an issue.

The suitability of the excavated material to be used for dike construction will have to be addressed. For ponds H1, H2 and H3 dike construction, stability issues due to seepage could occur if the material used is too pervious,. Geotechnical investigations at the pond location will have to be performed to assess this material. Standard geotechnical tests such as sieve analysis and Proctor tests will be required. If the material in place is too permeable, it will be possible to cover the bottom and slopes of the ponds with suitable compacted silty material available on site, or to use a geosynthetic membrane to seal the ponds.

11.0 CONCLUSION

SNC-Lavalin Inc. (SLI) was mandated by Howse Minerals Canada Ltd to conceive, at a conceptual engineering level, Howse project's water management plan. The adopted water management strategy is based on the following concepts:

- Minimize impacts on environment;
- Use existing infrastructures as much as possible;
- Clean and contaminated water separation;
- Water treatment for suspended sediments.

The necessary water management infrastructures consist in clean water derivation ditches, contaminated water collection ditches, a transfer pond, and several sedimentation ponds. Different options were analyzed for the collection and treatment of water from the site runoff and pit dewatering.

The adopted layout is made of a network of collection ditches, one diversion ditch, three sedimentation ponds and one transfer pond. Sedimentation pond H1 is used to treat water collected by the diversion ditch, located on the south-west side of the mine pit, before releasing treated water into Burnetta Creek. The Transfer pond is used to collect runoff water naturally flowing into Pinette Lake watershed. Then, this water is pumped into the existing Timmins 4 Sedimentation pond 3 for treatment before being released into Goodream Creek. Sedimentation pond H3 is used for the treatment of the pit runoff that is pumped from the pit bottom into Sedimentation pond 3. Once treated, this water is released into Burnetta Creek. Runoff water from the remaining of the mine site as well as pit dewatering water are collected and conveyed by a network of collection ditches into Sedimentation pond H2 for treatment. Once treated, this water is released into Goodream Creek.

A few options were studied, and the adopted layout is the option that has the least impact on the environment. Overall, existing watershed drainage areas are the least modified, and the release of treated water is split between Goodream Creek and Burnetta Creek to minimize impacts on their respective flow patterns and water quality.

The water management infrastructures were designed, at a conceptual level, based on a series of design criteria approved by HML, and a series of assumptions. These assumptions will need to be validated in the project next engineering phases. The validation of several assumptions concerning water quality and available material for pond construction will need to be made based on a series of data that will need to be collected on the future Howse mine site or on existing sites nearby.

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APPENDIX A

Schefferville A Intensity-Duration-Frequency Data

Environment Canada/Environnement Canada

Short Duration Rainfall Intensity-Duration-Frequency Data
Données sur l'intensité, la durée et la fréquence des chutes de pluie de courte durée

Gumbel - Method of moments/Méthode des moments

2011/05/17

==

SCHEFFERVILLE A QC 7117825

Latitude: 54 48'N Longitude: 66 49'W Elevation/Altitude: 521 m

Years/Années : 1965 - 1992 # Years/Années : 23

==

****

Table 1 : Annual Maximum (mm)/Maximum annuel (mm)

****

Year Année	5 min	10 min	15 min	30 min	1 h	2 h	6 h	12 h	24 h
1965	3.6	4.1	4.1	4.3	8.4	13.2	17.8	23.6	24.9
1966	2.8	4.1	4.6	7.1	10.2	17.3	29.5	30.5	30.5
1967	4.8	8.1	8.6	9.1	10.9	15.2	35.1	43.2	47.2
1969	3.6	5.3	6.1	6.3	8.4	10.4	11.7	17.3	22.1
1972	4.1	5.3	5.8	7.1	8.6	11.2	20.1	22.6	25.9
1973	6.6	10.2	12.4	14.5	14.5	16.5	20.6	20.6	21.3
1974	2.3	3.6	4.8	5.1	6.1	8.6	16.8	24.1	39.1
1975	11.4	12.4	14.0	17.8	22.1	22.6	27.7	34.0	40.1
1976	6.1	8.6	8.9	10.4	10.4	10.4	17.3	29.2	42.2
1978	2.6	3.5	4.4	5.8	9.8	10.5	20.0	23.2	32.8
1979	8.6	9.0	9.0	9.0	9.8	15.0	22.5	23.7	30.7
1980	5.4	8.9	11.2	13.7	17.9	22.2	28.5	42.5	56.6
1981	-99.9	-99.9	-99.9	7.9	9.8	10.1	18.3	29.7	37.9
1982	2.8	4.4	4.4	5.4	9.9	12.7	18.1	22.1	29.4
1983	5.1	6.8	7.3	8.9	12.9	16.6	26.4	33.1	38.8
1984	5.6	7.3	7.8	8.2	8.2	11.0	23.8	26.4	31.5
1985	1.3	2.0	2.4	2.6	4.0	6.6	13.1	18.7	20.7
1986	2.5	3.0	3.8	4.8	9.1	13.1	21.8	25.5	35.1
1987	3.5	5.3	5.5	5.5	8.6	13.5	30.1	45.5	47.7
1988	2.0	3.2	3.3	5.5	7.8	11.1	20.2	26.1	50.1
1989	2.9	5.5	8.0	12.4	17.2	17.7	32.2	47.8	59.1
1990	1.3	2.4	3.7	7.1	13.0	21.2	33.9	53.3	83.4
1991	1.9	2.9	4.1	6.0	9.1	16.3	27.8	33.8	37.0
1992	3.7	5.8	7.1	8.9	9.7	14.7	27.5	37.9	56.2
# Yrs.	23	23	23	24	24	24	24	24	24

Années									
Mean Moyenne	4.1	5.7	6.6	8.1	10.7	14.1	23.4	30.6	39.2
Std. Dev. Écart-type	2.4	2.8	3.1	3.6	3.9	4.2	6.4	9.8	14.6
Skew. Dissymétrie	1.50	0.76	0.92	1.15	1.34	0.50	0.12	0.82	1.24
Kurtosis	5.91	3.23	3.57	4.49	5.45	3.09	2.49	3.07	5.45

*-99.9 Indicates Missing Data/Données manquantes

****

Table 2a : Return Period Rainfall Amounts (mm)
Quantité de pluie (mm) par période de retour

****

Duration/Durée	2 yr/ans	5 yr/ans	10 yr/ans	25 yr/ans	50 yr/ans	100 yr/ans	#Years Années
5 min	3.7	5.8	7.3	9.0	10.4	11.7	23
10 min	5.3	7.7	9.3	11.4	12.9	14.4	23
15 min	6.1	8.8	10.6	12.8	14.5	16.2	23
30 min	7.5	10.6	12.7	15.4	17.3	19.3	24
1 h	10.0	13.5	15.8	18.8	20.9	23.1	24
2 h	13.4	17.1	19.5	22.6	24.9	27.2	24
6 h	22.3	28.0	31.7	36.5	40.0	43.5	24
12 h	29.0	37.7	43.4	50.7	56.1	61.5	24
24 h	36.8	49.7	58.2	69.0	77.1	85.0	24

****

Table 2b :

Return Period Rainfall Rates (mm/h) - 95% Confidence limits
Intensité de la pluie (mm/h) par période de retour - Limites de confiance de 95%

****

Duration/Durée	2 yr/ans	5 yr/ans	10 yr/ans	25 yr/ans	50 yr/ans	100 yr/ans	#Years Années
5 min	44.5	70.1	87.1	108.5	124.3	140.1	23
	+/- 10.9	+/- 18.3	+/- 24.7	+/- 33.3	+/- 39.9	+/- 46.4	23
10 min	31.6	46.2	55.9	68.1	77.2	86.2	23
	+/- 6.2	+/- 10.4	+/- 14.1	+/- 19.0	+/- 22.7	+/- 26.5	23
15 min	24.3	35.1	42.2	51.3	58.0	64.6	23
	+/- 4.6	+/- 7.7	+/- 10.4	+/- 14.0	+/- 16.8	+/- 19.6	23
30 min	14.9	21.3	25.5	30.7	34.7	38.6	24
	+/- 2.6	+/- 4.4	+/- 6.0	+/- 8.1	+/- 9.6	+/- 11.2	24
1 h	10.0	13.5	15.8	18.8	20.9	23.1	24
	+/- 1.4	+/- 2.4	+/- 3.3	+/- 4.4	+/- 5.3	+/- 6.2	24
2 h	6.7	8.5	9.8	11.3	12.5	13.6	24
	+/- 0.8	+/- 1.3	+/- 1.8	+/- 2.4	+/- 2.8	+/- 3.3	24

6 h		3.7	4.7	5.3	6.1	6.7	7.3	24
	+/-	0.4 +/-	0.7 +/-	0.9 +/-	1.2 +/-	1.4 +/-	1.7	24
12 h		2.4	3.1	3.6	4.2	4.7	5.1	24
	+/-	0.3 +/-	0.5 +/-	0.7 +/-	0.9 +/-	1.1 +/-	1.3	24
24 h		1.5	2.1	2.4	2.9	3.2	3.5	24
	+/-	0.2 +/-	0.4 +/-	0.5 +/-	0.7 +/-	0.8 +/-	1.0	24

****

Table 3 : Interpolation Equation / Équation d'interpolation: R = A*T^B

R = Interpolated Rainfall rate (mm/h)/Intensité interpolée de la pluie (mm/h)
RR = Rainfall rate (mm/h) / Intensité de la pluie (mm/h)
T = Rainfall duration (h) / Durée de la pluie (h)

****

Statistics/Statistiques	2 yr/ans	5 yr/ans	10 yr/ans	25 yr/ans	50 yr/ans	100 yr/ans
Mean of RR/Moyenne de RR	15.5	22.7	27.5	33.5	38.0	42.5
Std. Dev. /Écart-type (RR)	15.0	23.4	29.0	36.1	41.3	46.5
Std. Error/Erreur-type	0.8	1.3	2.1	3.1	3.9	4.6
Coefficient (A)	10.4	14.4	17.0	20.3	22.7	25.2
Exponent/Exposant (B)	-0.595	-0.625	-0.637	-0.648	-0.654	-0.659
Mean % Error/% erreur moyenne	3.2	4.3	5.5	6.5	7.1	7.6

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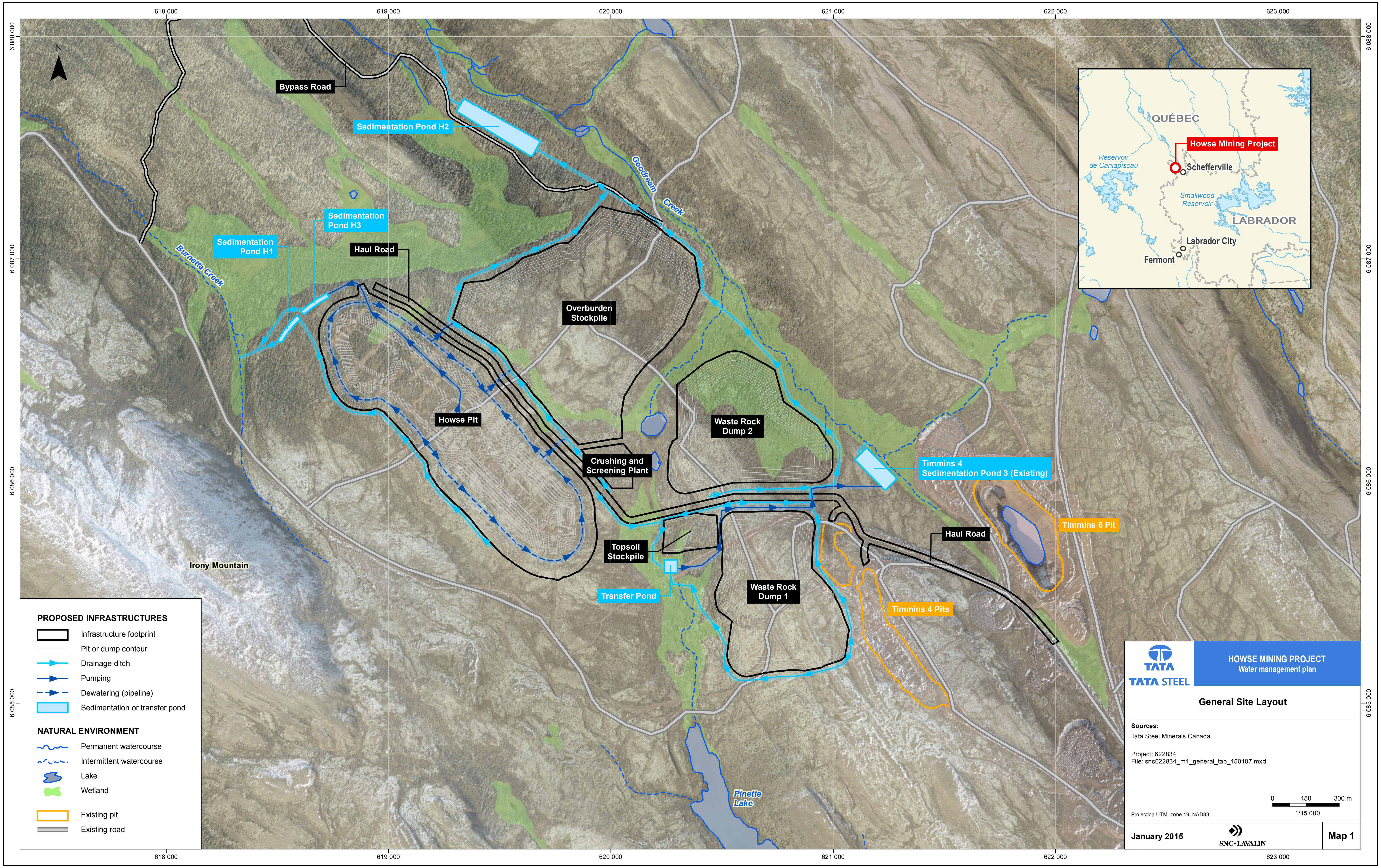
APPENDIX B

Maps and Drawings



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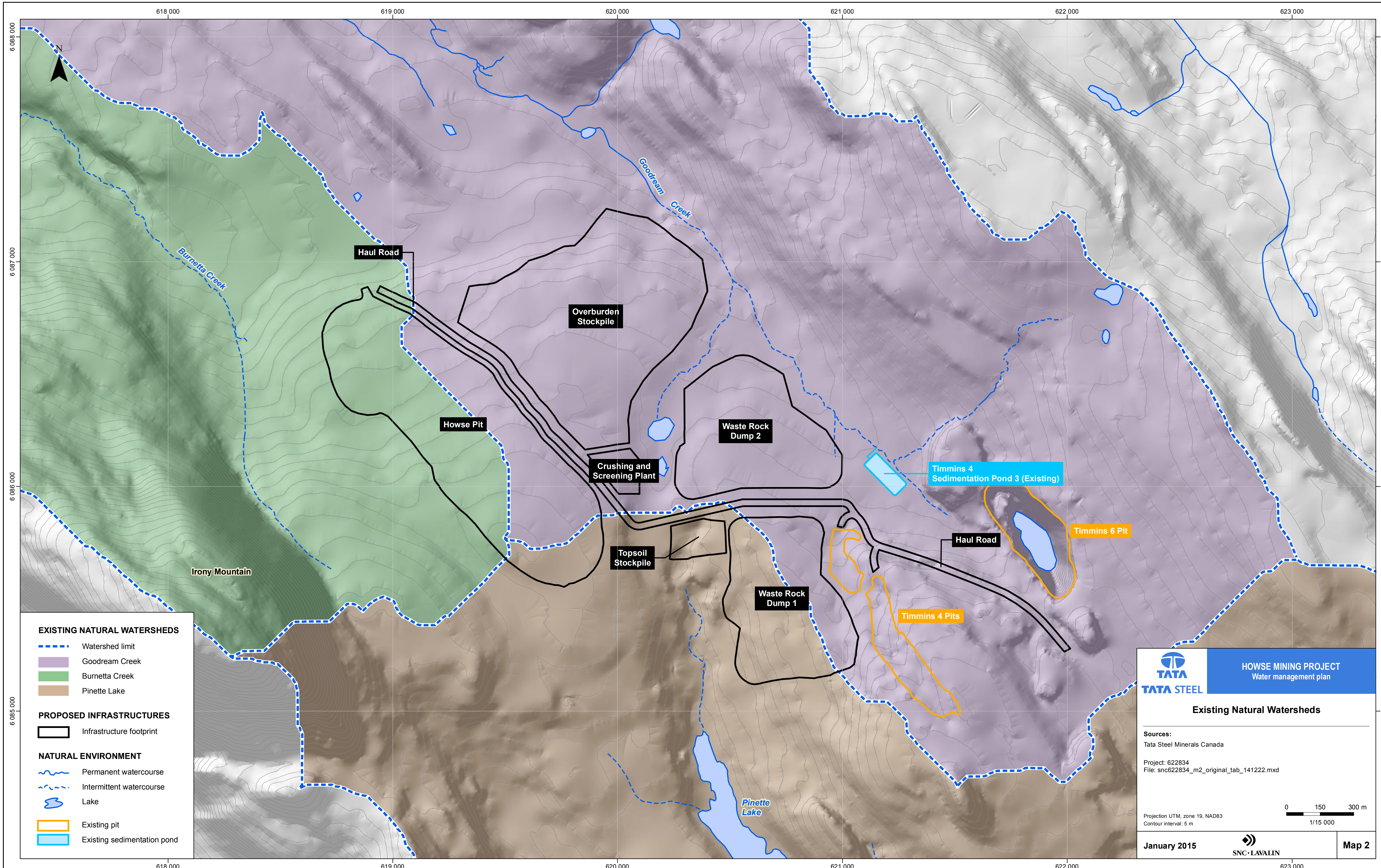

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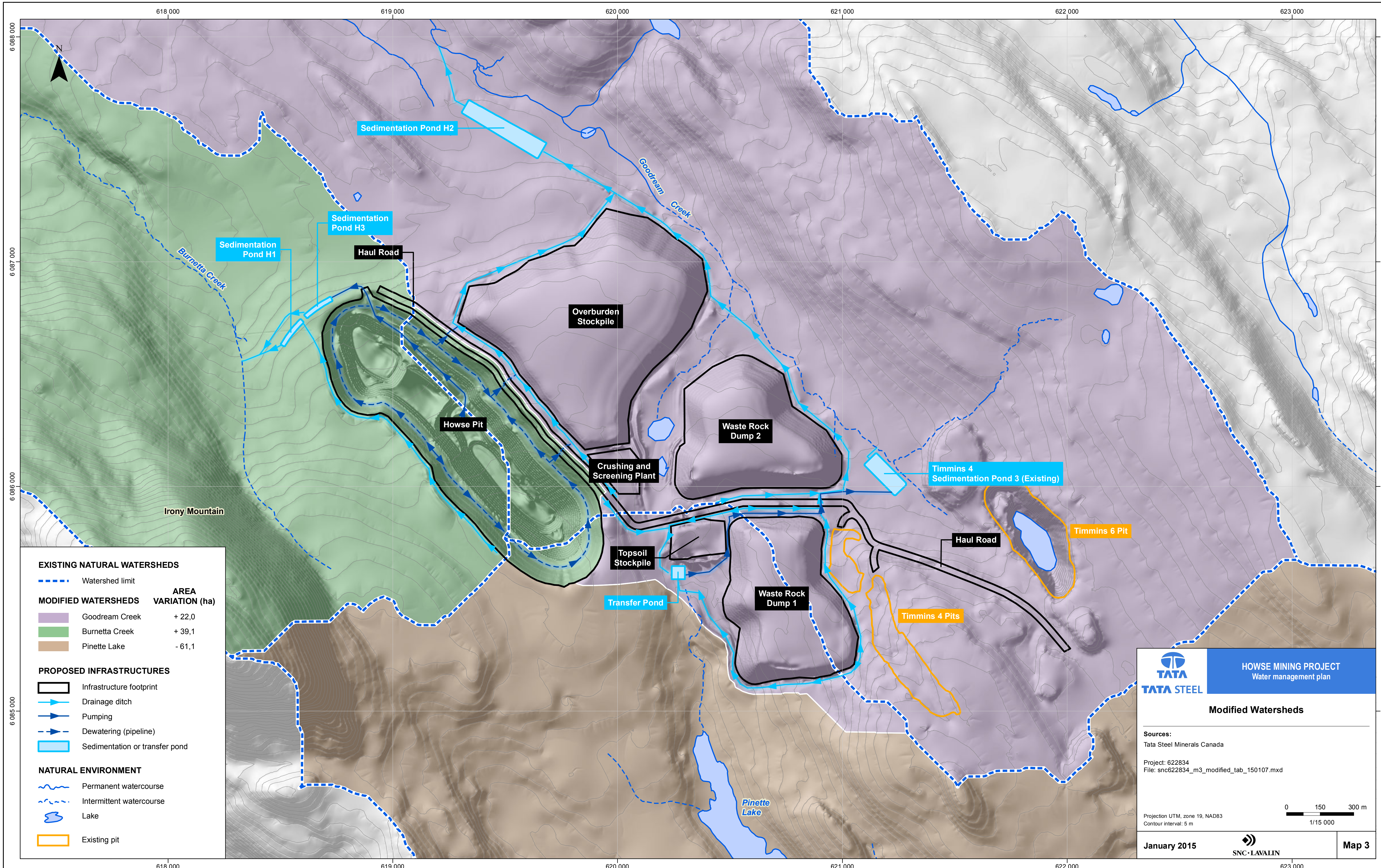

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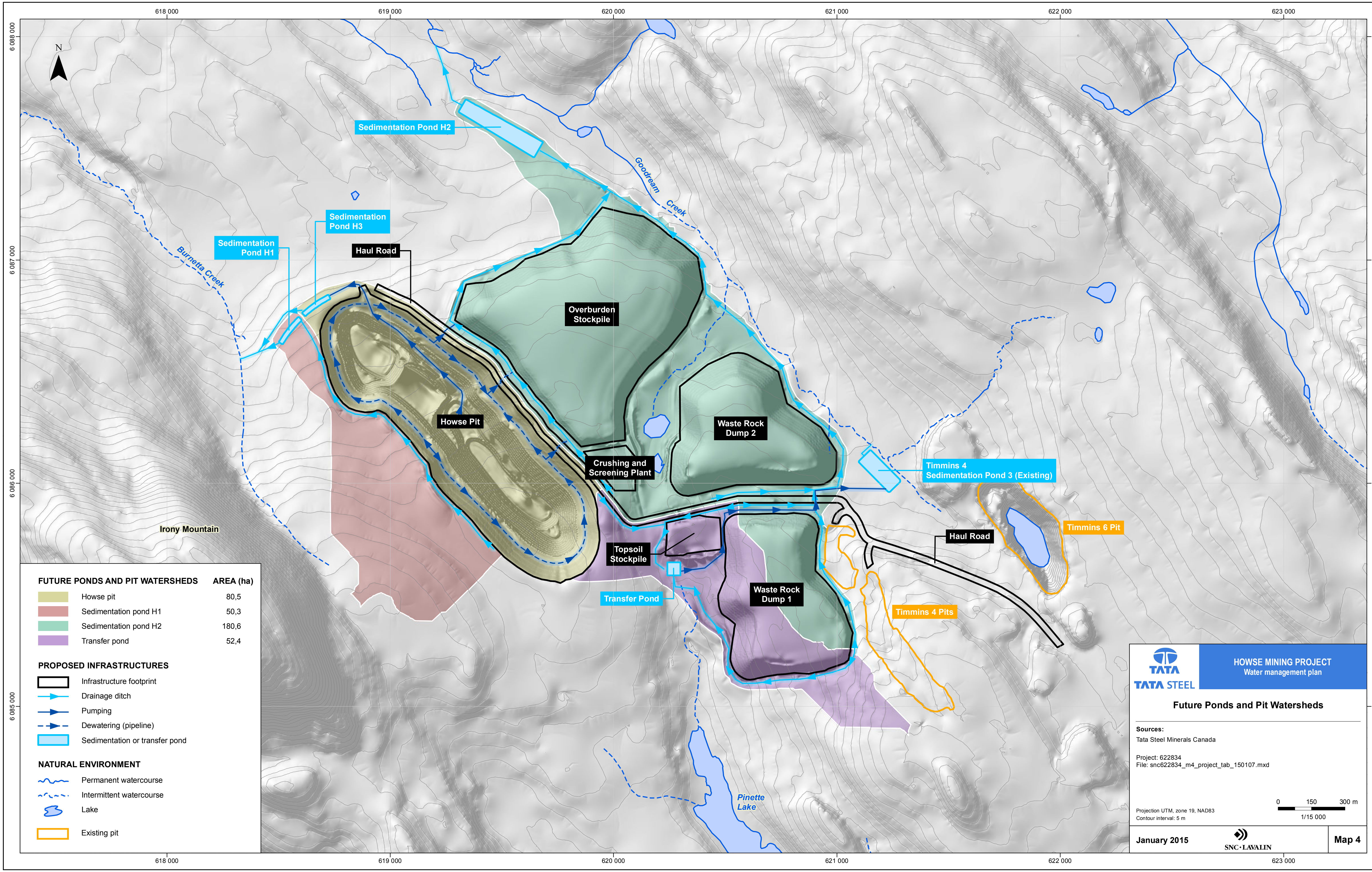

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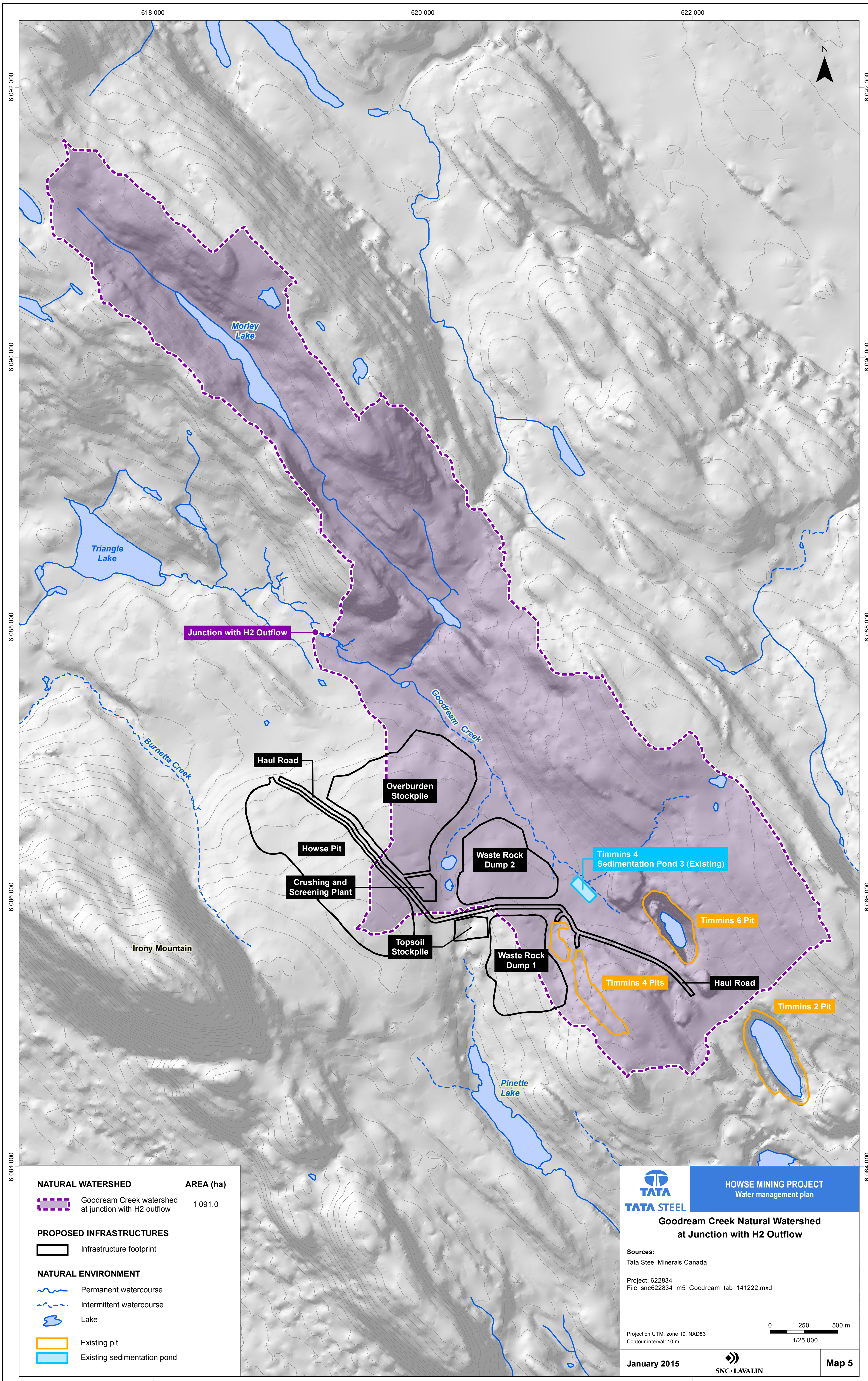

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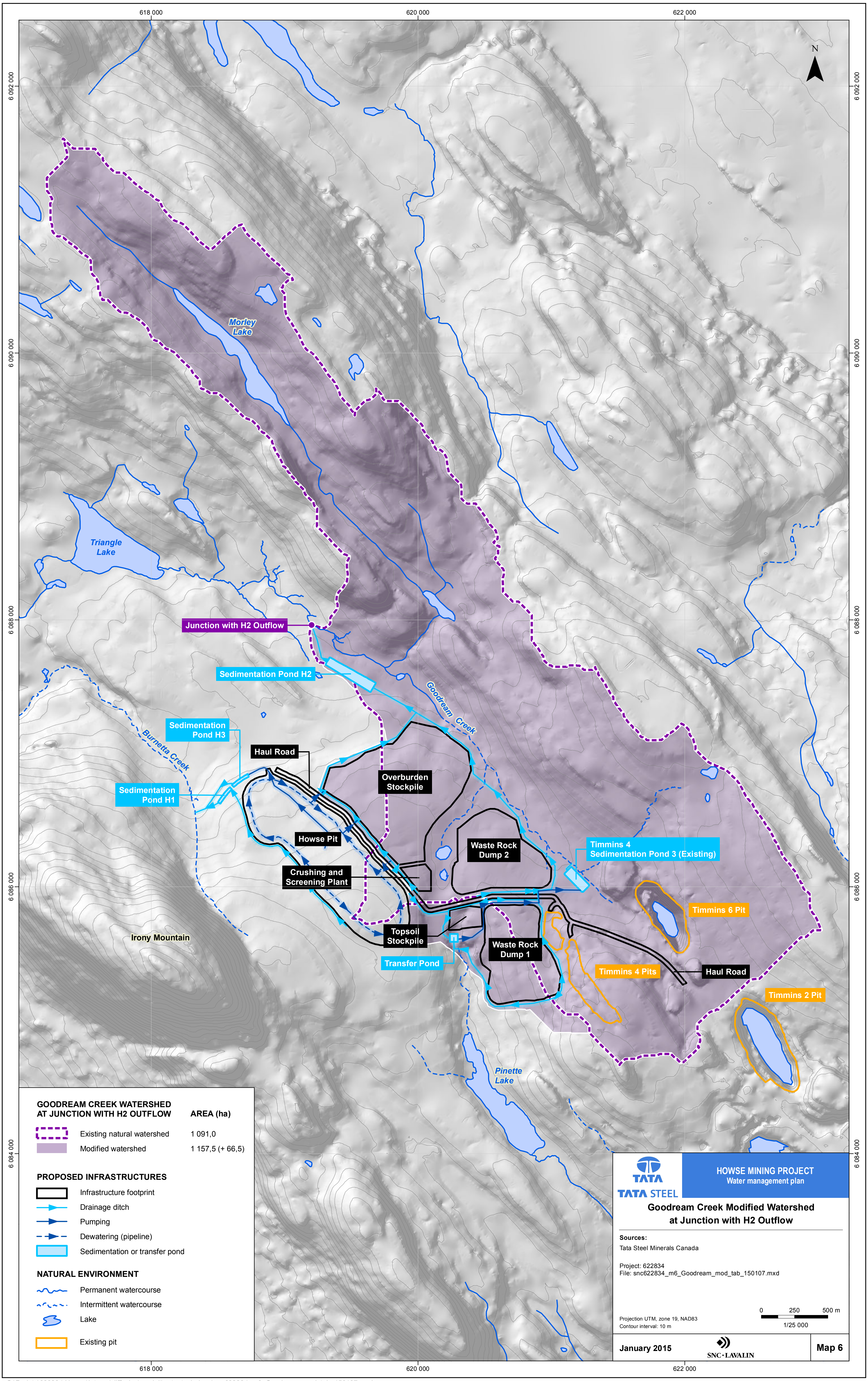

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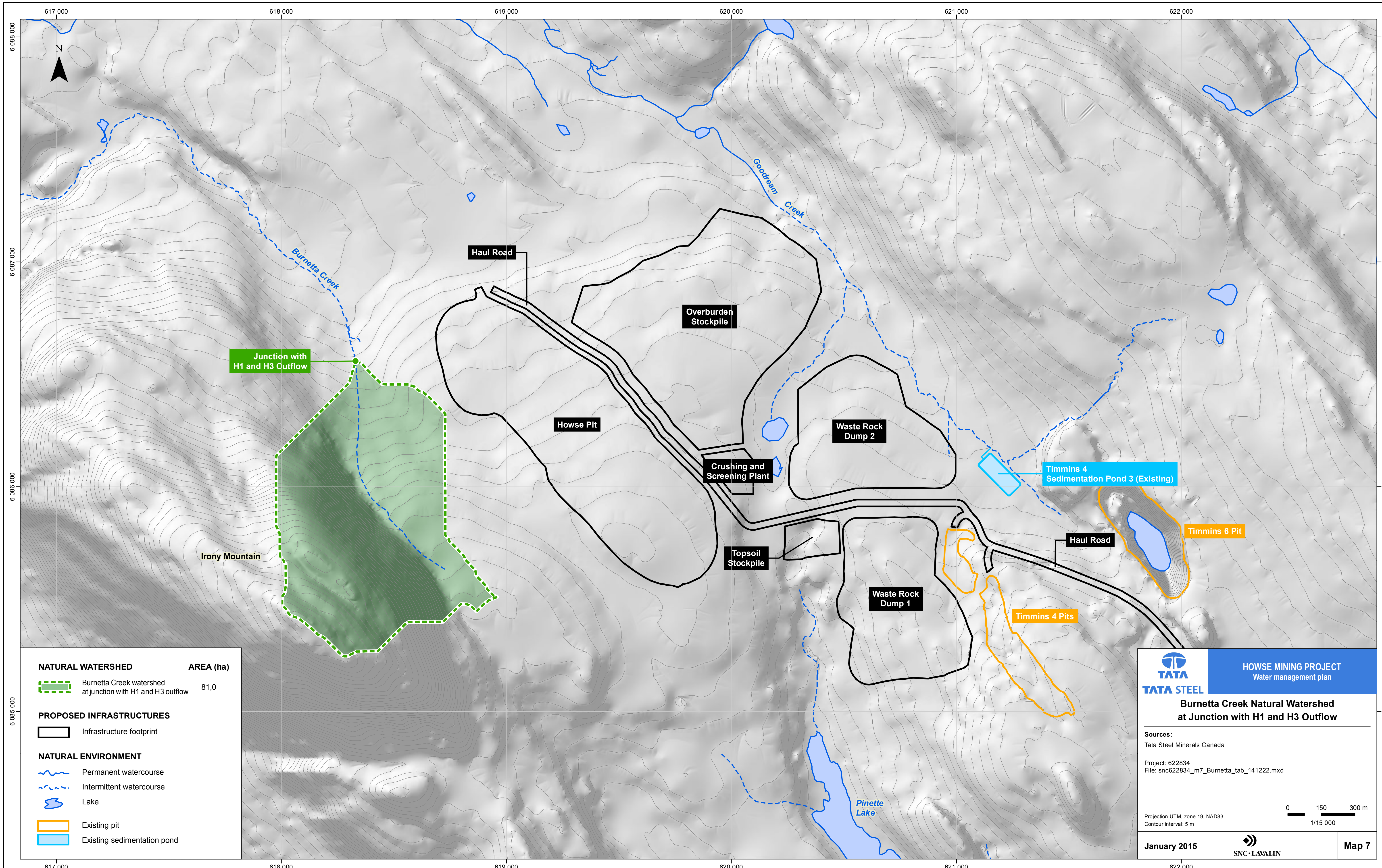

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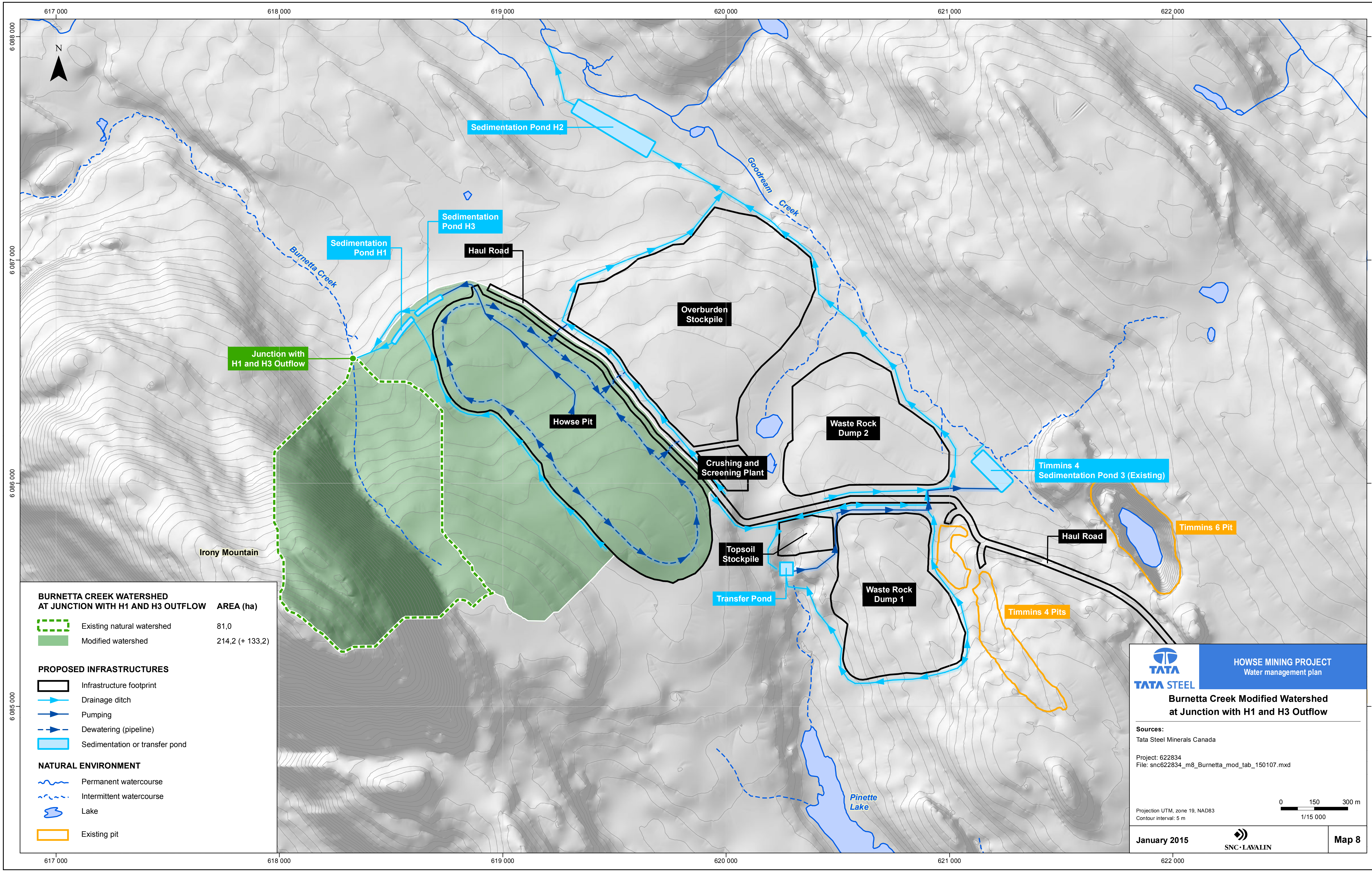

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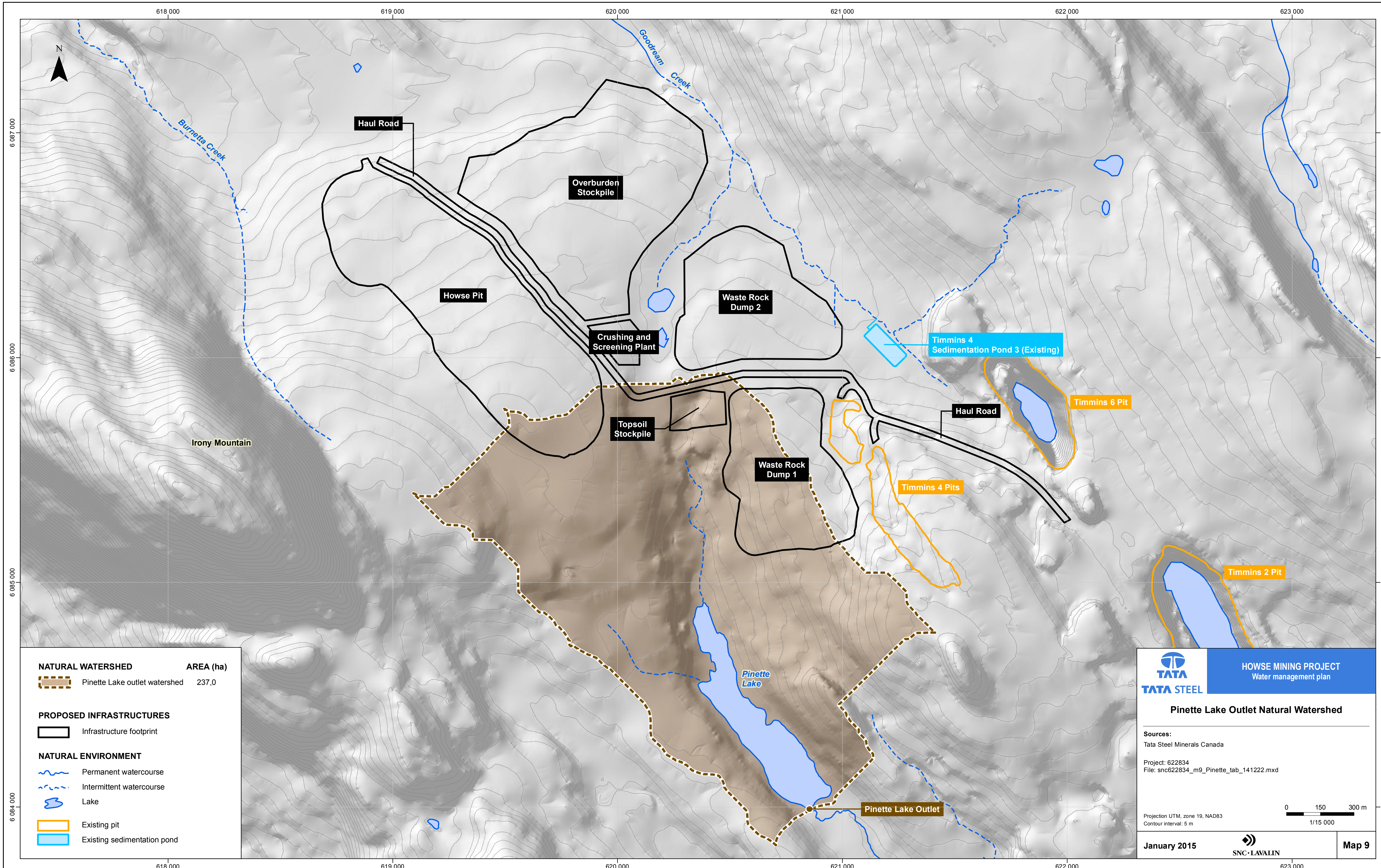

HOWSE MINING PROJECT
Water management plan
TATA STEEL
Pinette Lake Outlet Natural Watershed
Sources:
Tata Steel Minerals Canada
Project: 622834
File: snc622834_m9_Pinette_tab_141222.mxd
Projection UTM, zone 19, NAD83
Contour interval: 5 m
0 150 300 m
1/15 000
January 2015
SNC·LAVALIN
Map 9
NATURAL WATERSHED
AREA (ha)
Pinette Lake outlet watershed 237,0
PROPOSED INFRASTRUCTURES
Infrastructure footprint
NATURAL ENVIRONMENT
Permanent watercourse
Intermittent watercourse
Lake
Existing pit
Existing sedimentation pond
N
Haul Road
Overburden Stockpile
Howse Pit
Waste Rock Dump 2
Crushing and Screening Plant
Timmins 4 Sedimentation Pond 3 (Existing)
Topsoil Stockpile
Waste Rock Dump 1
Timmins 6 Pit
Haul Road
Timmins 4 Pits
Timmins 2 Pit
Pinette Lake
Pinette Lake Outlet
Irony Mountain
Burnetta Creek
Goodream Creek
618 000
619 000
620 000
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622 000
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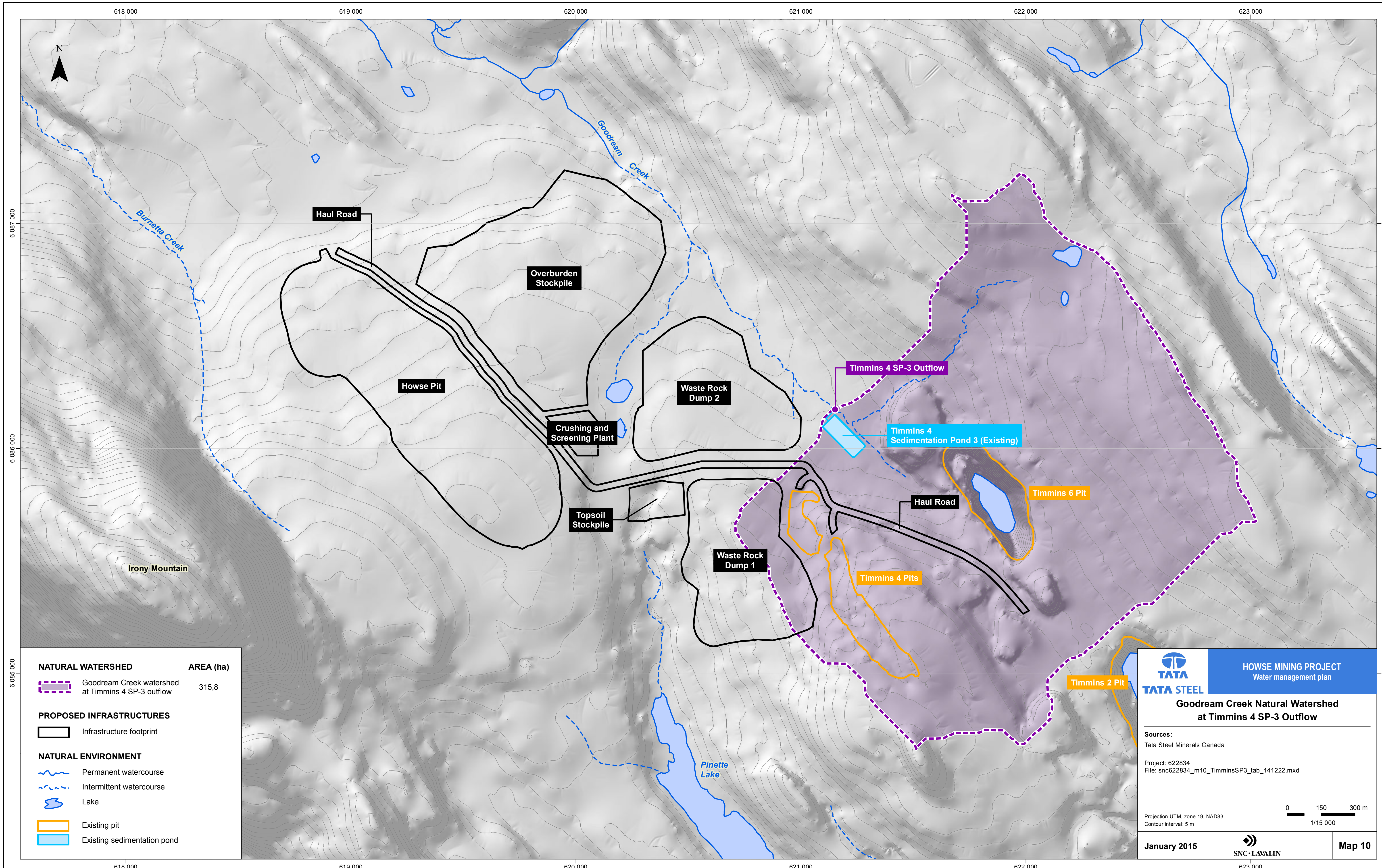
6 085 000
6 084 000



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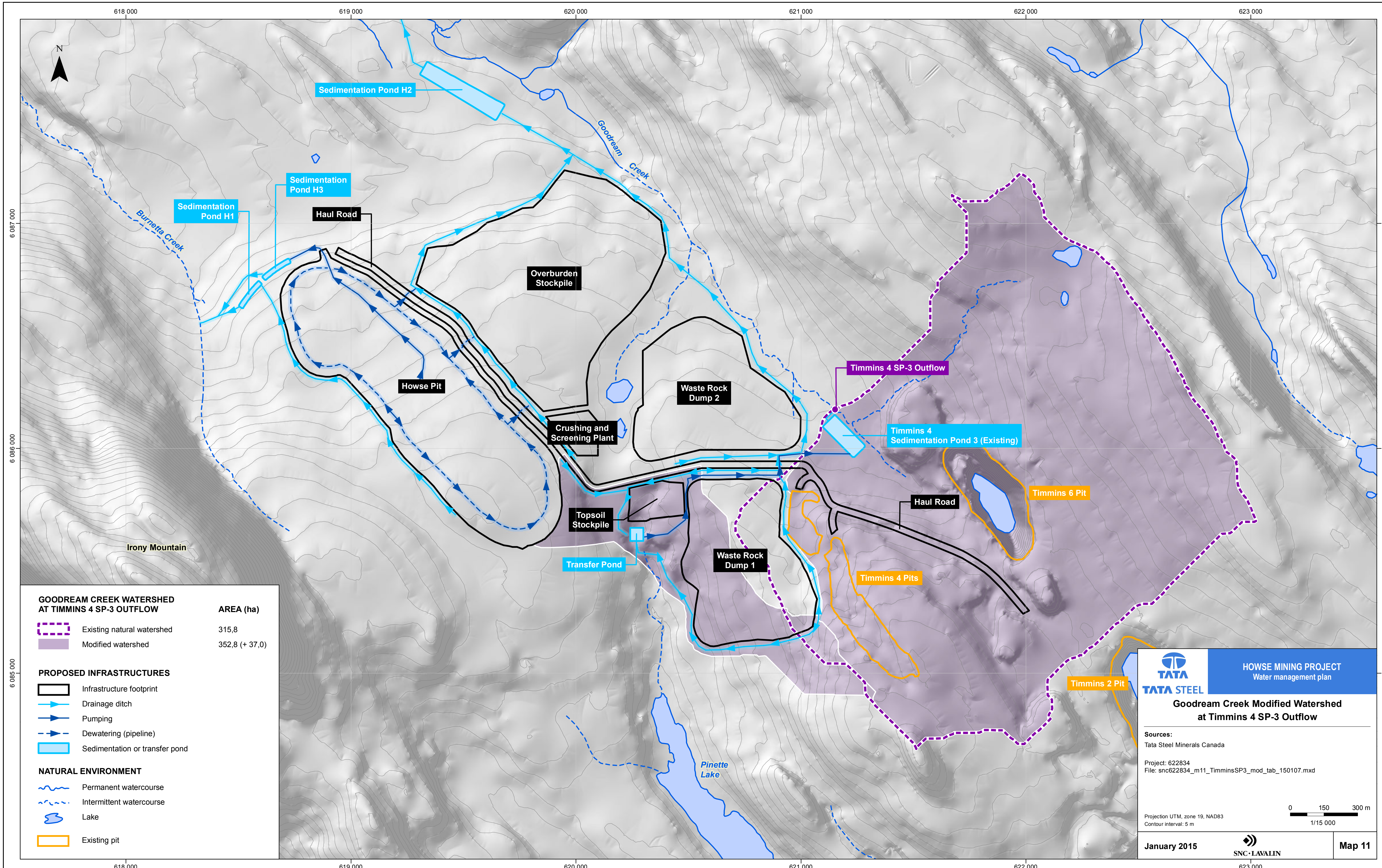

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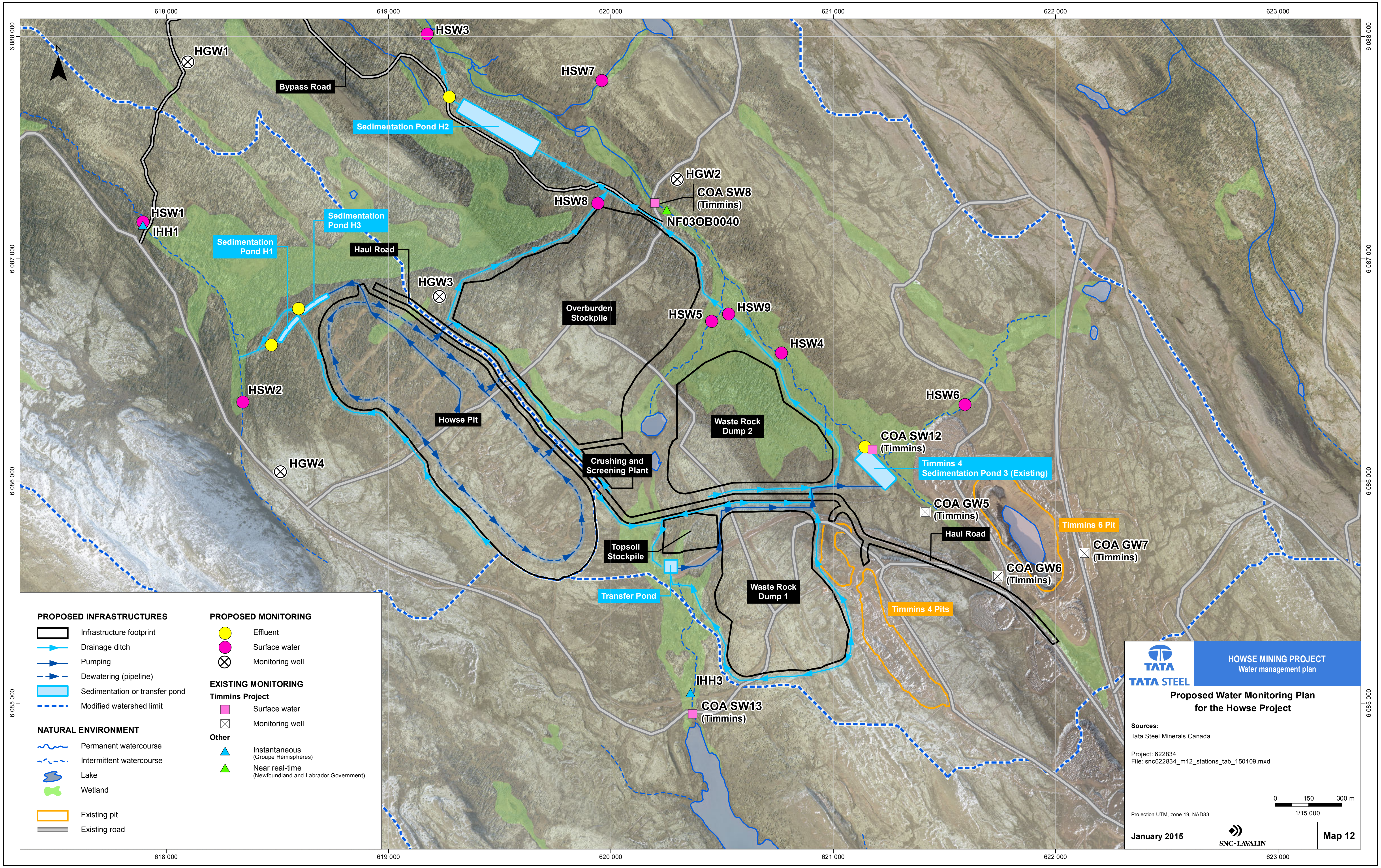

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2	PB	2014/11/14	ISSUED FOR CLIENT REVIEW	
1	PA	2014/11/06	ISSUED FOR INTERNAL REVIEW	

ISSUE REGISTER

No	REFERENCE DRAWINGS NUMBER
01	AU-2013-028-501-MN-REVD (OPTION 3, DEC.5, 2013)

REVISION REGISTER

PROFESSIONAL SEAL

SNC·LAVALIN
Sustainable Mine Development
Global Mining & Metallurgy
SNC LAVALIN INC.
455, Boul. René-Lévesque Ouest
Montreal (Quebec)
Canada H2Z 1Z3

CLIENT: HOWSE MINERALS CANADA LIMITED

PROJECT: WATER MANAGEMENT PLAN HOWSE PROJECT

TITLE: GENERAL SITE LAYOUT

PREPARATION		APPROVAL	
DESIGNED	M.H. Paquette	PROJECT DISCIPLINE ENGINEER	L. Didillon
DRAWN	D. Lan	CLIENT	
CHECKED	P. Scholz	DATE	2014-10-20
SCALE	1 : 7 500		

PROJECT No	SUBDIVISION	SUBJECT	SERIAL	REV.
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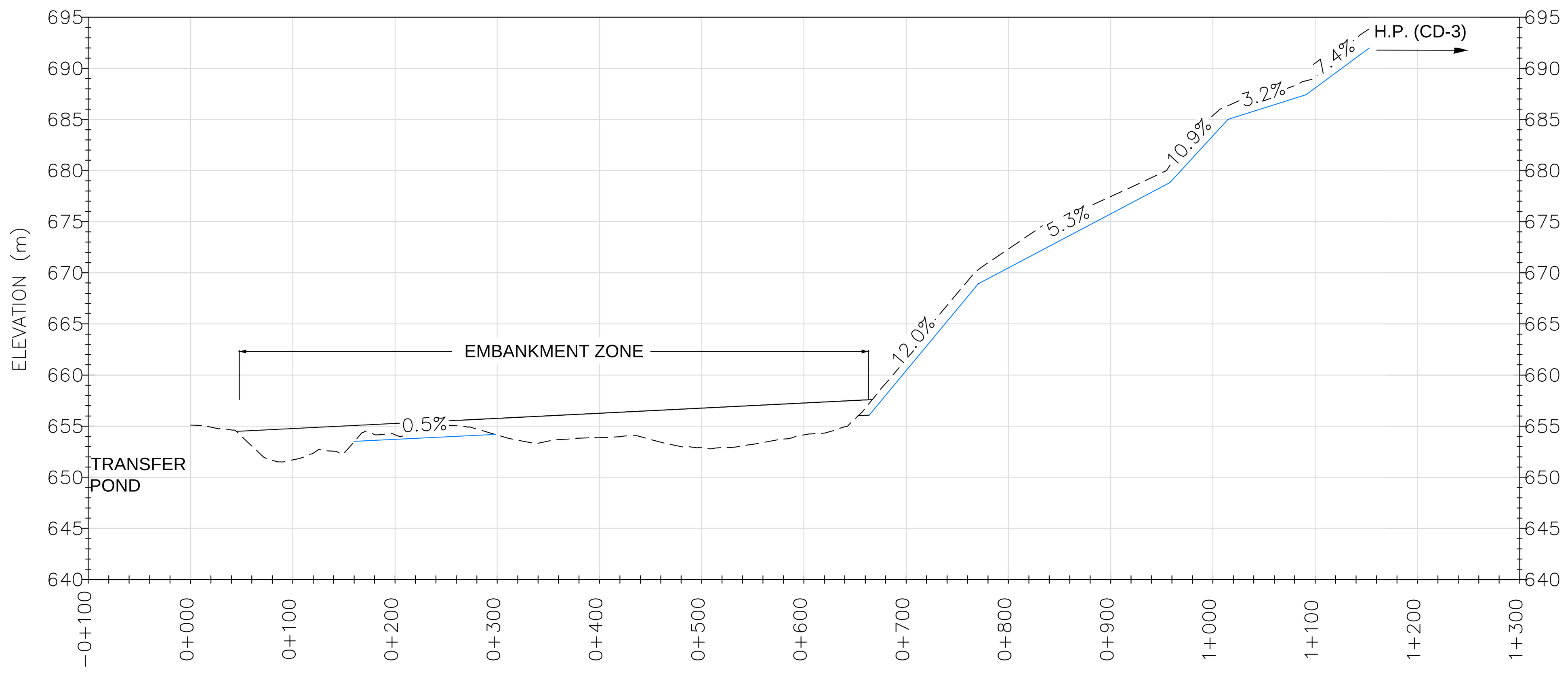

LONGITUDINAL PROFILE - DITCH CD-1

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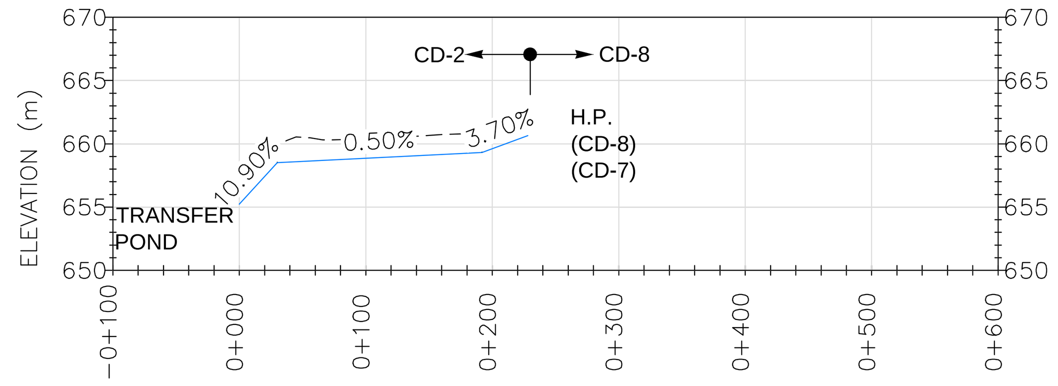

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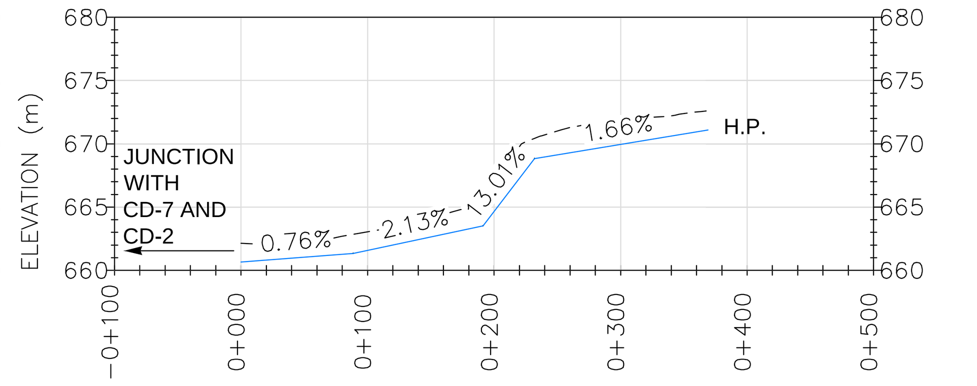

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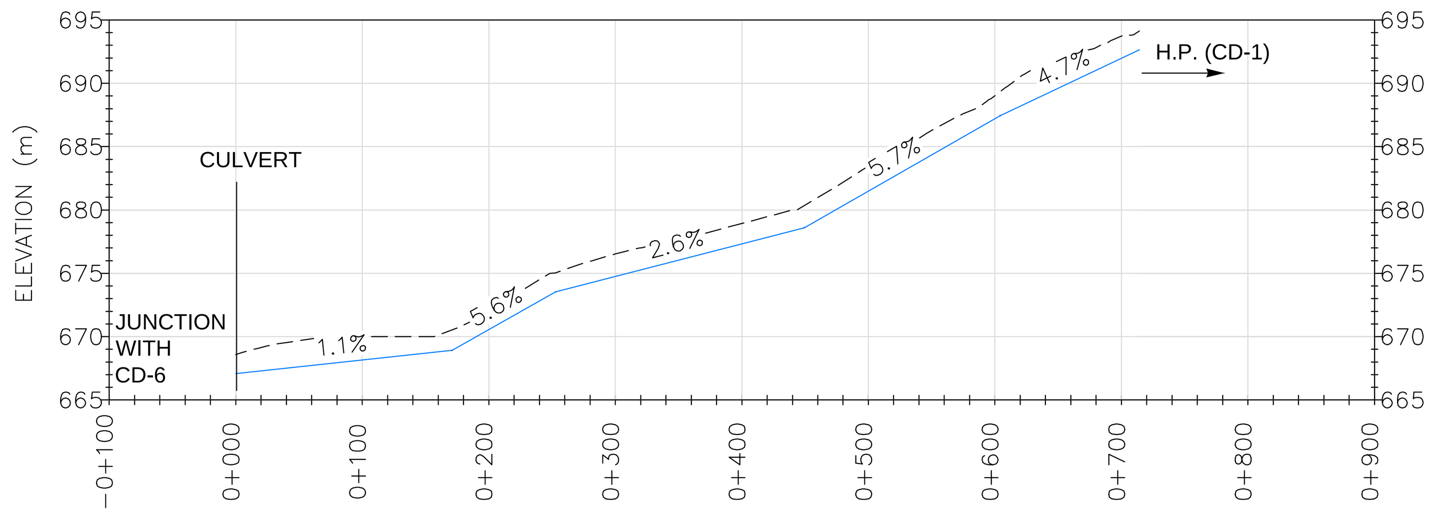

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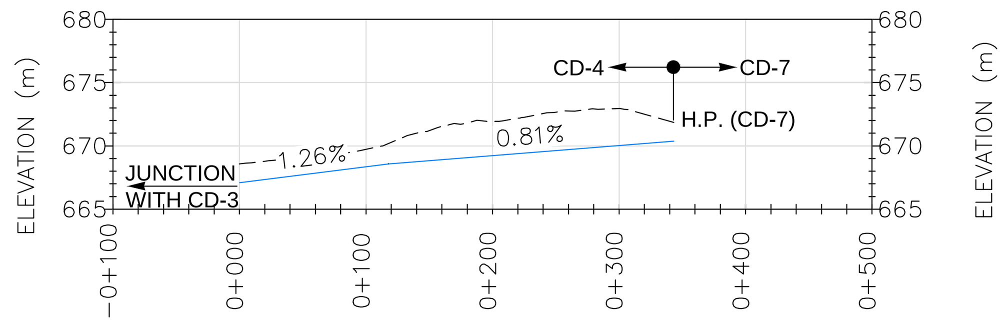

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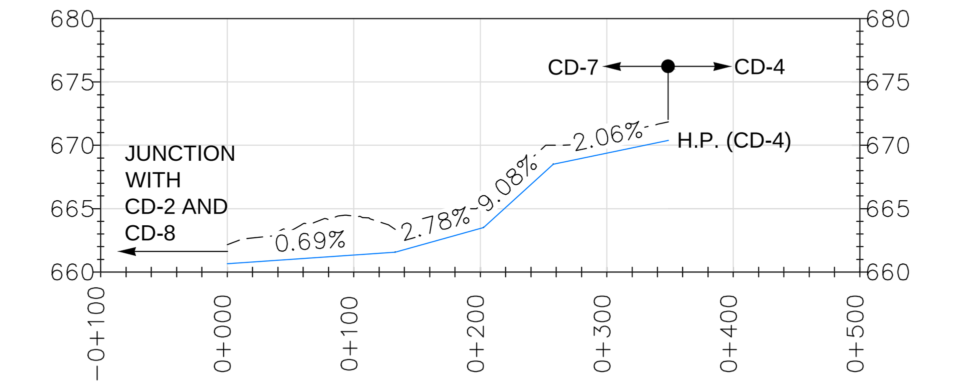

LONGITUDINAL PROFILE - DITCH CD-7

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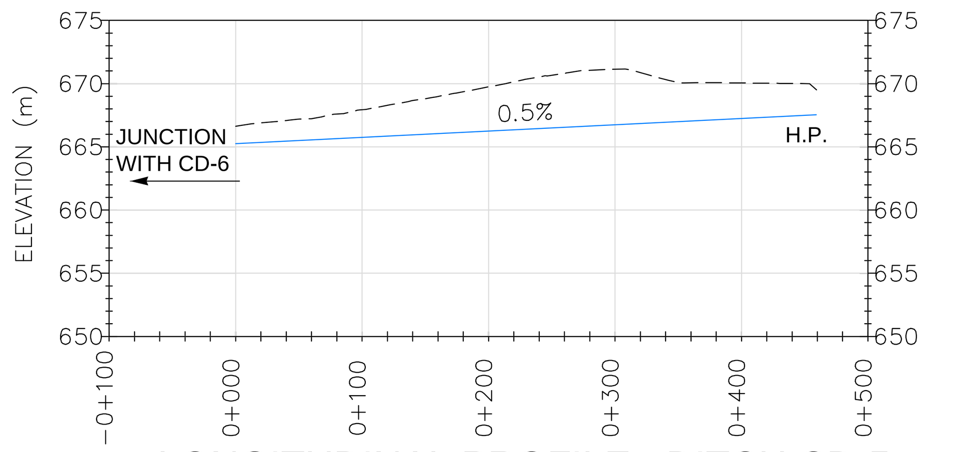

LONGITUDINAL PROFILE - DITCH CD-5

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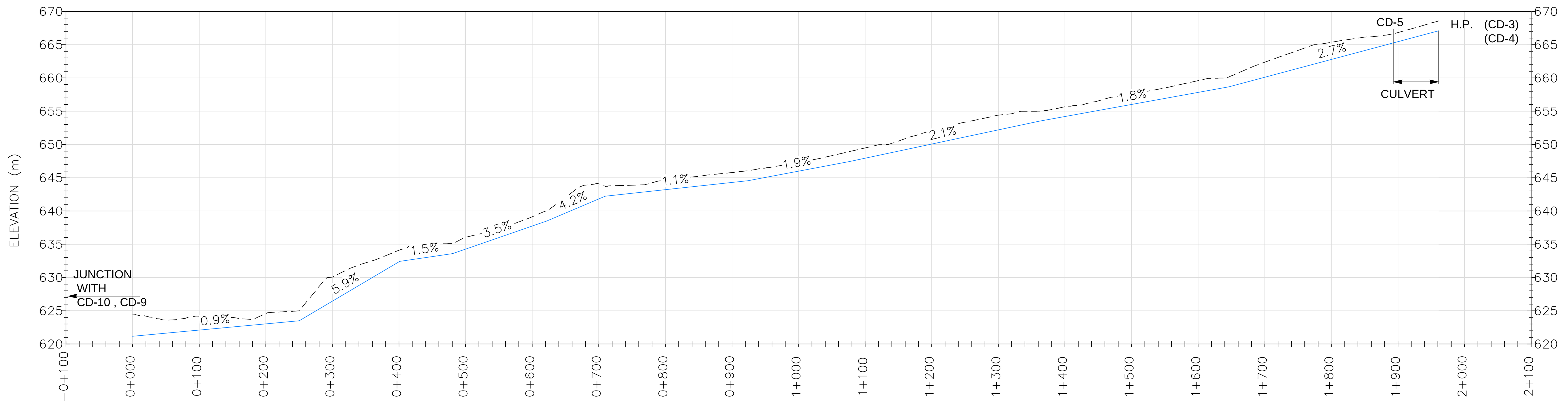

LONGITUDINAL PROFILE - DITCH CD-6

SCALE: H: 1:5000
V: 1:500

NOTE: DITCHES WILL BE PROTECTED AGAINST EROSION.

LEGEND

- – – – – NATURAL GROUND
- ——— DITCH INVERT
- H.P. HIGH POINT

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ISSUE No	REV.	DATE (Y/M/D)	PURPOSE OF ISSUE	TRANSMISSION LETTER No
3	00	2014/12/11	ISSUED FOR IMPACT STUDY	
2	PB	2014/11/14	ISSUED FOR CLIENT REVIEW	
1	PA	2014/11/06	ISSUED FOR INTERNAL REVIEW	

ISSUE REGISTER | ISSUE REGISTER | REVISION REGISTER (No, REVISION DESCRIPTION, DATE (Y/M/D), *, **; INITIALS: * DESIGNED ** APPROVED) | REVISION REGISTER | No | REFERENCE DRAWINGS NUMBER

PROFESSIONAL SEAL

SNC·LAVALIN

Sustainable Mine Development
Global Mining & Metallurgy
SNC LAVALIN INC.
455, Boul. René-Lévesque Ouest
Montreal (Quebec)
Canada H2Z 1Z3

PREPARATION	APPROVAL
DESIGNED: M.H. Paquette	PROJECT DISCIPLINE ENGINEER: L. Didillon
DRAWN: D. Lan	CLIENT
CHECKED: –	DATE: 2014-10-20

SCALE 1 : 5 000 (50 0 50 100 150 200m)

CLIENT: HOUSE MINERALS CANADA LIMITED

PROJECT: WATER MANAGEMENT PLAN HOWSE PROJECT

TITLE: DRAINAGE DITCHES LONGITUDINAL PROFILES (1/2)

PROJECT No	SUBDIVISION	SUBJECT	SERIAL	REV.
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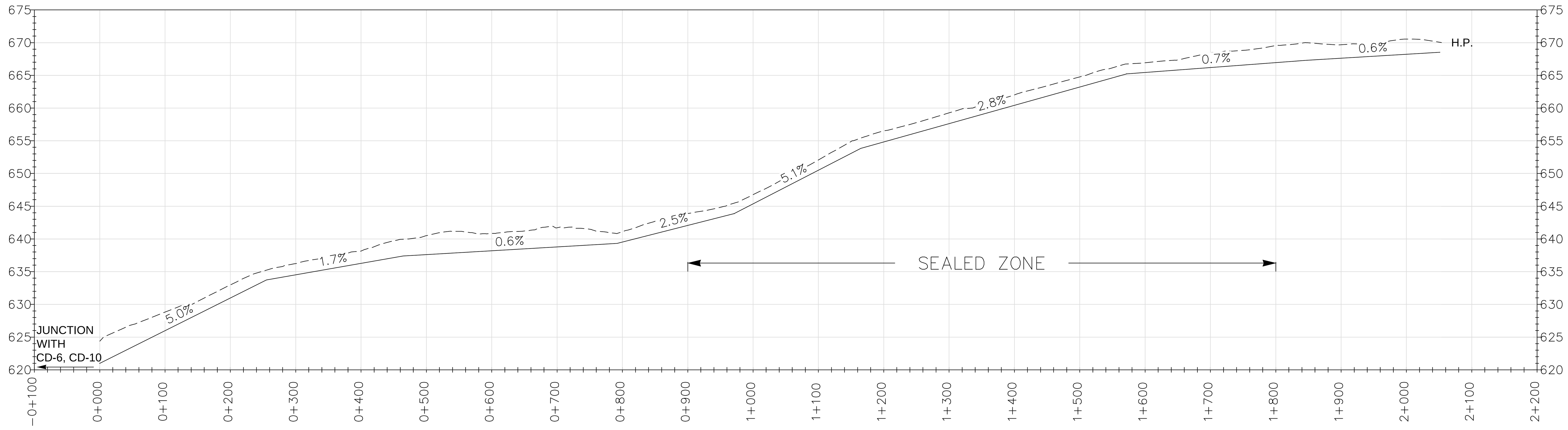

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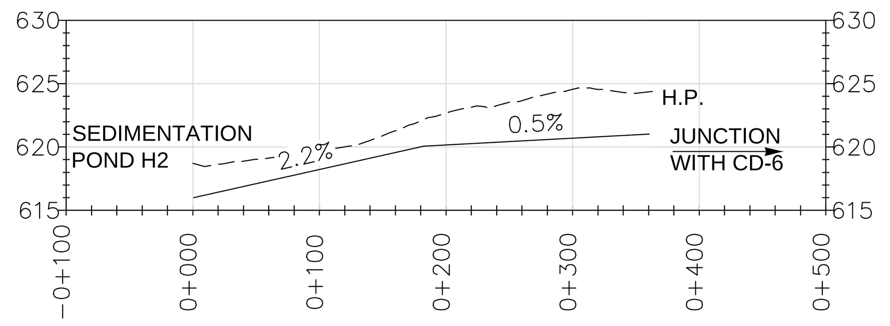

LONGITUDINAL PROFILE - DITCH CD-10

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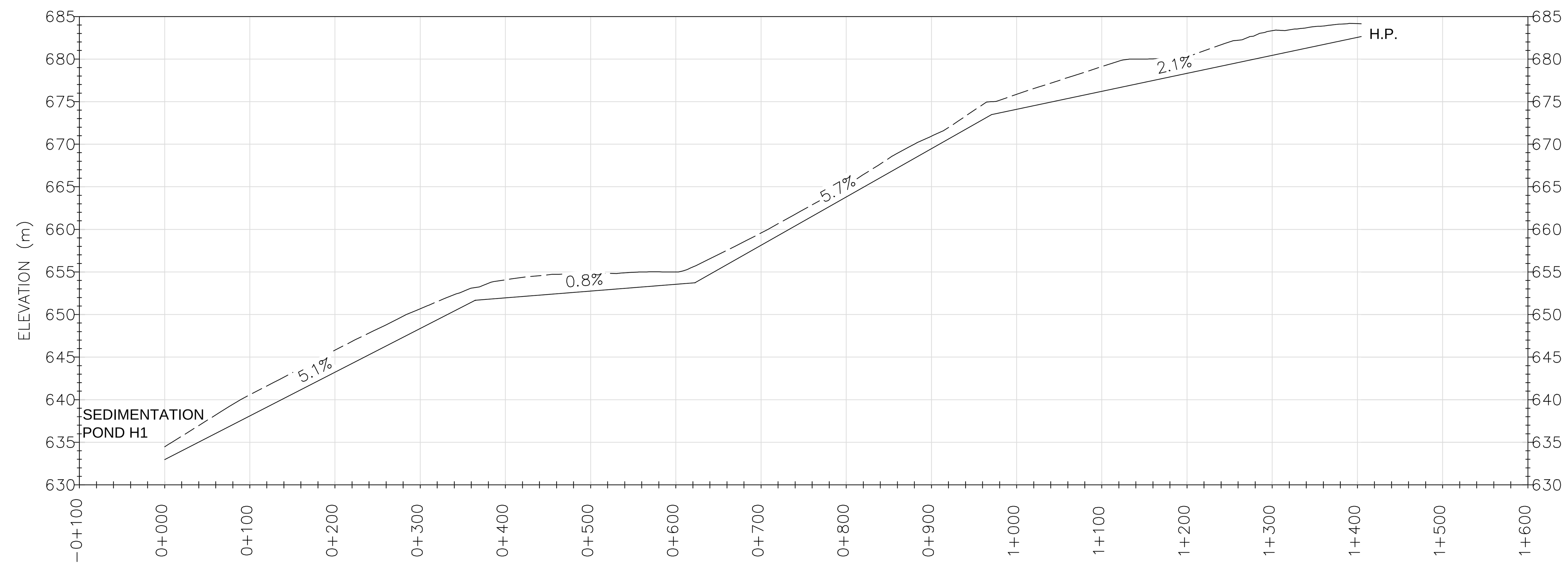

LONGITUDINAL PROFILE - DITCH DD-1

SCALE: H: 1:5000
V: 1:500

LEGEND

- – – – – NATURAL GROUND
- ——— DITCH INVERT
- H.P. HIGH POINT

NOT FOR CONSTRUCTION

ISSUE No	REV.	DATE (Y/M/D)	PURPOSE OF ISSUE
4	01	2015/01/08	ISSUED FOR IMPACT STUDY
3	00	2014/12/11	ISSUED FOR IMPACT STUDY
2	PB	2014/11/14	ISSUED FOR CLIENT REVIEW
1	PA	2014/11/06	ISSUED FOR INTERNAL REVIEW

ISSUE REGISTER — REVISION REGISTER — REFERENCE DRAWINGS NUMBER

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Sustainable Mine Development
Global Mining & Metallurgy
SNC LAVALIN INC.
455, Boul. René-Lévesque Ouest
Montreal (Quebec)
Canada H2Z 1Z3

PREPARATION	APPROVAL
DESIGNED: M.H. Paquette	PROJECT DISCIPLINE ENGINEER: L. Didillon
DRAWN: D. Lan	CLIENT
CHECKED: –	DATE: 2014-10-20
SCALE: 1 : 5 000	

CLIENT: HOUSE MINERALS CANADA LIMITED

PROJECT: WATER MANAGEMENT PLAN HOWSE PROJECT

TITLE: DRAINAGE DITCHES LONGITUDINAL PROFILES (2/2)

PROJECT No	SUBDIVISION	SUBJECT	SERIAL	REV.
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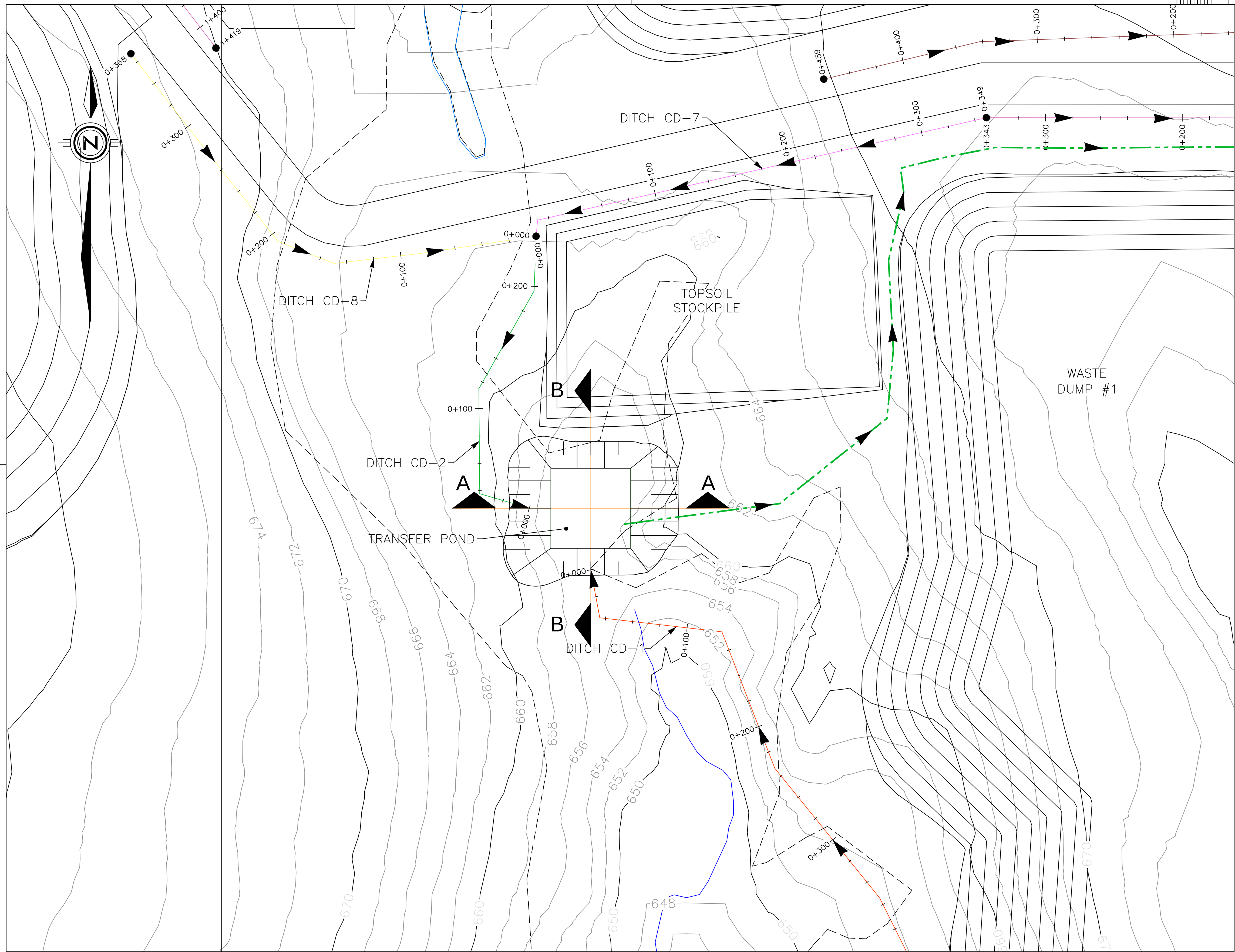

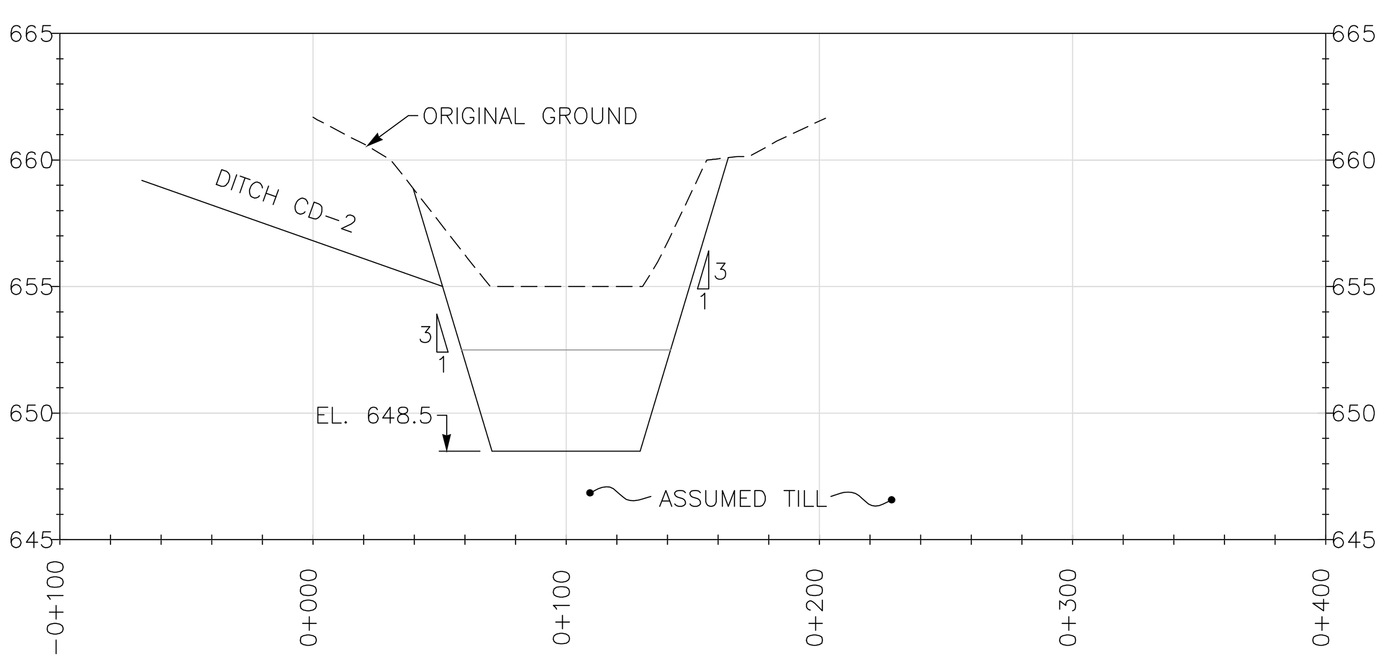

SECTION A-A - TRANSFER POND

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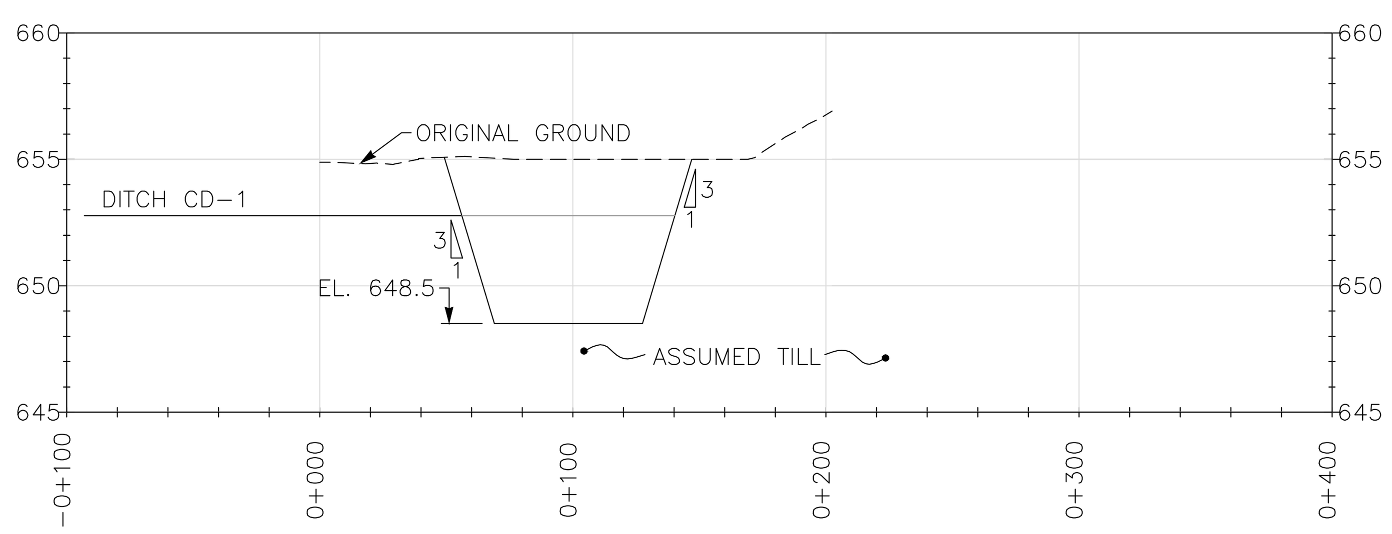
V: 1:250



SECTION B-B - TRANSFER POND

SCALE: H: 1:2500
V: 1:250

LEGEND

- PROPOSED DITCH
- WETLAND
- WATER COURSE
- CD-1 DITCH NUMBER
- PUMPING FROM TRANSFER POND

NOTE:

THE SUITABILITY OF THE EXCAVATED TILL TO BE USED FOR DYKE CONSTRUCTION WILL BE CONFIRMED IN THE NEXT PHASE OF ENGINEERING.

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ISSUE REGISTER

ISSUE No	REV.	DATE (Y/M/D)	PURPOSE OF ISSUE	TRANSMISSION LETTER No
3	00	2014/12/11	ISSUED FOR IMPACT STUDY	
2	PB	2014/11/14	ISSUED FOR CLIENT REVIEW	
1	PA	2014/11/06	ISSUED FOR INTERNAL REVIEW	

REFERENCE DRAWINGS NUMBER

No	REFERENCE DRAWINGS NUMBER
01	AU-2013-028-501-MN-REVD (OPTION 3, DEC.5, 2013)

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Sustainable Mine Development
Global Mining & Metallurgy
SNC LAVALIN INC.
455, Boul. René-Lévesque Ouest
Montreal (Quebec)
Canada H2Z 1Z3

PREPARATION	APPROVAL
DESIGNED: M.H. Paquette	PROJECT DISCIPLINE ENGINEER: L. Didillon
DRAWN: D. Lan	CLIENT
CHECKED: P. Scholz	DATE: 2014-10-20
SCALE: 1 : 2 500	

CLIENT: HOWSE MINERALS CANADA LIMITED

PROJECT: WATER MANAGEMENT PLAN HOWSE PROJECT

TITLE: TRANSFER POND SECTIONS AND DETAILS

PROJECT No	SUBDIVISION	SUBJECT	SERIAL	REV.
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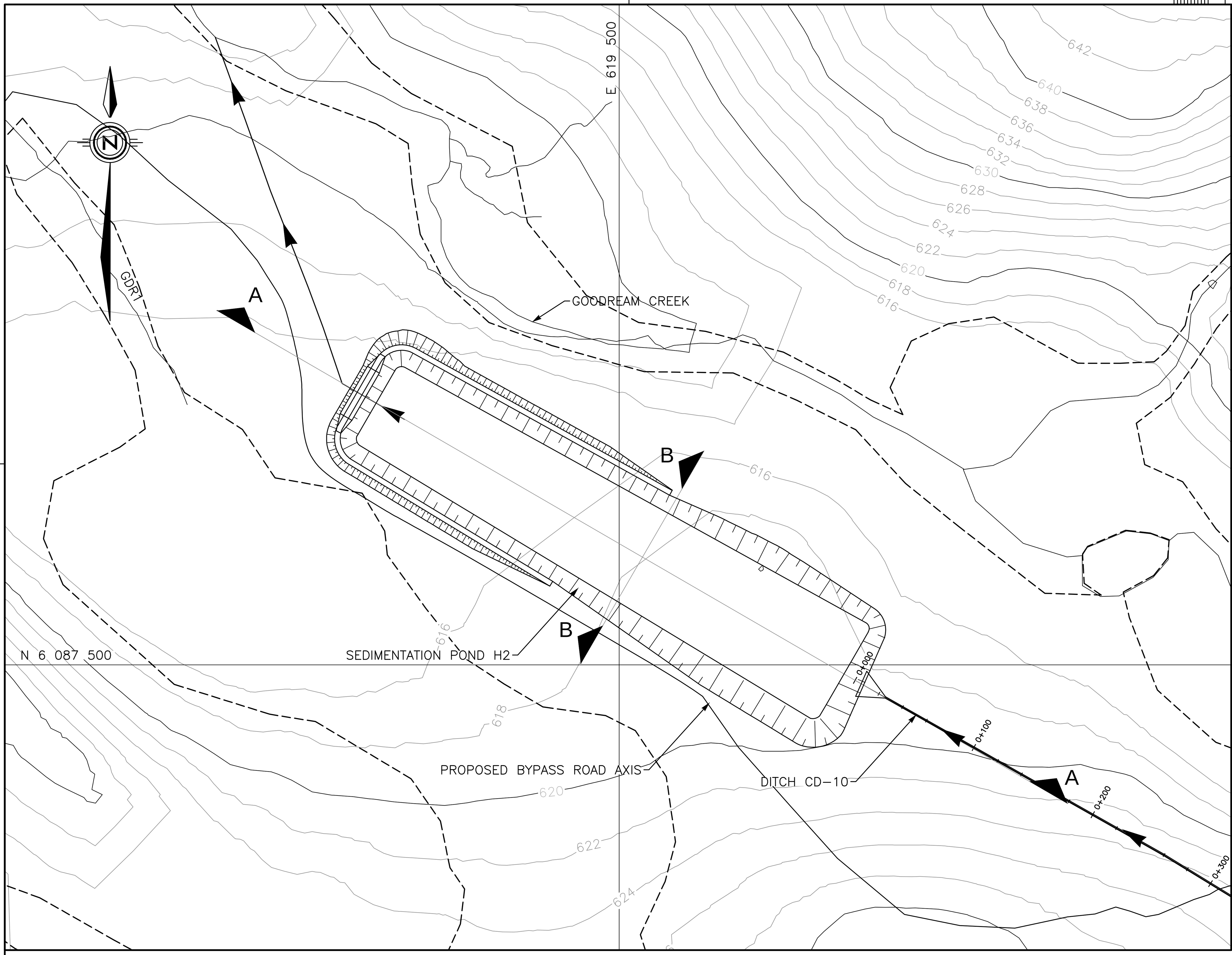
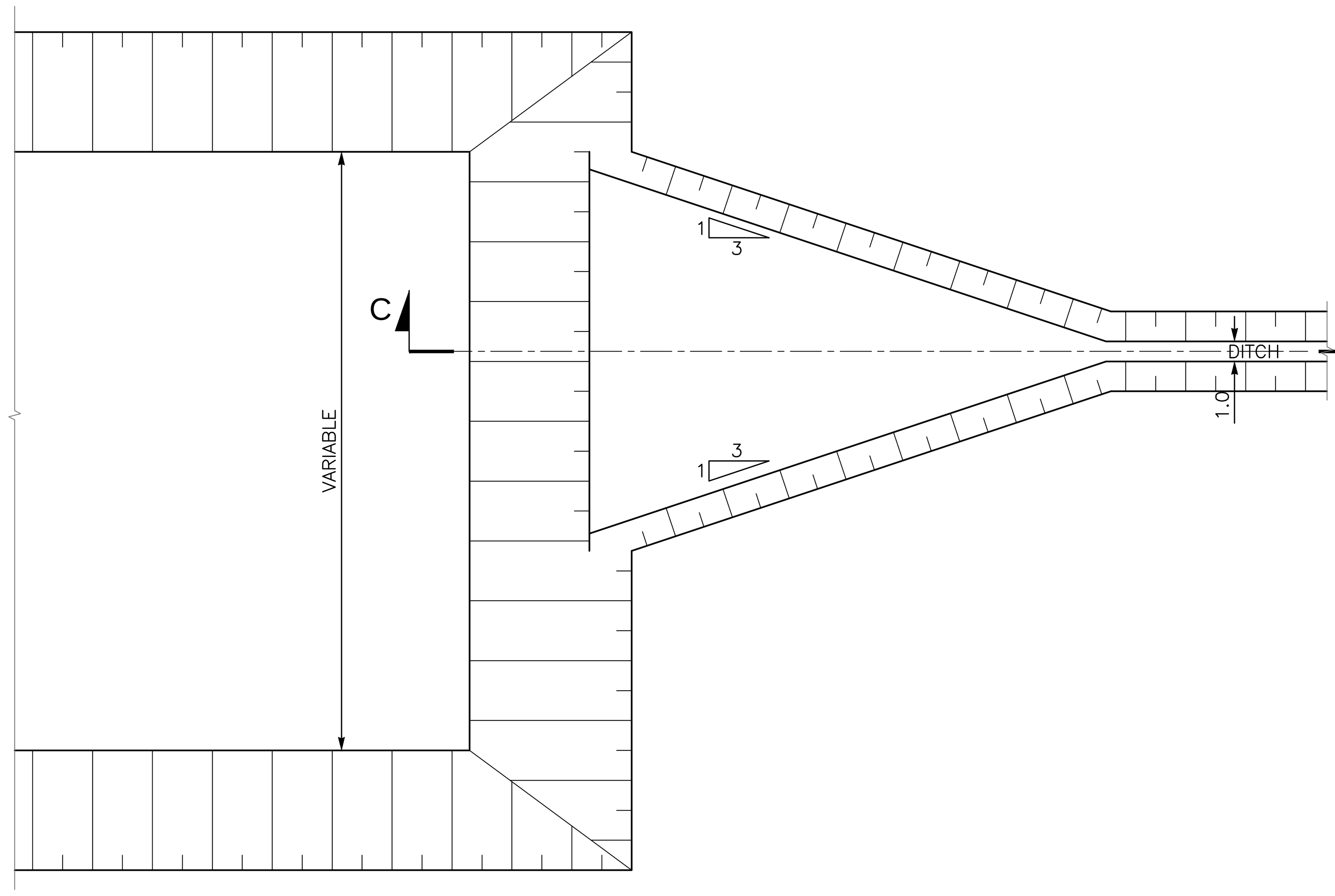
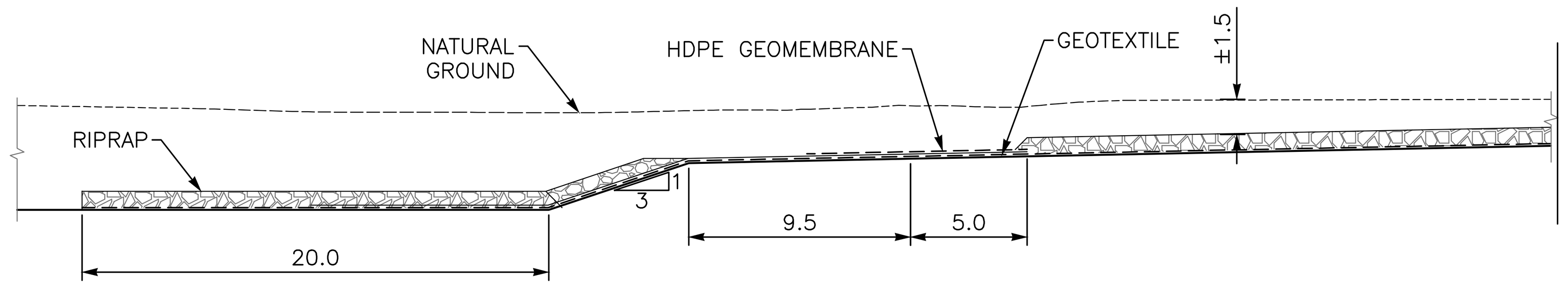
LEGEND

- PROPOSED DITCH
- WETLAND
- WATER COURSE
- CD-1 DITCH NUMBER

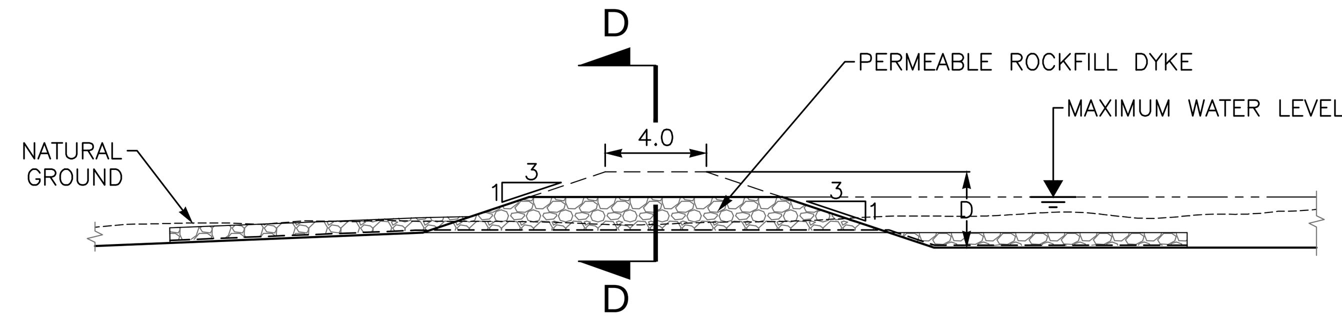




TYPICAL POND ENTRANCE DETAIL (PONDS H1 & H2)
SCALE 1:250



SECTION C-C
SCALE 1:250



TYPICAL SECTION PERMEABLE ROCKFILL DYKE AND EMERGENCY SPILLWAY (PONDS H1, H2 & H3)
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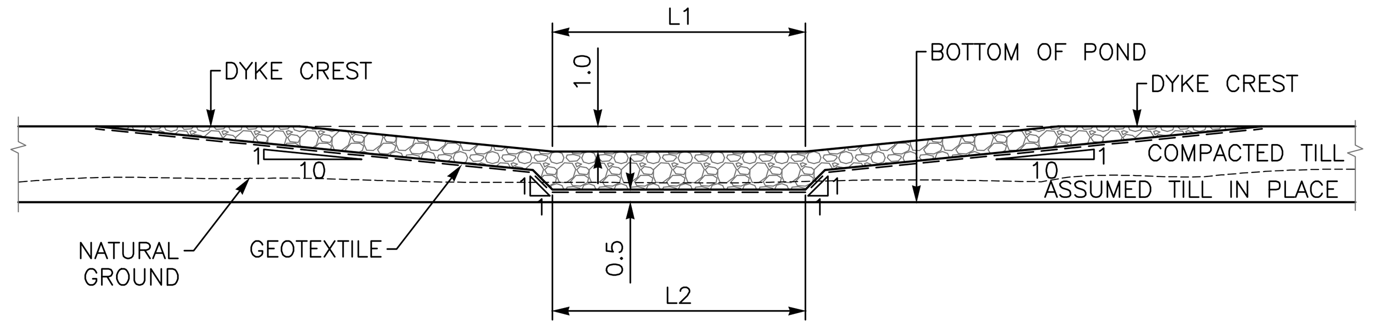
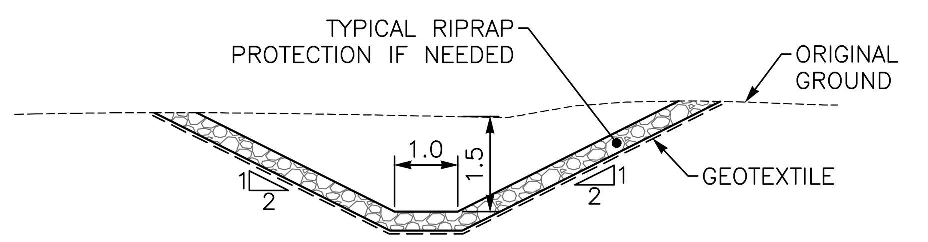
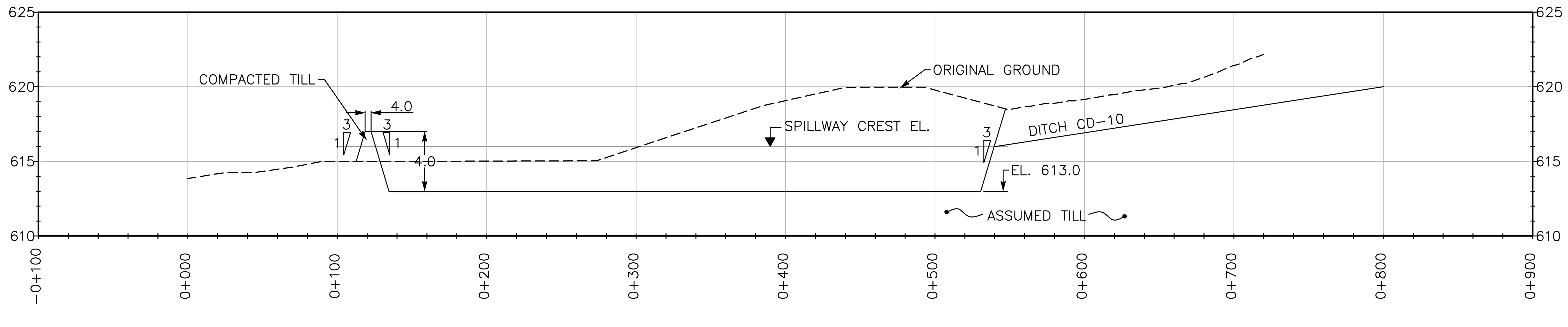


SECTION D-D
SCALE 1:250

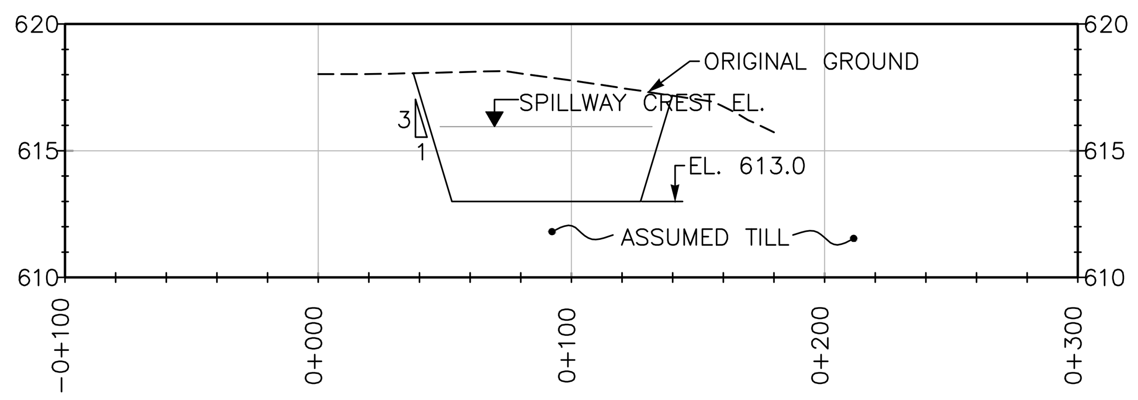
	L1 (m)	L2 (m)	D (m)
POND H1	10	10	3
POND H2	40	10	4
POND H3	5	10	2.5
TRANSFER POND	–	–	6.5
TIMMINS 4 POND#3	15	30	4



TYPICAL DITCH SECTION (NOTE 2)
SCALE 1:100



SECTION A-A - SEDIMENTATION POND H2
SCALE: H: 1:2500
V: 1:250



SECTION B-B - SEDIMENTATION POND H2
SCALE: H: 1:2500
V: 1:250

NOTE:

1. THE SUITABILITY OF THE EXCAVATED TILL TO BE USED FOR DYKE CONSTRUCTION WILL BE CONFIRMED IN THE NEXT PHASE OF ENGINEERING.
2. EXCEPT CD-6 (1.5m BOTTOM BASE WIDTH) AND CD-10 (3.0m BOTTOM BASE WIDTH)

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ISSUE No	REV.	DATE (Y/M/D)	PURPOSE OF ISSUE	TRANSMISSION LETTER No
3	00	2014/12/11	ISSUED FOR IMPACT STUDY	
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Sustainable Mine Development
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SNC LAVALIN INC.
455, Boul. René-Lévesque Ouest
Montreal (Quebec)
Canada H2Z 1Z3

PREPARATION	APPROVAL
DESIGNED: M.H. Paquette	PROJECT DISCIPLINE ENGINEER: L. Didillon
DRAWN: D. Lan	CLIENT
CHECKED: P. Scholz	DATE: 2014-10-20
SCALE: 1 : 2 500	

CLIENT: HOWSE MINERALS CANADA LIMITED

PROJECT: WATER MANAGEMENT PLAN HOWSE PROJECT

TITLE: SEDIMENTATION POND H2, TYPICAL INLET AND OUTLET SECTIONS AND DETAILS

PROJECT No	SUBDIVISION	SUBJECT	SERIAL	REV.
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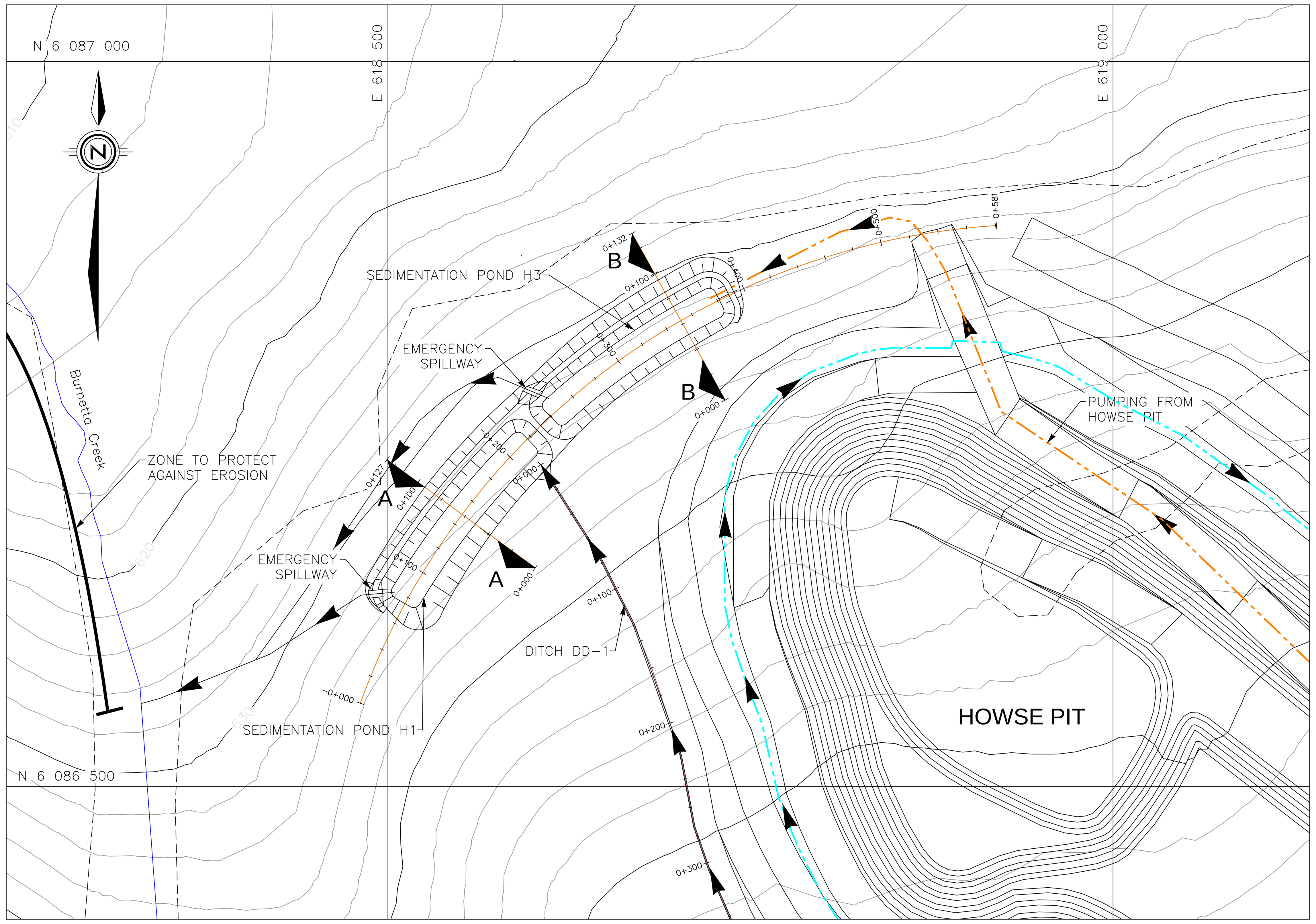

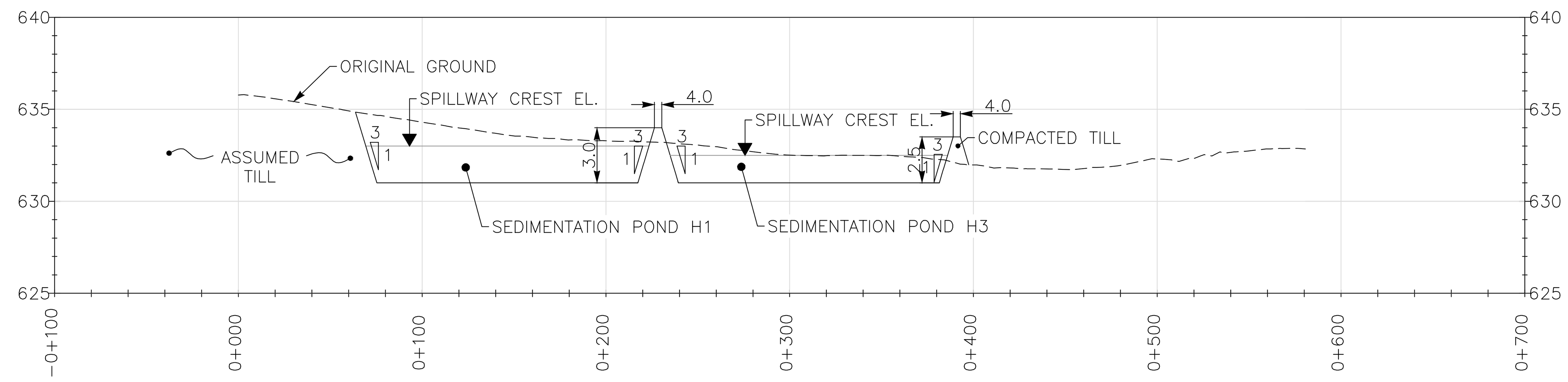

LONGITUDINAL PROFILE - SEDIMENTATION POND H1, H3

SCALE: H: 1:2500
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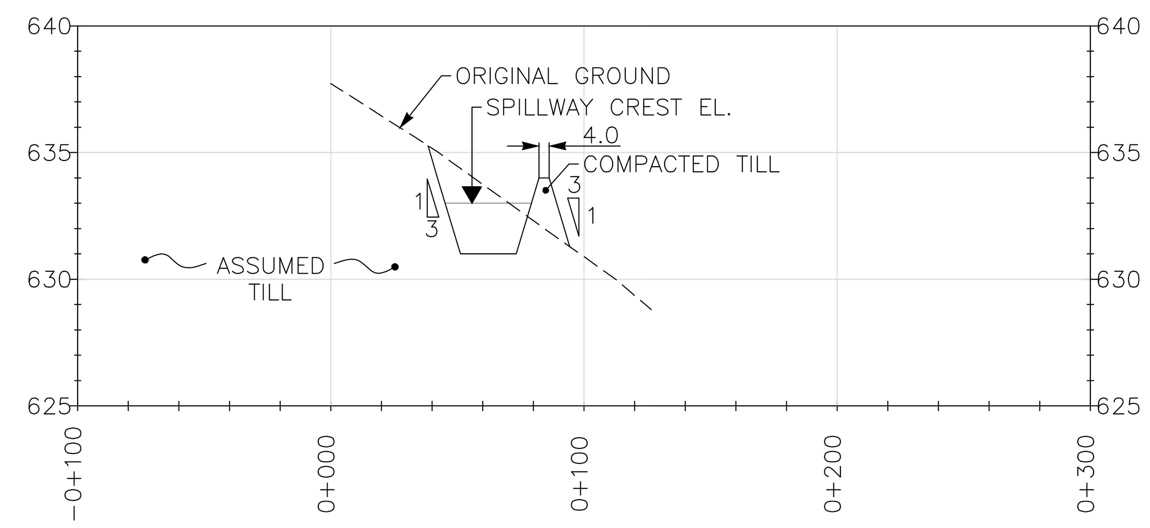

SECTION A-A - SEDIMENTATION POND H1

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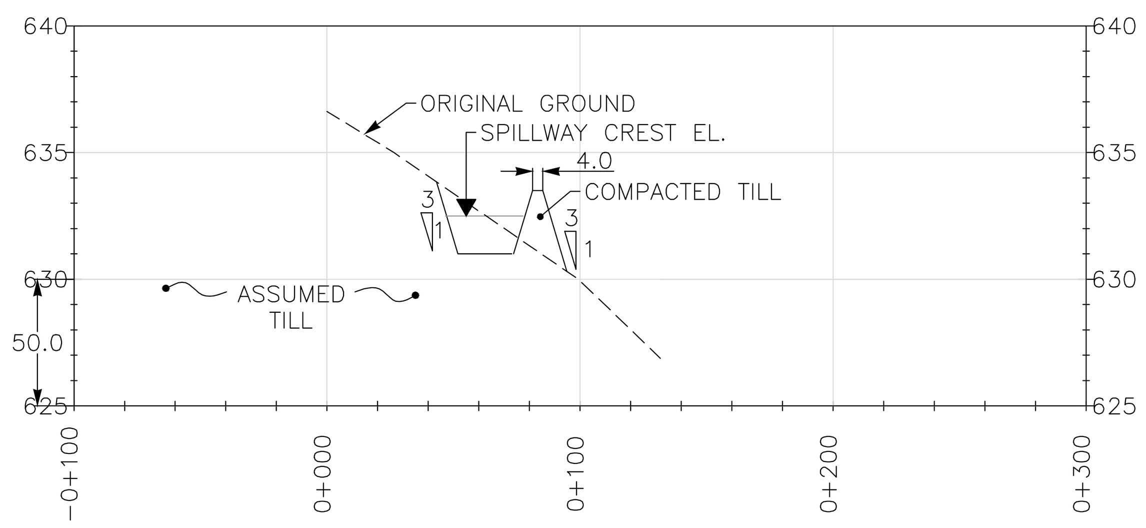

SECTION B-B - SEDIMENTATION POND H3

SCALE: H: 1:2500
V: 1:250

LEGEND

- PROPOSED DITCH
- WETLAND
- WATER COURSE
- CD-1 DITCH NUMBER
- PIT SUMP PUMP
- PIT DEWATERING

NOTE:

THE SUITABILITY OF THE EXCAVATED TILL TO BE USED FOR DYKE CONSTRUCTION WILL BE CONFIRMED IN THE NEXT PHASE OF ENGINEERING.

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ISSUE No	REV.	DATE (Y/M/D)	PURPOSE OF ISSUE	TRANSMISSION LETTER No
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1	PA	2014/11/06	ISSUED FOR INTERNAL REVIEW	

ISSUE REGISTER

ISSUE No | REV. | DATE (Y/M/D) | PURPOSE OF ISSUE | TRANSMISSION LETTER No

ISSUE REGISTER

No | REVISION DESCRIPTION | DATE (Y/M/D) | * | **
INITIALS: * DESIGNED ** APPROVED

REVISION REGISTER

No | REVISION DESCRIPTION | DATE (Y/M/D) | * | **
INITIALS: * DESIGNED ** APPROVED

REVISION REGISTER

No	REFERENCE DRAWINGS NUMBER
01	AU-2013-028-501-MN-REVD (OPTION 3, DEC.5, 2013)

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Sustainable Mine Development
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SNC LAVALIN INC.
455, Boul. René-Lévesque Ouest
Montreal (Quebec)
Canada H2Z 1Z3

PREPARATION	APPROVAL
DESIGNED: M.H. Paquette	PROJECT DISCIPLINE ENGINEER: L. Didillon
DRAWN: D. Lan	CLIENT
CHECKED: P. Scholz	DATE: 2014-10-20
SCALE: 1 : 2 500 (20 0 20 40 60 80 100m)	

CLIENT: HOWSE MINERALS CANADA LIMITED

PROJECT: WATER MANAGEMENT PLAN HOWSE PROJECT

TITLE: SEDIMENTATION PONDS H1 & H3 SECTIONS AND DETAILS

PROJECT No	SUBDIVISION	SUBJECT	SERIAL	REV.
622834	4000	40 DD	0006	00

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LAST SAVE: 2014/12/08 - 1:35pm
PATH: Z:\622834\40_00\622834-4000-40DD-0006-00.dwg

APPENDIX C

Design Criteria

Title of document: **DESIGN CRITERIA**

Client: **HOWSE MINERALS CANADA LIMITED**

Project: **WATER MANAGEMENT PLAN – HOWSE PROJECT**

Prepared by:

Patrick Scholz, Eng., M. Eng. (Hydrology) — par PS 11/27/14

Anh-Long Nguyen, Eng. (Water Treatment) — ing. #122858 11/24/14

Abdel Benlahcen, géo., M.Sc., Ph.D. (Hydrogeology) — #797 11/24/14

Andrew Peach, P. Geo., EP. (Environment) — #407812 11/26/14

Reviewed by: Marie-Hélène Paquette, Eng. M. Env. — MHPaquette, ing. #112021 11/24/2014

Approved by: (Client) Loic Didillon — ____________________

REVISION INDEX

Revision				Pages Revised	Remarks
#	Prep.	Rev.	Date		
PA	PS, ALN, AP, AB	--	October 9, 2014	--	Internal Coordination
PB	PS, ALN, AP, AB	MHP	October 10, 2014	All	Issued for Comments
00	PS, ALN, AP, AB	MHP	November 24, 2014	Tables 7-1, 7-2, 7-3	Issued for Design

NOTICE TO READER

This document contains the expression of the professional opinion of SNC-Lavalin Inc. ("SNC-Lavalin") as to the matters set out herein, using its professional judgment and reasonable care. It is to be read in the context of the agreement dated may 27th 2014 (the "Agreement") between SNC-Lavalin and Howse Minerals Canada Ltd (the "Client") and the methodology, procedures and techniques used, SNC-Lavalin's assumptions, and the circumstances and constraints under which its mandate was performed. This document is written solely for the purpose stated in the Agreement, and for the sole and exclusive benefit of the Client, whose remedies are limited to those set out in the Agreement. This document is meant to be read as a whole, and sections or parts thereof should thus not be read or relied upon out of context.

SNC-Lavalin has, in preparing estimates, as the case may be, followed accepted methodology and procedures, and exercised due care consistent with the intended level of accuracy, using its professional judgment and reasonable care, and is thus of the opinion that there is a high probability that actual values will be consistent with the estimate(s). Unless expressly stated otherwise, assumptions, data and information supplied by, or gathered from other sources (including the Client, other consultants, testing laboratories and equipment suppliers, etc.) upon which SNC-Lavalin's opinion as set out herein is based, has not been verified by SNC-Lavalin; SNC-Lavalin makes no representation as to its accuracy and disclaims all liability with respect thereto.

To the extent permitted by law, SNC-Lavalin disclaims any liability to the Client and to third parties in respect of the publication, reference, quoting, or distribution of this report or any of its contents to and reliance thereon by any third party

TABLE OF CONTENTS

LIST OF TABLES

1.0 INTRODUCTION

1.1 Context

Howse Minerals Canada Ltd (HML) plans to mine iron ore within the Howse deposit (Direct-Shipping Ore Howse Property Project) located near the border between the provinces of Quebec and Newfoundland and Labrador, approximately 25 km north of the community of Schefferville, Quebec. One open pit is planned and the anticipated mining period is from 2016 to 2024. Two waste dumps, one overburden stockpile and one topsoil stockpile are also planned for the site. No tailings will be generated in this area since the majority of the ore will only be crushed and screened on-site, with the ore then being directly shipped for secondary processing.

The Water Management Plan of the Howse property will include the design of sedimentation ponds and ditches. The location and purpose of the sedimentation ponds and ditches has already been roughly defined in the Project Registration / Project Description for the DSO-Howse Property Project. The water management plan will confirm those assumptions and the design of the water management infrastructures will be carried out to a conceptual level. Planned water management infrastructures are the following:

- Run-off from surrounding area will be collected by ditches leading to sedimentation pond no. H1.
- Run-off on the waste rock dumps and overburden stockpile will also be collected by ditches leading to sedimentation pond no. H2.
- Water from dewatering and surface runoff into the Howse pit will be diverted, if possible, to the existing Timmins 4-sedimentation pond 3. This assumption will be confirmed in this study.

An environmental monitoring program will also be developed to assess the quality of surface water and groundwater around the Howse property.

1.2 Content

This document presents the design criteria that will be used in the design of the ditches and sedimentation ponds on the Howse property. The source of data used for this mandate will first be presented. Criteria concerning infrastructure location will then be presented, followed by criteria for the design of the ditches and sedimentation ponds for the following disciplines: geotechnical engineering, hydrogeology, hydrology and water treatment. Finally, criteria used to establish the environmental monitoring program will be presented.

The relevant regulations are also presented in each section.

2.0 SOURCE DATA

The following table summarizes the available data used to complete the water management plan.

Table 2-1 : Source Data

Document Name	Provided by	Content	Used for:
Howse DSO Deposit - Project Notice – Mine Site General Layout Drawing no. A4-2013-028-501-MN rev D	Tata Steel	Location of Howse pit, overburden stockpile, waste rock dump, topsoil stockpile	Location of infrastructures
Topographic map	Tata Steel	Topograhpic map, isocontours 5 m	Location of infrastructures
Groupe Hémisphères (March / April 2014) Project Registration / Project Description for the DSA – Howse Property Project. Submitted to Howse Minerals Limited, 223 pp and 4 appendices.	Tata Steel	Section 3.0 Description of the Physical Environment Section 7.0 Potential Environmental Effects and Their Management	Hydrological, hydrogeological, water treatment and geotechnical evaluations
Environment Canada Schefferville A Meteorological Station Data	Environment Canada	Meteorological data	Hydrological calculation
DSO-Timmins Project – Design Criteria Drainage_Design Brief Document no. DSOT-DC-4310-CI-0001 rev A	Tata Steel	Timmins 4 Sedimentation pond-3 design basis	Hydrological calculation
DSO-Timmins Project – Hydrology – Drainage – Flow Measurement – General Location Drawing no. DSOT-DW-4310-CI-0001 rev G	Tata Steel	Delineation of the watershed for the Timmins project and Timmins 4 Sedimentation pond-3	Hydrological calculation
Real Time Water Quality Monitoring Stations Web: http://www.env.gov.nl.ca/env/waterres/rti/stations.html	Newfoundland Labrador Department of Environment and Conservation	Real time water quality data for: - Goodream Creak, 2 km northwest of Timmins 6 (NF03OB0040)	Water treatment
DSO-Timmins Project – Water Monitoring Stations Drawing no. GIS-ML-19-03, 2012-12-10	Tata Steel	Actual monitoring stations for Timmins Project	Monitoring
Stratigraphic Information on Howse Property Drawing no. GIS-EXP-HOWSE-Geofor-01	Tata Steel	Bedrock groundwater level and nature of overburden	Geotechnical and Hydrogeological evaluations Water treatment

Document Name	Provided by	Content	Used for:
Howse Pit Hydrogeological Investigation – Summary of Factual Data in Support of Environmental Impact Assessment Process Document no. 011-13-1221-0104 MTA rev A	Geofor	Packer tests results on two boreholes and piezometric levels results in few existing boreholes	Hydrogeological evaluations
Open Pit Mine Dewatering – Knob Lake. The Canadian Institute of Mining and Metallurgy Bulletin, 58:814-822.	Public	Historical information on mine dewatering of DSO (Knob Lake)	Hydrogeological evaluations
Hydrological and hydrogeological study: survey season 2009, DSOP. Final technical report. March 2010	Groupe Hémisphères	Results of Timmins 3 pit dewatering simulations	Hydrogeological evaluations

3.0 LOCATION OF WATER MANAGEMENT INFRASTRUCTURES

3.1 Codes, Laws and Regulations

The followings laws and regulations will be used to define the location of infrastructures at the site:

- Water Resource Act, Newfoundland and Labrador, SNL2002 Chapter W-4.01
- Policy for Development in Wetland, Newfoundland and Labrador , W.R. 97-2

3.2 Design Criteria

The location of infrastructures, including water management infrastructures, mining pit, overburden stockpile and waste rock dumps, is governed by regulation, topography, nature of the land and some criteria adopted after consultation between Tata Steel and local stakeholders. The criteria used to define the location of infrastructures at the site are the following:

- A buffer zone of 500 m has to be kept between the infrastructures and Irony Mountain;
- Any alteration of Pinette Lake has to be avoided since it is considered as a sensitive area;
- A 10 to 15 m buffer strip has to be kept between infrastructures and water course and wetlands respectively ;
- When possible avoid any infrastructures in wetlands.

4.0 GEOTECHNICAL ENGINEERING

The geotechnical engineering required for the present mandate mainly consists in designing stable ponds and ditches according to latest state-of-the art practices.

4.1 Codes, Laws and Regulations

- Canadian Dam Association (2007, revised 2013), Dam Safety Guidelines.

4.2 Design Criteria

Depending on the topography at the location of the new sedimentation ponds, the ponds can be a totally excavated construction or partly excavated and partly contained with dykes.

If dykes have to be built, the design of the dykes will be determined in compliance with the design criteria presented in the Dam Safety Guidelines published by the Canadian Dam Association (2007). These guidelines present a methodology for dyke classification depending on the potential consequences of dam failure and allowances that take into account for the design for earthquake and flood conditions.

The following table presents the dam classification evaluation for the dykes that could be built as part of the sedimentation ponds.

Table 4-1 : Dam Classification Evaluation for Sedimentation Pond Dykes

Potential Consequences for :	Dam Class	Comments	Reference
Population at Risk	**Low**	There is no temporary or permanent population living downstream any pond.	Dam Safety Guidelines (2007, revised 2013, table 2-1)
Loss of Life	**Significant**	Unspecified. Loss of life can't be put to zero because employees are present on the site.	
Environmental and Cultural Values	**Low**	Only minimal short term loss could affect flora and fauna.	
Economy	**Low**	No infrastructures downstream.	
Summary of Evaluation : Significant			

Based on the evaluation presented in Table 4-2, with a **Significant** dam class, the return period for the design earthquake condition and design flood condition would be between 1:100 years and 1:1000 years.

Table 4-2 : Design Return Period According to Dam Classification

Dam Class	Return Period for Design Earthquake	Return Period for Design Flood
Low	1/100	1/100
Significant	**Between 1/100 and 1/1000**	**Between 1/100 and 1/1000**
High	1/2475	1/3 between 1/1000 and PMF
Very High	½ between 1/2475 and 1/1000	2/3 between 1/1000 and PMF
Extreme	1/10 000 or MCE	PMF

MCE = Maximum Credible Earthquake

PMF = Probable Maximum Flood

Reference : Table 6-1B, Dam Safety Guidelines (2007, revised 2013)

Design earthquake data are not presented in this study because no stability analysis will be performed at this conceptual level, as there is no information concerning ground stratigraphy at the future pond location.

According to CDA, an emergency spillway must be designed to allow passage of the design flood (see section 6).

Other design criteria concerning the building of ditches and ponds will be determined mainly from state-of-the-art practice and are presented in table 4-3.

Table 4-3 : Geotechnical Design Criteria

Item	Criteria	Note
Minimal ditch slope	0.5%	--
Ditch excavation	Minimize volume of excavation	--
Pond waterproofing	No pond waterproofing necessary	The only issue concerning water quality is total suspended solids (TSS). Refer to Section 7.0 on water treatment.
Factor of Safety for pond slope stability, static condition (downstream slope)	1.5(*)	No stability analysis will be carried out for this study since no information concerning ground stratigraphy at the location of the ponds is available. Therefore pond excavation slopes and dyke slopes will be set to 3H:1V for the purpose of this study.
Factor of Safety for pond slope stability, full or partial rapid drawdown (upstream slope)	1.2 – 1.3 (*)	
Factor of Safety for pond slope stability, pseudo-static condition	1.0(*)	
(*) According to Table 6-2 and 6-3, Dam Safety Guidelines (2007, revised 2013)		

5.0 HYDROGEOLOGY

The hydrogeological characterization of the Howse deposit was ongoing during October 2014, in order to complete the hydrodynamic parameter estimation of the aquifer hosting this deposit.

For the purpose of the conceptual water management plan, the dewatering estimation of the Howse pit will be based on dewatering historical data of other similar mines in the area, and on few assumptions.

An overview of the historical mine dewatering at Knob Lake during previous mining is given in Stubbins & Munro (1965). The studied mines included Wishart, Gagnon, French and Ruth mines, where the dewatering was very much depth correlated and increased with the mine pit floor depth. Table 5-1summarizes the results.

New dewatering simulations were conducted for two new future mines, Timmins 3 and LabMag, located about 5 km to the north-east and south of the site respectively. The results are also summarized in Table 5-1. The simulated dewatering results for these two closer mines are the same order of magnitude to the ones recorded for Wishart and Gagnon mines (dewatering rate between 13000 and 23000 m^3/d).

The relatively lower hydraulic conductivity estimated from geotechnical investigations (Golder, 2014) in comparison to Timmins 3 and LabMag sites, suggests that the dewatering rate of the Howse pit would not exceed the ones estimated for these two closer mines.

Based on these observations, a flow rate of 23000 m^3/d with a safety factor of 50% will be considered a conservative value for the Howse deposit. Therefore, a total dewatering rate of about 34500 m^3/d could be considered for preliminary design criteria.

The dewatering estimate needs to be updated with the results that will be obtained from the future hydrogeological modeling of the dewatering, and that will be based on the ongoing hydrogeological investigation results.

Considering that the water table at the Howse deposit is located between 64 and 88 m in depth, the dewatering during the first years will be greatly lower until the pit floor reaches the water table.

Table 5-1 : Summary of Hydrogeological Data

Type of Data	Mine Site	Floor Depth (m)	Dewatering (m^3/d)	Data References
Historical data of DSO mines	Wishart	69	16874	Stubbins, J. B. and P. Munro. 1965. Historical information on mine dewatering of DSO (Knob Lake). The Canadian Institute of Mining and Metallurgy Bulletin, 58:814-822.
	Gagnon	83	20412	
	French	116	84370	
	Ruth	144	86547	
Simulation Results on new mines	Timmins 3	80	12960	Groupe Hémisphères, march 2010. Hydrological and hydrogeological study: survey season 2009, DSOP. Final technical report.
	LabMag	150	22262	SNC-Lavalin, in preparation. Hydrogeology and mine pit dewatering modeling - LabMag site. New Millenium Iron – TATA Steel
Assumption	Howse	160	34500(*)	--
(*) Including a safety factor of 50%				

6.0 HYDROLOGY

The hydrological part of the present mandate mainly consisted of designing a drainage network, made of ditches and sedimentation ponds, performing water balance computations for the Howse property, including the mine pit.

6.1 Codes, Laws and Regulations

- Canadian Dam Association (2007, revised 2013), Dam Safety Guidelines.
- Environmental code of Practice for Metal Mines (Canada)

6.2 Design Criteria

6.2.1 Ditches

The drainage network will be designed for a 100 years return period flood. The hydrograph of the 100 years flood will be derived from available intensity-duration-frequency (IDF) curves from meteorological station Schefferville A, located approximately 24 km from the Howse property.

Ditches peak discharge will be computed using the rational method:

$$Q = \frac{CIA}{360}$$

Where:

Q: Peak discharge [m^3/s].

C: Runoff coefficient [-].

I: Rainfall intensity corresponding to the watershed time of concentration [mm/h].

A: Drainage area [ha].

Ditches will have a trapezoid section and their dimensions will be determined using the manning equation:

$$Q = \frac{1}{n} A R^{2/3} S^{1/2}$$

Where:

Q: Peak discharge [m^3/s].

n: Manning's coefficient [$s/m^{1/3}$].

A: Flow area [m^2].

R: Hydraulic radius [m]. R = A/P, where P is the wetted perimeter [m].

S: Ditch slope [%].

If necessary, ditches will be protected against erosion with a layer of riprap and culverts will be used for road crossings.

6.2.2 Sedimentation ponds

Sedimentation ponds will be designed with a minimum area determined based on a design particle size (see section 7.0 Water Treatment) and a design flood with a 25 years return period.

The sedimentation ponds will have a 0.5 m dead storage at the bottom of the pond for sediment accumulation, and a 2.0 m dead storage at the top of the pond for ice formation.

Part of the dyke at the downstream side of the pond will be built with coarse rock to make it permeable and allow water to flow out of the pond. This solution was selected to minimize the risks of freezing of the outlet structure.

Finally, an emergency spillway will be designed for a design flood determined accordingly to the dyke classification (Table 4-2), as a trapezoidal weir located on the dyke crest.

Average monthly water balance computations will be performed for the whole Howse property in order to evaluate the flow and residence time at each of the sedimentation ponds.

6.2.3 Summary of Hydrological Criteria

The main hydrological design criteria are the following:

- Impacts on Goodream creek should be minimized as much as possible. If possible, during dewatering the water from Howse pit should be pumped uphill, into the existing Timmins 4 sedimentation pond no. 3 to prevent modification to the Goodream creek water balance;
- The drainage network will be designed for a 100 years return period flood;
- Ditches will be designed using the rational method and manning equation;
- Sedimentation ponds will be designed for a design particle size (section 7.0) and for a 25 years return period flood;
- Sedimentation ponds will have a 0.5 m dead storage for sediments;
- Sedimentation ponds will have a 2.0 m dead storage for ice cover;
- Sedimentation ponds freeboard will be determined based on CDA (2007) guidelines;
- Sedimentation ponds outlet will be located in a permeable dyke able to convey the most critical flood generated by:
    - A summer-fall 25 years return period rainfall.
    - A combination of a 24-hours 25 years return period rainfall with the melting of a 25 years return period snowpack.
- Emergency spillways associated with the sedimentation ponds will be constructed as a trapezoidal weir designed to safely pass an inflow design flood determined according to the dam classification previously presented (see table 4.2);
- Even if water could flow out of the sedimentation ponds by infiltration through the bottom and sides of the pond, the ponds will be designed assuming no infiltration, since no data is presently available to assess infiltration rates.

7.0 WATER TREATMENT

7.1 *Codes, Laws and Regulations*

For this project, the latest revision of the following codes, laws and regulations will be used in the design of the water treatment infrastructures required for the water management:

- Water Resource Act, Newfoundland and Labrador, SNL2002 Chapter W-4.01;
- Environmental Control Water and Sewage Regulations 65/03, 2003;
- Metal Mining Effluent Regulations (Canada) SOR/2002-222, section 3 and 19.1 and 20 and Schedule 4.

7.2 *Design Criteria*

7.2.1 Sources of Effluent to be Treated

There are three effluent sources to be treated on the Howse property

- Natural site runoff;
- Runoff from the overburden stockpile and waste rock dump;
- Pit dewatering water and pit runoff.

7.2.2 Effluent Quality

7.2.2.1 Natural Site Runoff

The natural site runoff at the Howse property is expected to have an effluent quality similar to the water quality found in creeks and lakes that are within the property.

As per the data presented in the report *Project Registration / Project Description for the DSA – Howse Property Project (Groupe Hémisphères, March / April 2014*), *section 3.7,* the surface water around the site is characterized as being soft, with low conductivity and total dissolved solids as well as low concentration of metals. The pH of Goodream Creek, a stream that flows to the north of the property, range from 5.33 to 6.53, while Burnetta Creek located to the west of the property has a pH ranging from 5 to 6. Furthermore, the total suspended solids are generally low. However, the report does note that moderate turbidity events (e.g. 100 to 1000 NTU) could occur and typically coincided with rainfall activity.

Based on the data available to date, the main parameters of concern in the site runoff will be suspended solids, specifically during a rainfall event as well as possibly during a snowmelt event.

The site runoff pH is expected to be in the same range as the pH of the natural waters around the property, and thus could be lower than a pH value of 6.0. Consequently, the minimum pH discharge criterion specified in the *Environmental Control Water and Sewage Regulations* or in the *Metal Mining Effluent Regulations* should not be an issue for this project.

For the purpose of design, the following table presents the assumptions taken with regard to the quality of the suspended solids in the site runoff:

Table 7-1 : Assumptions for Site Runoff Water Quality

Parameters	Units	Value
Type of suspended solid	--	Sand and grit
Minimum particle size to settle	mm (microns)	0.1 (100)
Specific Gravity	--	2.7(*)
(*) Assumption based on typical specific gravity for rock formations in Howse Area (ref. Table 3.5 Project Registration/Project Description for the DSO-Howse Property Project, March/April 2014)		

7.2.2.2 Runoff From Overburden and Waste Rock Dump

The overburden at the Howse DSO property is expected to be mainly composed of sand and gravel. The waste rock is expected to be composed of fine rock particles.

Furthermore, as per the studies presented in the report *Project Registration / Project Description for the DSA – Howse Property Project (Groupe Hémisphères, March / April 2014*), the waste rock and ore is not expected to be acid generating.

Consequently, the main parameter of issue considered for this project is related to suspended solids.

For the purpose of design, the following table presents the assumptions taken with regard to the quality of the suspended solids in the overburden and waste rock dump runoff:

Table 7-2 : Assumption for Overburden and Waste Dump Runoff Water Quality

Parameters	Units	Value
Type of suspended solid	--	Sand, grit and fine rock particles
Minimum particle size to settle	mm (microns)	0.01 (10)
Specific Gravity	--	2.7(*)
(*) Assumption based on typical specific gravity for rock formations in Howse Area (ref. Table 3.5 Project Registration/Project Description for the DSO-Howse Property Project, March/April 2014)		

7.2.2.3 Pit Dewatering Water

The pit dewatering water will consist mainly of groundwater that infiltrates into the pit, as well as surface runoff. Groundwater will be intercepted by pumping wells located around the pit and transferred to the Timmins 4 sedimentation pond no. 3. Surface runoff will flow inside the pit and be collected at several sumps in the pit and transferred to the Timmins 4 sedimentation pond no. 3.

The groundwater and surface runoff around the pit are expected to be of similar quality to the natural site runoff with regard to conductivity, total dissolved solids and pH. Total suspended solids of the pit surface runoff will however be higher due to the mining activity in the pit. The pit surface runoff could also be contaminated with ammonia and nitrate coming from un-exploded explosive residues. The pit surface runoff could also be contaminated with oil and hydrocarbon from the machinery.

In order to minimize the load of ammonia and nitrate that can migrate into the pit surface runoff, proper explosive management will be implemented as described in the *Project Registration / Project Description for the DSA – Howse Property Project (Groupe Hémisphères, March / April 2014).*

To manage any oil and hydrocarbon from the machinery, an oil/water separator will be used to remove the free oil and hydrocarbon from the pit surface runoff before it is transferred to the sedimentation pond.

Consequently, the main parameter of issue considered for this project is related to suspended solids from the pit surface runoff. The groundwater pumped from the wells around the pit is expected to have very little suspended solids.

For the purpose of design, the following table presents the assumptions taken with regard to the quality of the suspended solids in the pit dewatering water:

Table 7-3 : Assumptions for Pit Dewatering and Pit Runoff Water Quality

Parameters	Units	Value
Type of suspended solid	--	Grit and fine rock particles
Minimum particle size to settle	mm (microns)	.01 (10)
Specific Gravity	--	2.7[(*)]
(*) Assumption based on typical specific gravity for rock formations in Howse Area (ref. Table 3.5 Project Registration/Project Description for the DSO-Howse Property Project, March/April 2014)		

7.2.3 Treated Effluent Discharge Quality

The water treatment infrastructure will be designed in order to treat the effluent and produce a treated effluent that will meet the discharge quality specified in the following regulations:

- Environmental Control Water and Sewage Regulations 65/03, 2003
- Metal Mining Effluent Regulations (Canada) SOR/2002-222, section 3 and 19.1 and 20 and Schedule 4

The following table summarizes the discharge criteria specified in the above regulations:

Table 7-4 : Water Quality Discharge Criteria

Parameters	Units	Environmental Control Water and Sewage Regulations, 2003	MMER (SOR/2002-222)	
		Max. Concentration	Max. Monthly Mean	Max. Concentration in Grab Sample
pH		5.5 to 9.0	6.0 to 9.5	
Arsenic	mg/L	0.5	0.5	1.00
Copper	mg/L	0.3	0.3	0.6
Cyanide	mg/L	0.025	1.0	2.0
Lead	mg/L	0.2	0.2	0.4
Nickel	mg/L	0.5	0.5	1
Zinc	mg/L	0.5	0.5	1
Total Suspended Solids	**mg/L**	**30**	**15**	**30**
Radium 226	Bq/L	0.37	0.37	1.11
Total dissolved solids	mg/L	1000	----	----
B.O.D.	mg/L	20	----	----
Barium	mg/L	5.0	----	----
Cadmium	mg/L	0.005	----	----
Chromium (VI)	mg/L	0.05	----	----
Chromium (III)	mg/L	1.0	----	----
Iron (total)	mg/L	10	----	----
Mercury	mg/L	0.005	----	----
Nitrates	mg/L	10	----	----
Nitrogen (ammoniacal)	mg/L	2.0	----	----
Phenol	mg/L	0.1	----	----
Phosphate (total as P2O5)	mg/L	1.0	----	----
Phosphorus (elementals)	mg/L	0.0005	----	----
Selenium	mg/L	0.01	----	----
Sulfides	mg/L	0.5	----	----
Silver	mg/L	0.05	----	----

As noted in the Section 7.2.2, the primary parameter of concern is expected to be limited to **total suspended solids** concentrations.

7.2.4 Design Flow Capacity

The design flow rate capacity will be determined based on the design criteria for hydrology and hydrogeology (refer to Sections 5 and 6).

7.2.5 Sedimentation Pond Design

In order to manage the total suspended solids in the three (3) effluents generated at the Howse property, these effluents will be sent to sedimentation ponds to allow for the settling of the suspended solids before they are discharged to the receiving creeks.

There will be a total of three (3) sedimentation ponds:

1. Sedimentation Pond no. H1: Natural site runoff will be directed toward this sedimentation pond located to the north of the pit. The treated water will be discharged to the nearest creek.
2. Sedimentation Pond no. H2: Runoff from the overburden stockpile and waste rock dump will be directed to this sedimentation pond located to the north-west of the overburden stockpile. The treated water will be discharged to the nearest creek.
3. Timmins 4 sedimentation Pond no. 3: If possible, groundwater and surface runoff from the Howse pit will be transferred to an existing sedimentation pond that currently manages the runoff water from Timmins 4. This assumption will be confirmed in this study. The treated water will be discharged to Goodream Creek. The pit surface runoff water will also be treated using an oil/water separator prior to its transfer to this existing sedimentation pond.

Each sedimentation pond will be sized based on the following design parameters:

- Pond designed based on discrete particle settling;
- Terminal settling velocity of the particle evaluated using Stokes' law based on the smallest particle size specified in Section 7.2.2;
- The sedimentation pond will have a rectangular shape, with a length to width ratio of at least 3 to 1;
- Refer to Section 6.0 for additional design criteria for the sedimentation pond.

8.0 ENVIRONMENTAL MONITORING PROGRAM

8.1 Codes, Laws and Regulations

The environmental monitoring program will be planned in accordance with the following protocols and regulations:

- Environmental Control Water and Sewage Regulations (2003);
- Protocols Manual for Real Time Water Quality Monitoring in Newfoundland and Labrador (2013);
- Metal Mining Effluent Regulations (Canada).

8.2 Design Criteria

There are several factors which need to be considered when planning and implementing real time water quality (RTWQ) stations, manual water sampling, and effluent sampling into the water monitoring program.

These factors include:

- The type of data needed to be captured: baseline data, changes in water quality, changes in water quantity;
- Reasons for monitoring water quality/quantity: regulatory management, protection of fragile ecosystems or communities, etc;
- The water bodies of interest, and their characteristics: lake, stream, tailings pond, well, and whether upstream and/or downstream data is required;
- Expected contaminants, parameters of interest, and their characteristics;
- Location of the site, including hydrogeologic/geologic characteristics and anthropologic influences;
- Groups interested in the data: government, non-government, community groups, the public, etc;
- The duration of the monitoring program: temporary or long term. Seasonally or year-round;
- Accessibility to site, and sites accessibility to resources: How will the site be accessed for station installation, maintenance, and or manual sampling (by foot, road vehicle, ATV, boat), how instrumentation will be deployed based on accessibility, and type of equipment suitable for the site chosen (power source, transmission type, monitoring instrumentation, etc.);
- Additional sources of data nearby that may be used to supplement water quality data: Nearby weather stations, and/or water quality/quantity stations.

The provincial and/or federal government will be responsible for the installation or relocation of real-time monitoring stations, as part of the Real-time water quality/quantity monitoring network. The installation of additional monitoring wells may be required if it is discovered that the current groundwater wells are not suitable for the purposes of groundwater sampling/monitoring based on hydrogeologic/geologic data.

9.0 REFERENCES

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APPENDIX D

Water Quality from Timmins 4 project

SAMPLE: COA-SW11

SOURCE: SURFACE WATER FROM FLEMMING 7N AND TIMMINS 7N PIT AREAS, AFTER PASSING THROUGH SEDIMENTATION POND A AND B

				COA-SW11-10	COA-SW11-9	COA-SW11-8	COA-SW11-7	COA-SW11-6	COA-SW11	COA-SW11-5	COA-SW11-4	COA-SW11-4	COA-SW11-3	COA-SW11	COA-SW11	COA-SW11	COA-SW11	COA-SW11
Parameters	Units	CofA	MMER (review 10 years)	May 27 2014	May 19 2014	May 14 2014	May 6 2014	Oct 21 2013	Oct 2 2013	Sep 25 2013	Sep 18 2013	Sep 16 2013	Sep 11 2013	Aug 27 2013	Aug 19 2013	Aug 15 2013	Jun 9 2013	May 5 2013
Arsenic (As)	ug/L	1.0 mg/L	0.2 mg/L	0.5	0.5	1.6	8.1	8.4	1.1	2.4	2.3	2.0	1.8	0.5	0.5	3.3	<1.0	0.5
Copper (Cu)	ug/L	0.6 mg/L	0.1 mg/L	2.5	2.2	2.2	40	21	4.6	3.8	3.5	2.3	3.0	2.4	1.6	4.7	0.55	0.85
Nickel (Ni)	ug/L	1.0 mg/L	0.5 mg/L	1	1	1	28	14	2.1	2.9	2.4	3.0	2.7	1.4	1.1	3.8	n/a	0.5
Lead (Pb)	ug/L	0.4 mg/L	0.1 mg/L	0.64	0.68	0.65	13	5.2	0.58	0.97		0.80	0.79	1.1	0.82	1.5	0.14	0.38
Zinc (Zn)	ug/L	1.0 mg/L	1.0 mg/L	110	36	52	120	140	1300	180	190	160	140	45	44	43	n/a	29
pH	pH	5.5 - 9.0		6.33	6.45	7.84	5.77	6.77	7.09	7.12	7.27	7.08	6.75	6.89	6.85	6.83	6.89	6.61
Total suspended solids (TSS)	mg/L	30 mg/L	30 mg/L	9	24	25	510	120	4	1	13	3	1	6	22	30	18	53
Radium 226	Bq/L	1.11 mg/L	1.11 Bq/L	0.001	0.001	0.002	0.044	0.02	0.003	0.01	0.005	0.002	0.006	0.01	0.01			
Iron	ug/L															11000	<100	
Turbidity	NTU															510	n/a	

SAMPLE: COA-SW12

SOURCE: SURFACE WATER FROM TIMMINS 4, AFTER PASSING THROUGH SEDIMENTATION POND C

				COA-SW12-1	COA-SW12
Parameters	Units	CofA	MMER (review 10 years)	May 19 2014	May 5 2013
Arsenic (As)	ug/L	1.0 mg/L	0.2 mg/L	2.8	<1.0
Copper (Cu)	ug/L	0.6 mg/L	0.1 mg/L	5.8	1.5
Nickel (Ni)	ug/L	1.0 mg/L	0.5 mg/L	4.0	<1.0
Lead (Pb)	ug/L	0.4 mg/L	0.1 mg/L	1.4	0.50
Zinc (Zn)	ug/L	1.0 mg/L	1.0 mg/L	22	7.1
pH	pH	5.5 - 9.0		6.45	6.06
Total suspended solids (TSS)	mg/L	30 mg/L	30 mg/L	24	84
Radium 226	Bq/L	1.11 mg/L	1.11 Bq/L	<0.002	<0.002
Iron	ug/L				
Turbidity	NTU				

Legend	XXX	Above the Certificate of Approval regulation
	XXX	Unusually high

INTRODUCTION

This appendix contains the complete list of standard mitigation measures. The list provides a brief description of each measure and lists the main ecosystem components targeted by each one.

Most of the mitigation measures are mentioned in section 6, but some are not. This is because the list includes measures that are not applicable to the Project, but that could apply to other assessment groups (see Table 2.3). This approach also provides regulatory bodies with the opportunity to require that other numbered standard mitigation measures be implemented.

1 TREE REMOVAL AND TIMBER MANAGEMENT (TM)

Table 1.1 Summary of Mitigation Measures Regarding Tree Removal and Timber Management

Code	Measure	Target Component
TM1	Comply with the *Forest Act* and all related regulations, particularly the *Regulation respecting standards of forest management for forests in the domain of the State* and the *Forest Protection Regulation*. Take the necessary measures to ensure that tree removal complies with the stipulated requirements.	Caribou Avifauna Subsistence harvesting
TM2	Before removing trees, ensure that the person in charge has a permit for public lands or an authorization in the case of private land.	No specific component
TM3	Do no clearing in the riparian strip along watercourses or in wetlands without authorization.	Water quality Wetlands Avifauna Aquatic fauna Subsistence harvesting
TM4	Use a forest technician for the tree removal work and obtain supervisor's authorization to begin cutting	Avifauna Subsistence harvesting
TM5	Be particularly careful in wetlands and protected areas.	Water quality Wetlands
TM6	Before removing any trees, clearly mark work sites (right-of-way, storage area, etc.) and required clearing to be done around the work sites (branches to be trimmed) so that they can be readily inspected at any time during the work.	Wetlands
TM7	For marking use strong, weather- and tear-resistant material of a colour that is visible at a distance. If possible, use short lengths of biodegradable tape.	Wetlands
TM8	Remove trees in a way that does not damage vegetation bordering the work sites. Prevent trees from falling outside the work site or into watercourses. If this does occur, remove the trees carefully to avoid any unnecessary disturbance to the area. Do not remove or uproot trees with machinery near the edges of a work site.	Water quality Wetlands Avifauna Aquatic fauna Subsistence harvesting
TM9	Maintain a transition zone around work site in which trees are removed, but stumps are left intact to preserve the shrub stratum.	Avifauna Wetlands Subsistence harvesting
TM10	Ensure that cleared areas that are left bare and exposed to the elements are kept to a strict minimum.	Air quality Avifauna Subsistence harvesting
TM11	When a tree on the bank of a watercourse must be cut, preserve its root structure to maintain bank stability.	Water quality Aquatic fauna Subsistence harvesting
TM12	If access to a watercourse or lake is necessary, clear only five-meter-wide openings at intervals of at least 100 m.	Water quality Wetlands Aquatic fauna Subsistence harvesting
TM13	When line cutting and surveying, clear a maximum width of one meter.	Avifauna Subsistence harvesting
TM14	Use only manual tools for line cutting.	No specific component
TM15	Do not pile organic matter from topsoil stripping or logging and commercial wood waste less than 20 m from a lake or watercourse, in a wetland or in the water.	Water quality Wetlands Aquatic fauna Subsistence harvesting

Code	Measure	Target Component
TM16	Determine the most suitable method of disposing of logging and commercial wood waste (e.g., in swaths, chipping, burning, elimination at an authorized disposal site).	No specific component

2 EROSION AND SEDIMENTATION CONTROL (ES)

Table 2.1 Summary of Mitigation Measures Regarding Erosion and Sedimentation Control

Code	Measure	Target Component
ES1	Identify erosion-sensitive zones using surface deposit and slope class maps, and avoid working in these areas if possible.	Water quality Wetlands Aquatic fauna Subsistence harvesting
ES2	To follow the site's natural topography and prevent erosion, keep stripping, clearing, excavation, backfilling, and grading operations to a strict minimum on the work sites.	Water quality Water balance Wetlands Aquatic fauna Subsistence harvesting
ES3	Excavation and reshaping must be done from the top of the embankment and closely monitored in order to detect any possibility of slippage and to modify work methods if necessary.	Water quality Wetlands Aquatic fauna Subsistence harvesting
ES4	Respect the area's natural drainage and take all appropriate measures to permit the normal flow of water.	Water quality Water balance Wetlands Aquatic fauna Subsistence harvesting
ES5	Comply with instructions on plans and specifications with respect to the area and location of the work as well as the volume of material excavated.	Water quality Wetlands Aquatic fauna Subsistence harvesting
ES6	Transport heavy material in multi-axle trailers for better load distribution.	Water quality Wetlands Aquatic fauna Subsistence harvesting
ES7	Do not dump plant cutting or soil stripping waste in watercourses or lakes.	Water quality Aquatic fauna Subsistence harvesting
ES8	Avoid removing vegetation from slopes bordering roads or near watercourses. When building or improving a road that crosses a watercourse, preserve a 20 m strip of shrub vegetation on either side, hereafter called the "riparian strip."	Water quality Wetlands Aquatic fauna Subsistence harvesting
ES9	No ditches must be dug in the riparian strip on either side of a watercourse. Within the riparian strip, ditch water must be diverted toward a vegetated area, ideally a wetland. If necessary, build a settling pond outside the riparian strip to receive runoff and sediments. Pond dimensions will depend on the inflow and outflow volume.	Water quality Wetlands Aquatic fauna Subsistence harvesting
ES10	Trenches dug on sloping land must be stepped or terraced. Ensure that slopes adjacent to access roads are designed for maximum stability.	Water quality Wetlands Aquatic fauna Subsistence harvesting

Code	Measure	Target Component
ES11	In sloped areas, use techniques such as the installation of trenches, retaining banks or diversion ditches perpendicular to the slope.	Water quality Wetlands Aquatic fauna Subsistence harvesting
ES12	No road must be built within 60 m of a lake or permanent watercourse or less than 30 m from an intermittent watercourse. If, by exception, such a road is necessary, an authorization must be obtained. The slope of the embankment must be reduced for all built or improved roads located less than 60 m from a lake or permanent watercourse and less than 30 m from an intermittent watercourse. Note, however, that watercourses can be crossed at a more or less perpendicular angle.	Water quality Wetlands Aquatic fauna Subsistence harvesting
ES13	Install anti-erosion barriers to prevent soil, rocks, or other material from reaching watercourses. Plant wooden stakes one to two meters apart. At the base of the anti-erosion barrier, dig a trench about 10 cm deep and 10 cm wide. Attach the filter fabric to the stakes, being careful to keep 20 cm of filter fabric free to be placed in the trench perpendicular to the barrier. Fill in the trench over the filter fabric and compact the soil. Check the condition of the barrier every six months or after heavy rains.	Water quality Wetlands Aquatic fauna Subsistence harvesting
ES14	Along steep slopes bordering rights-of-way, use sediment barriers at the foot of the embankment or install protective material (straw, wood chips or mats) directly on the slope to reduce the volume of sediments that are transported.	Water quality Water balance Wetlands Aquatic fauna Subsistence harvesting
ES15	Avoid storing excavated material on steep slopes and ensure they are properly compacted. To ensure better compaction of fill more than 60 cm thick, it is preferable to deposit several thin layers rather than a single layer. In zones with no transversal slope, the height and depth of the fill must be limited to three meters.	Air quality Water quality Wetlands Aquatic fauna Subsistence harvesting
ES16	Stabilize slopes of excavated material or fill using native plants wherever erosion is likely to deposit sediments in watercourses.	Water quality Wetlands Aquatic fauna Subsistence harvesting
ES17	Store excavated material more than 20 m from watercourses, i.e. outside the riparian strip.	Water quality Wetlands Aquatic fauna Subsistence harvesting
ES18	Control the quality of surface runoff and water pumped from excavations by filtering, decanting or treating the water, or by any other method. Do not release it directly into a waterbody.	Water quality Wetlands Aquatic fauna Subsistence harvesting
ES19	Contain the drilling waste storage area and take the necessary measures to prevent runoff from dispersing into the ground or ensure that it is filtered before it reaches a drainage component.	Water quality Aquatic fauna Subsistence harvesting
ES20	When excavating a trench, put the topsoil, subsoil and excavated rock in separate piles no more than one or two meters high. This makes it possible to backfill the trenches without using material from elsewhere.	No specific component
ES21	Backfill trenches as soon as possible and in reverse order to their excavation, replacing excavated mineral soil first and finishing with the topsoil.	No specific component
ES22	If there is not enough topsoil, keep it for areas where erosion could cause the most damage.	Water quality Wetlands Aquatic fauna Subsistence harvesting
ES23	Do not put the topsoil in a water-saturated area. Ideally, it should be used within 12 months of piling.	Water quality Wetlands

Code	Measure	Target Component
		Aquatic fauna Subsistence harvesting
ES24	Take the necessary measures to avoid stripping the soil during snow removal operations.	Water quality Aquatic fauna Subsistence harvesting

3 WATERCOURSE CROSSINGS (WC)

Table 3.1 Summary of Mitigation Measures Regarding Watercourse Crossings

Code	Measure	Target Component
WC1	Check whether a permit or authorization is needed for building watercourse crossings.	Water quality Water balance Wetlands Aquatic fauna Subsistence harvesting
WC2	Arched culverts must be installed at all watercourse crossings where potential or confirmed fish habitat is present.	Water quality Aquatic fauna Subsistence harvesting
WC3	Keep the scale and duration of work in the water to a minimum and confine the work to minimum-flow or low-water periods.	Water quality Aquatic fauna Subsistence harvesting
WC4	Ensure that fish can move freely at all times and avoid critical periods for fish (spawning, incubation, nursing, etc.).	Aquatic fauna Subsistence harvesting
WC5	Build bridges and install culverts on narrow, straight sections without reducing the width of the watercourse, choosing ground with adequate load-bearing capacity and gentle slopes. Build them as far as possible from watercourse mouths or confluences.	Water quality Water balance Wetlands Aquatic fauna Subsistence harvesting
WC6	Accurately assess the watercourse's peak flow in order to choose the appropriate diameter of pipe.	Water quality Water balance Wetlands Aquatic fauna Subsistence harvesting
WC7	Choose the type of culvert (arched, round, elliptical, etc.) based on the characteristics of the site and the fish habitat.	Water balance Wetlands Aquatic fauna Subsistence harvesting
WC8	For more information on suggested types of structures (bridges and culverts, corrugated metal, ice bridges and snow fill crossings) read MRNF's *Guide d'aménagement de ponts et ponceaux dans le milieu forestier*.	Water balance Wetlands Aquatic fauna Subsistence harvesting
WC9	Build crossings perpendicular to the watercourse.	Water quality Wetlands Aquatic fauna Subsistence harvesting
WC10	Use existing crossings on roads, cleared strips or paths as far as possible to avoid disturbing riparian vegetation.	Water quality Wetlands

Code	Measure	Target Component
		Aquatic fauna Subsistence harvesting
WC11	Limit tree felling along the shore and mark trees to be left standing.	No specific component
WC12	Preserve plant cover and stumps in road rights-of-way.	Water quality Wetlands Aquatic fauna Subsistence harvesting
WC13	Set aside organic matter and soil for site rehabilitation.	Wetlands
WC14	Before starting work, confine the work area to avoid sediment transport into water and ensure that work methods and materials used do not generate excessive turbidity.	Water quality Wetlands Aquatic fauna Subsistence harvesting
WC15	When building a winter road that crosses a watercourse, install bridging or build an ice bridge.	Water quality Wetlands Aquatic fauna Subsistence harvesting
WC16	When building a bridge or installing a culvert in an area without fish habitat, do not reduce the width of the watercourse more than 20% (measured from the natural high-water mark).	Water quality Water balance Wetlands
WC17	Install a culvert at least 45 cm in diameter.	Water balance
WC18	Maximum flow depth must not exceed 85% of the culvert's vertical clearance.	Water balance
WC19	Ensure the stability of soil, shorelines, banks, fill and structures during the construction of watercourse crossings (geotextile liner, rip-rap on embankments and watercourse bed, etc.)	Water quality Wetlands Aquatic fauna Subsistence harvesting
WC20	Install transversal drains to divert the flow of water from road ditches. The transversal drains must be placed about every 30 m and be 60 cm wide and 30 cm deep.	Water quality Water balance Wetlands
WC21	Do not block the flow of water and respect the slope, natural drainage of the soil and direction of the watercourse when installing a culvert.	Water quality Water balance Wetlands Aquatic fauna Subsistence harvesting
WC22	Backfill around the culvert and stabilize the fill. The end of the culvert must extend at least 30 cm beyond the base of the fill.	Water quality Wetlands Aquatic fauna Subsistence harvesting
WC23	The base of the culvert must be buried beneath the natural bed of the watercourse to a depth equivalent to 10% of the culvert's height. Maximum burial depth must not exceed 30 cm, however, or a bottomless arched culvert must be used.	Aquatic fauna Subsistence harvesting
WC24	Tubular culverts may not have more than two parallel pipes, and they must be separated by at least one meter.	Aquatic fauna Subsistence harvesting
WC25	All temporary structures must be stabilized upstream and downstream and demolished when the work is finished.	Water quality Water balance Wetlands Aquatic fauna Subsistence harvesting

Code	Measure	Target Component
WC26	Once work is finished, restore the bed of the watercourse to its natural profile, stabilize the banks and revegetate as needed with native species.	Water quality Wetlands Aquatic fauna Subsistence harvesting
WC27	Monitor culverts and bridges periodically, especially in the spring or after heavy rains. Pay particular attention to signs of erosion, poor plant regrowth, obstacles blocking water flow and structural integrity.	Water quality Water balance Wetlands Aquatic fauna Subsistence harvesting
WC28	If necessary, spread the work out over time to take into account the life cycles of the species found in the area.	Wetlands Aquatic fauna Subsistence harvesting

4 WASTE MANAGEMENT (WM)

Table 4.1 Summary of Mitigation Measures Regarding Waste Management

Code	Measure	Target Component
WM1	Before starting exploration, estimate, if possible, the quantity of waste that may be generated based on information such as the number of project participants, the presence of a camp on the site and project duration.	No specific component
WM2	Emphasize, in the following order, reduction at source re-use, recycling and conversion of waste. Replace hazardous products with less harmful ones if possible. The quantity of waste can be reduced at source by using up products completely, buying in bulk and accurately estimating required amounts.	No specific component
WM3	Do not dump any waste into aquatic environments, including waste from cutting vegetation or stripping the soil. All waste accidentally introduced into aquatic environments must be removed as quickly as possible.	Water quality Water balance Wetlands Aquatic fauna Subsistence harvesting
WM4	Domestic and construction waste, as well as recyclable materials, must be shipped to authorized sites according to type.	No specific component
WM5	If quantities are minimal, dry materials (concrete, asphalt, etc.) can be used as fill buried directly behind the protective work. Wood and plant debris can be buried in the bank directly above the protective work.	Air quality Wetlands
WM6	Plan a storage site for use before and after processing large quantities of waste, particularly plastics, which are difficult to extinguish once they catch fire.	No specific component
WM7	Comply with applicable regulations that prohibit the burning of waste.	Air quality Water quality Water balance Aquatic fauna Subsistence harvesting
WM8	Store waste temporarily in a single location inaccessible to wildlife, employees and the public.	No specific component

5 HAZARDOUS MATERIALS MANAGEMENT (HM)

Table 5.1 Summary of Mitigation Measures Regarding Hazardous Materials Management

Code	Measure	Target Component
HM1	Implement a hazardous waste management plan in the event that fuel or other hazardous substances are spilled.	Water quality Water balance Wetlands Avifauna Aquatic fauna Subsistence harvesting
HM2	Comply with laws and regulations regarding the transportation of hazardous materials.	No specific component
HM3	Spill kits for recovering oil products and hazardous materials must be present on the worksite at all times.	Water quality Water balance Wetlands Avifauna Aquatic fauna Subsistence harvesting
HM4	Each vehicle and piece of machinery on the site must contain enough absorbent materials to intervene rapidly in the event of a spill. A list of materials and intervention methods to be used in the event of a spill must be approved by the supervisor.	Water quality Water balance Wetlands Avifauna Aquatic fauna Subsistence harvesting
HM5	All accidental spills must be reported immediately to the person in charge of the emergency response plan, which will have been drawn up and approved before work start-up.	Water quality Water balance Wetlands Avifauna Aquatic fauna Subsistence harvesting
HM6	If harmful substances are spilled, the responsible authority must be contacted.	Water quality Water balance Wetlands Avifauna Aquatic fauna Subsistence harvesting
HM7	It is prohibited for any employee to dump any hazardous material in the environment or wastewater treatment system. This includes scrap and volatile materials, particularly mineral spirits and oil or paint thinners.	Water quality Water balance Wetlands Avifauna Aquatic fauna Subsistence harvesting
HM8	In the event of a spill during vehicle refuelling, the spilled fuel must be cleaned up before restarting the engine.	No specific component
HM9	If hazardous materials are spilled, the contaminated areas must be marked and the surface layer removed for disposal in accordance with regulations in effect in order to limit contamination of waterbodies by runoff. Contaminated areas must be backfilled and stabilized to permit revegetation.	Water quality Water balance Wetlands Avifauna Aquatic fauna Subsistence harvesting
HM10	Keep hazardous substances, including fuel, at least 100 m from waterbodies or surface drainage channels.	No specific component
HM11	Hazardous materials must be handled and stored in accordance with regulations.	No specific component

Code	Measure	Target Component
HM12	When a site is closed, ensure that all tires have been removed and properly disposed of.	Water quality Water balance Wetlands Avifauna Aquatic fauna Subsistence harvesting

6 DRILLING AND BLASTING (DB)

Table 6.1 Summary of Mitigation Measures Regarding Drilling and Blasting

Code	Measure	Target Component
DB1	An explosives management plan must be drawn up to minimize the amount of ammonia and nitrates released into the natural environment.	Air Quality Water quality Aquatic fauna Subsistence harvesting
DB2	All explosives must be used in accordance with applicable laws, orders and regulations.	Noise
DB3	Only properly qualified and trained personnel may handle and detonate explosives as per the manufacturer's instructions and applicable laws and regulations.	Air Quality Noise
DB4	The manufacturer's instructions must be followed to ensure that blasting procedures are safe both for humans and the environment.	Air Quality Noise Water quality Water balance Aquatic fauna Subsistence harvesting
DB5	Fisheries and Oceans Canada *Guidelines for the Use of Explosives in or near Canadian Fisheries Waters* must be followed when blasting on land.	Water quality Aquatic fauna Subsistence harvesting
DB6	No explosive is to be detonated in or near fish habitat that produces an instantaneous pressure change greater than 100 kPa in the swimbladder of a fish.	Aquatic fauna Subsistence harvesting
DB7	No explosive is to be detonated that produces, or is likely to produce, a peak particle velocity greater than 13mm s^{-1} in the spawning bed during the period of egg incubation.	Aquatic fauna Subsistence harvesting
DB8	To keep the fish away when blasting near water, small charges must be fired to scare the fish shortly before the main charge is fired.	No specific component
DB9	No explosive must be used in or near water.	Water quality Water balance Wetlands Aquatic fauna Subsistence harvesting
DB10	Blasting must be suspended in certain circumstances to avoid excessive disturbance of wildlife.	Caribou Subsistence harvesting

Code	Measure	Target Component
DB11	To prevent spills of explosive materials, trained employees must ensure that all containers, tanks, storage trailers and loading equipment receive regular maintenance.	No specific component
DB12	Blasted rock may be used as backfill.	No specific component
DB13	Water left after drilling must be blown out using compressed air before the pneumatic loading of the ANFO.	Water quality Aquatic fauna Subsistence harvesting
DB14	Depending on blasting conditions, the explosives used can greatly affect the overall quantity of explosives waste, so it is important to choose the appropriate type of explosive.	Water quality Aquatic fauna Subsistence harvesting
DB15	Explosives waste must be recovered and disposed of in an appropriate manner after each blast.	Water quality Aquatic fauna Subsistence harvesting
DB16	Use multiple detonators in bore holes as per the manufacturer's recommendations and optimize the arrangement of blasting holes to minimize misfires.	Noise Water quality Water balance Aquatic fauna Subsistence harvesting
DB17	To minimize explosives waste, minimum distances between collars and charges must be determined for all underground blasting charges, based on geological conditions and the application.	Water quality Aquatic fauna Subsistence harvesting
DB18	Prevent misfires by establishing time delay blasting cycles as per the explosives manufacturer's recommendations.	Noise Water quality Aquatic fauna Subsistence harvesting
DB19	Use reliable triggering systems that allow for precise firing of the explosives.	Water balance Aquatic fauna Subsistence harvesting
DB20	Use blasting mats, if necessary, to prevent excessive scatter of rock.	Air quality Noise
DB21	Take the necessary precautions to control dust emissions from drilling.	Air quality
DB22	Fill borehole necks with clean crushed rock to eliminate dust and gas emissions during blasting.	Air quality
DB23	Use explosives in such a way as to minimize the scattering of blasting material outside the blasting site.	Air quality
DB24	Keep blasting data for two years, including the following: vibration speed, vibration frequency on the ground, air pressure and blasting patterns. Respect maximum vibration speeds.	Noise
DB25	Blasting must be carried out in such a way that air pressure at the receptors (camps) is less than 128 db.	Noise

7 CONSTRUCTION EQUIPMENT (CE)

Table 7.1 Summary of Mitigation Measures Regarding Construction Equipment

Code	Measure	Target Component
CE1	Store all equipment and machinery in areas specifically designed for this purpose, particularly parking, washing and maintenance areas. These zones must be located 60 m or more from watercourses and waterbodies.	Water quality Water balance Wetlands Aquatic fauna Subsistence harvesting
CE2	Washing of equipment in aquatic environments is prohibited.	Water quality Water balance Wetlands Aquatic fauna Subsistence harvesting
CE3	Only qualified personnel may refuel and maintain equipment.	No specific component
CE4	Construction equipment must be delivered to the site in good working order, without leaks and equipped with all emissions filters required to comply with emissions regulations and reduce noise disturbance. The equipment must be regularly inspected to detect any leaks or mechanical defects that could lead to fuel, lubricant or hazardous material spills.	Air Quality Noise Water quality Water balance Wetlands Aquatic fauna Subsistence harvesting
CE5	Fuel-related operations (storage, transportation and handling) must comply with the relevant standards and guidelines. All equipment must be refuelled more than 15 m from a waterbody.	Water quality Water balance Wetlands Aquatic fauna Subsistence harvesting
CE6	No machinery must circulate in the riparian strip unless regulations permit it.	Wetlands Water balance Aquatic fauna Subsistence harvesting
CE7	Equipment and vehicles must yield to passing animals.	Caribou Subsistence harvesting
CE8	Install appropriate road signs and follow speed limits in order to minimize accidents and disturbance to the environment.	Air quality Caribou Subsistence harvesting
CE9	All pumps and generators near waterbodies must be equipped with a drip pan.	Water quality Water balance Wetlands Aquatic fauna Subsistence harvesting
CE10	Inspect equipment at each use to detect leaks and drips. Any leaks must be repaired and reported immediately to the field supervisor.	Water quality Water balance Wetlands Aquatic fauna Subsistence harvesting
CE11	All employees driving company vehicles must hold a valid driving licence. Personnel must attend an orientation and employee safety session and must be familiar with the procedures to follow in the event of a collision with an animal.	No specific component
CE12	Road access must be limited to project personnel.	No specific component

Code	Measure	Target Component
CE13	Respect speed limits and all traffic regulations. Install signs warning drivers of the presence of animals along project roads and railways.	Caribou Subsistence harvesting
CE14	Use low sulfur content fuels.	Air quality
CE15	The dust-control liquid used must comply with GNL regulations.	Air quality Water balance Water quality Aquatic fauna Subsistence harvesting
CE16	When making the final choice of equipment, ensure that their noise levels are equal or less than those described in the environmental impact study.	Noise

8 MINING OPERATIONS (M)

Table 8.1 Summary of Mitigation Measures Regarding Mining Operations

Code	Measure	Target Component
M1	Crushers, dryers, sieves, conveyors, elevators and hoppers must not generate airborne dust that is visible more than two meters from the emission source.	Air Quality
M2	The noise level of mining operations must be no higher than 40 dba at night and 45 dba during the day at each receiver (Quebec Guidelines for Stationary Noise Sources for Type I Zoning Area).	Noise
M3	Reports required by governments must be submitted by the stipulated deadlines.	Air Quality Noise Water quality Aquatic fauna Subsistence harvesting

9 MANAGEMENT OF ORE, ROCK PILES, WASTE ROCK, TAILINGS AND OVERBURDEN (MO)

Table 9.1 Summary of Mitigation Measures Regarding Management of Ore, Rock Piles, Waste Rock, Tailings and Overburden

Code	Measure	Target Component
MO1	Take the necessary steps to prevent wind erosion of stored tailings and avoid slippage around the mine tailing storage sites.	Water quality Water balance Aquatic fauna Subsistence harvesting
MO2	Locate the storage area more than 100 m from the high water mark.	Water quality Water balance Aquatic fauna Subsistence harvesting

Code	Measure	Target Component
MO3	Only mine tailings shall be deposited in the storage areas.	Water quality Water balance Aquatic fauna Subsistence harvesting
MO4	Prepare scenarios for using tailings, particularly waste rock. For example, tailings could be used to build roads and railways.	No specific component
MO5	The physico-chemical parameters of the ore and tailings must be characterized.	Water quality Water balance Aquatic fauna Subsistence harvesting
MO6	Control dust emissions from tailing storage and handling.	Air quality Health Subsistence harvesting

10 WATER MANAGEMENT (H_2OM)

Table 10.1 Summary of Mitigation Measures Regarding Water Management

Code	Measure	Target Component
H_2OM1	Fresh water supply pipes must be equipped with water meters.	No specific component
H_2OM2	Re-use of waste water from mining operations will be encouraged.	Water balance
H_2OM3	Facilities posing risks (ore processing complex, tailings storage area, oil products and chemical storage area, etc.) must be built and operated in a manner that prevents any significant deterioration in groundwater quality before and during the mine's operation.	No specific component
H_2OM4	Observation and sampling shafts around facilities posing risks (ore processing complex, tailings storage area, oil products and chemical storage area, etc.) must be used to monitor groundwater quality.	No specific component
H_2OM5	Once mining operations are finished, but before restoration work begins, establish a surface water and groundwater monitoring programme approved by the competent authority and proceed with required sampling.	Water quality Water balance Aquatic fauna Subsistence harvesting
H_2OM6	At the end of restoration work, implement the surface water and groundwater monitoring programme.	Water quality Water balance Aquatic fauna Subsistence harvesting

11 AIR QUALITY CONTROL (AQ)

Table 11.1 Summary of Mitigation Measures Regarding Air Quality Control

Code	Measure	Target Component
AQ1	Dust extractors with filter bags will be used to control dust emissions at the crude ore recovery tunnel, the secondary crusher and the dryer.	Air Quality
AQ2	Dust recovered from the dust extractor must be disposed of in a manner that prevents dust emissions.	Air Quality
AQ3	Use a water-spraying system at conveyor transfer and drop points.	Air Quality
AQ4	Mix the ore with water in the drum scrubber.	No specific component
AQ5	A dust extractor will be used to limit dust emissions from drills.	Air quality
AQ6	Roads will be sprayed to reduce dust emissions during dry periods.	Air quality Health Subsistence harvesting

12 REHABILITATION (R)

Table 12.1 Summary of Mitigation Measures Regarding Rehabilitation

Code	Measure	Target Component
R1	Follow good practices presented in the rehabilitation plan.	Water quality Water balance Wetlands Avifauna Aquatic fauna Subsistence harvesting
R2	Draw up a rehabilitation plan	Water quality Water balance Wetlands Caribou Avifauna Aquatic fauna Subsistence harvesting
R3	Produce post-mining and post-rehabilitation monitoring reports.	Water quality Wetlands Avifauna Aquatic fauna Subsistence harvesting

HEALTH AND SAFETY PROGRAM

Tata Steel Minerals Canada

We are committed to the health and safety of our employees, sub-contractor employees and the community.

June 2015 v1.0

Document History

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Executive Approvals

Approved By:	JmBlake	**Title:**	VPHR & H+S	**Date:**	June 18, 2015
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Approved By:		**Title:**		**Date:**	

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1.0 HEALTH AND SAFETY LEADERSHIP

1.1 TSMC Occupational Health and Safety Policy

TATA STEEL MINERALS CANADA LIMITED

TSMC Occupational Health and Safety

TSMC Health and Safety Vision

We are committed to the health and safety of our employees, sub-contractor employees and the community. We will lead our industry in creating a working culture where safety expectations are living choices. We believe that the only acceptable level of injuries or incidents is zero. To achieve this goal we will strive to create a workplace to continuously improve our processes, require individual accountability, and promote comprehensive safety awareness. We expect all employees to be constantly aware of potential hazards, faithfully adhere to our safety standards and actively participate in and support the advancement of our health and safety practices. Everyone shares in the responsibility of safety.

TSMC Health and Safety Mission

Protecting the health and safety of employees, sub-contractor employees and the community is the primary concern of all of us at TSMC. TSMC will make every reasonable effort to promote, create and maintain a safe and healthy work environment. This will be realized by everyone's adherence to safety principles, by adopting sound management practices and by complying with applicable local provincial and federal health and safety legislations.

Rajesh Sharma	Praveen Jha	Atul Agrawal	Jean-Marc Blake
CEO & MD	Chief Operations	VP Projects	VP Organizational Effectiveness

1.2 Assignment of Responsibility and Accountability for Safety

Tata Steel Minerals Canada is committed to clearly defining responsibilities and accountabilities required of all stakeholders for the accomplishment of desired safety program goals and maintenance of our safety management system.

All management and hourly employees are expected, as a condition of employment, to undertake their tasks and responsibilities in a manner that protects the health and safety of themselves and others in the workplace.

Corporate Health, Safety & Environment Steering Committee:

Under the chairmanship of the Vice-President, Human Resources, Health, Safety and Administration, the Steering Committee made up of: Vice President Operations; Vice-President Commercial and Procurement; Vice-President Projects; Superintendent Mining; Chief Administration; Senior Manager Health, Safety and Security; and, Manager Environment and Permitting, as members, provide the strategic TSMC direction to the Health and Safety Program.

More precisely, the Committee is responsible for:

- Providing visible leadership in health and safety;
- Maintaining overall control and direction of the Health & Safety Program;
- Ensuring that all safety policies are implemented and supported in all areas;
- Ensuring that all personnel are aware of, and effectively support, the policies and procedures set out in the Health and Safety Program;
- Reviewing safety statistics and incident summaries on a regular basis to evaluate performance and implement improvements as required;
- Setting annual objectives and targets for improvements in health and safety performance with assigned accountabilities.

Management Employees Shall:

- Lead by example;
- Do everything reasonably possible to ensure that activities are carried out in accordance with regulatory and organizational requirements and with utmost regard for worker health and safety;

- Conduct Tool Box and other safety meetings with employees at the required frequency and complete reports that detail the agenda, discussions, attendance and any action items requiring follow-up;
- Make daily observations of conditions and behaviours in the work locations and hold employees accountable for unacceptable performance in this regard;
- Ensure that new employees receive detailed job safety instructions and are limited in their work assignments until trained, tested and competent;
- Provide instruction to workers in safe work practices and procedures;
- Ensure compliance to personal protective equipment standards in all areas of the operation;
- Conduct and/or participate in planned workplace inspections;
- Provide employees with information about the hazards on the job and how to utilize existing controls to prevent injury;
- Support the TSMC Health and Safety Program by establishing personal goals and objectives for employees so that they may make direct contributions to the program's success.

Workers Shall:

- Actively participate in the Company Safety Program;
- Comply with safe work practices, procedures, and rules;
- Take all reasonable precautions in all circumstances to protect themselves and others in the workplace;
- Make proper use of safety equipment and personal protective devices and clothing required by the company;
- Report unsafe conditions or acts and assist with the aim of reduction and controlling of incident producing conditions and unsafe acts at work;
- Report all incidents, injuries and near misses immediately;
- Report any anticipated loss of work time to their supervisor as soon as possible after being treated by a physician;
- Promptly complete or assist in the completion, as necessary, of all forms, reports and investigations related to any incidents.

Occupational Health & Safety Committee Members Shall:

- Attend scheduled Occupational Health & Safety Committee Meetings;
- Assist, as required, in incident/incident investigations, site inspections and policy/documentation review;
- Advise workers on matters pertaining to health and safety;
- Act as a liaison between employees and management on matters pertaining to health and safety;

Health and Safety Advisors Shall:

- Champion the day-to-day compliance to, and administration of, the Safety Program;
- Post bulletins, safety posters, safety rules and other relevant information in the workplace;
- Facilitate incident investigations in conjunction with the responsible supervision;
- Coach and mentor supervisors in the application of safety interactions, safety meetings and other responsibilities;
- Ensure that pertinent safety reports are submitted as required;
- Prepare descriptions of identified unsafe conditions and the steps taken to correct these conditions;
- Ensure that corrective actions have been taken whenever deficiencies have been identified;
- Facilitate delivery of safety seminars and training;
- Inspect the work area regularly to keep informed about on-going activities;
- Compile the necessary statistical and incident data;
- Monitor Material Safety Data Sheets (MSDS) to ensure that current copies are accessible to all employees;
- Conduct orientations for new employees, contractors and others as required;

1.3 Improvement Action Plans

General improvements in the Health & Safety Program include the following emphasis areas:

Safety Culture Promotion through safety initiatives, programs, and/or awareness campaigns to continue to foster an improving safety culture. Efforts will be communicated to all employees and tracked through monthly reports.

Key Performance Indicators are used to measure results achieved by individuals, departments and the organization as a whole.

Targeted Improvements will be introduced throughout the year with updates required on a quarterly basis. Additional focus areas will be added as needed to ensure continuous improvement. This information will be provided to all personnel through postings in field areas, tool box meetings and on the company website.

Annual organizational goals to promote continuous improvement in health and safety shall be established by the Executive Committee and communicated throughout the organization. Measurement of success in attainment of annual organizational goals shall be made quarterly.

Personal performance objectives for all levels of management are a part of the overall performance management system. Wherever possible, corporate goals shall be cascaded to all levels.

Personal health and safety goals shall be assigned to all non-management employees at the beginning of each calendar year. Supervisors are to review performance on a quarterly basis and provide feedback and direction as required for successful attainment of these goals.

1.4 Program Element Leadership

The Executive Committee shall approve the appointment of leaders for each element of the Health and Safety Program to champion the promotion and proliferation of the element and its purpose and intent. Element leaders may engage subordinates and others to promote teamwork and involvement in the Safety Program.

Names and photographs of element leaders are to be posted in all work areas.

1.5 Annual Program Evaluation & Review

Internal audits of all Health and Safety Program elements shall be conducted by persons designated by senior management, with results reviewed by the Steering Committee. To facilitate meaningful internal auditing, audit protocols are provided for use as the basis for evaluation, scoring and reporting.

Results of program evaluations are to be used in the goals and objective setting process for subsequent years.

1.6 Occupational Health and Safety Committee

1.6.1 Committee Membership, Training and Leadership

A Joint Occupational Health and Safety Committee shall be established at the DSO-Timmins operations in accordance with the Occupational Health and Safety Act and Regulations.

Members shall be selected from main areas of the operation and both rotations to ensure adequate representation within:

- Mining;
- Plant Operation;
- Plant Maintenance;
- Support Areas.

Committee meetings shall be held during working hours at least every three months or more frequently if deemed necessary. Minutes of all regular meetings and special meetings shall be recorded and posted in work areas.

All committee members shall be trained for their roles.

A worker and management representative shall co-chair the committee.

At least half of the members of a committee are to be persons representing the workers who are not connected with the management of the workplace.

The people representing the workers on the committee are to be selected by their fellow workers. Management representative are appointed.

1.6.2 Committee Terms of Reference

The Committee shall review and adopt a well-defined, clearly stated Terms of Reference outlining its structure and function. The adopted Terms of Reference provides clear direction in committee roles and responsibilities. Suggested components include:

- Function, purpose and scope of the Committee;
- Process for forwarding recommendations to the employer;
- Provisions for record-keeping;
- Frequency of meetings;
- Number of people required for a meeting;
- Protocol for worksite inspections and visitations;
- Specific responsibilities for members;

- Duration of membership.

The duties and functions of a Joint Health & Safety Committee are those identified in provincial regulations:

- Identify situations that may be unhealthy or unsafe for workers and advise on effective systems for responding to those situations;
- Consider and expeditiously deal with complaints relating to the occupational health and safety of workers;
- Consult with workers and the employer on issues related to occupational health and safety;
- Make recommendations to the employer for the improvement of the health and safety of workers;
- Advise the employer on programs and policies required under the regulation for the workplace;
- Advise the employer on proposed changes to the workplace or the work processes that may affect the health or safety of workers;
- Ensure that incident investigations and regular inspections are carried out as required by the company policies;
- Participate in inspections and investigations;

1.6.3 Decisions of the Committee

The committee should attempt to reach consensus on each decision it makes. If the committee cannot reach consensus then a vote may be taken. The committee will go with the majority vote, when a vote is needed.

1.6.4 Assistance in Resolving Disagreements within Committees

If the Health and Safety Committee is unable to reach agreement on a matter at the workplace, a co-chair of the committee may report this to a senior manager, who may investigate and attempt to resolve the matter. Unresolved issues may be referred to the Inspections Divisions, Workplace Health, Safety and Compensation Commission for resolution.

1.6.5 Support for the Committee

The company shall provide the reasonable equipment, space and support necessary for the joint committee to carry out its duties and functions.

1.6.6 Visibility and Communications

Names and photographs of committee members shall be posted in all areas of the operation in order to make members recognizable to the workforce.

Copies of minutes of committee meetings are required to be posted in all work areas, along with up-to-date information on outstanding issues of concern to workers.

1.7 Health and Safety Rules and Absolutes

1.7.1 Organizational Rules

The following rules apply to all employees of TSMC. All regulations and rules specify the minimum standards to be maintained.

- Standard practices, standing instructions, directives, codes, etc. shall also govern employees, which are supplementary but do not contravene this manual.
- All unsafe acts and conditions, including “near miss” incidents, are to be immediately reported to appropriate supervision.
- First aid treatment is to be obtained promptly for any injury.
- All work shall be carried out in accordance with appropriate Safe Work Practices, Job Procedures, Hazard Analysis and your supervisor’s direction.

Personal Conduct – Mandatory Requirements:

Employees shall:

- Wear personal protective equipment as specified in the workplace.
- Report all injury or damage incidents immediately;
- Perform all work in accordance with safe practices and the supervisor’s direction;
- Follow good housekeeping practices;
- Operate all vehicles and mobile equipment in accordance with Company rules and highway regulations (including the wearing of seat belts). Employees are not permitted to ride in the back of a pick-up, or in any mobile equipment that does not have a specified passenger seat.

1.7.2 Absolutes

The following are prohibited at all times on all Company property and job-sites. Failure to comply may result in disciplinary action up to and including dismissal:

- Possession or consumption of alcohol or illegal drugs;
- Possession of firearms without authorization;
- Fighting, horseplay, practical jokes;
- Theft or vandalism;
- Damaging, disabling or interfering with safety, firefighting or first aid equipment;
- Arriving for work or remaining at work when ability to perform the job safely is impaired;
- Participating in unsafe acts or contributing to unsafe conditions;
- Causing injury or equipment damage by neglect;
- Working at heights greater than 1.8 meters (6 feet) without proper fall protection;
- Working without a valid safe work permit where one is required;
- Violation of the company Isolation (Lockout/Tagout) Program.

1.7.3 Rule Education and Enforcement

Failure to enforce safety rules leads to unsafe behaviours and conditions in the workplace – both of which result in higher injury rates and lower productivity. Enforcement of safety rules shall be the responsibility of all levels of supervision and management.

2.0 COMMUNICATIONS & TRAINING

2.1 Policy

It is TSMC policy to ensure that ongoing and effective communications and the exchange of information is established and maintained regarding health and safety in our workplaces.

Health and safety training is the foundation of a successful program. Such training should give management, supervision, and workers an appreciation of their personal responsibilities for health and safety within the framework of the minimum standards outlined by legislation.

In addition to the transfer of knowledge and skills, training promotes positive attitudes and a culture in which all parties collaborate to establish and maintain a safe and productive workplace.

2.2 Scope

This section outlines the strategies and tactics through which the programs of ongoing and effective health and safety communications and training are to be maintained. Responsibilities are identified wherever possible so as to ensure clear accountabilities.

2.3 General Communications

2.3.1 Incident Communication and Lesson Sharing

Site Wide Alerts are to be issued to communicate important health and safety information to the general site population. Alerts are prepared by the designated health and safety advisor and communicated through e-mail so that they may be posted in each area or disseminated through safety meetings and one-on-one interactions. Topics may include wildlife sightings, new traffic signage or patterns and health concerns such as a flu outbreak.

The Health, Safety and Security Department shall evaluate reported incidents and, investigation reports for opportunities to communicate the details and any lessons learned to other areas of the operation.

2.3.2 Bulletin Boards

Health and Safety Bulletin boards that are strategically located throughout the DSO-Timmins site are intended to communicate current information to workers and contractors. Bulletin boards are to be inspected as part of the Planned General Inspection program to ensure that they are kept up-to-date, clean and used only as intended.

2.3.3 Medical and Health Information

The communication of medical and general health information is the responsibility of the site nurse who shall:

- Update bulletin board information;
- Distribute alerts and general information through e-mail;
- Promote general health and well-being amongst TSMC employees, contractors and service providers;
- Liaise with the local communities and public medical practitioners on health issues of mutual concern.

2.3.4 Off-the Job Safety & Health Promotion

Wherever practicable, health and safety advisors shall provide postings, safety meeting discussion topics and other media to promote safety and health of workers while away from the job site.

2.4 Orientations

Tata Steel Minerals Canada shall provide Employee Orientations to all employees and contractors prior to beginning work.

The orientation shall include company policies, expectations, worker rights, general safe work practices/procedures and related topics. Employees shall sign off on topics covered in the orientation.

The purpose of any orientation is to educate employees on the expectations, hazards and any other information that may be required for the safe and smooth functioning in a new workplace. Orientations will provide consistency in communicating the rules, processes and expectations to all employees and contractors before they start work.

There are five types of orientations for TSMC employees, contractors and visitors:

- General orientation;
- Mine orientation;
- Work Site orientation;
- Visitors orientation;
- Contractor orientation.

2.4.1 General Orientations

New TSMC employees, contractors, or other persons who work at the DSC-Timmins site for more than 48 hours or who provide regular services at the site, are required to undergo a General Orientation.

General Orientations are facilitated by the Health, Safety & Security Department and consist of a presentation on the key elements of the TSMC Safety Program, site safety rules and absolutes and emergency procedures.

Upon completion of the General Orientation, TSMC employees are presented with a name tag and company logo to be affixed to their hard hats.

Records of orientations are maintained by the Health, Safety & Security Department.

2.4.2 Mine Orientations

Mine Orientations are required for all employees, contractors, visitors, suppliers and service representatives who work or drive in designated mining areas.

Mine Orientations are provided by the Health, Safety and Security Department. Hat decals are provided to people who have completed the Mine Orientation training so that they may be immediately identifiable.

2.4.3 Work Site Orientations

Site orientations are the responsibility of the immediate supervisor who shall ensure that new employees are adequately oriented to their work areas. A Worksite Orientation Checklist must be completed and signed by the supervisor and worker to verify that the orientation had been completed.

Contractors and subcontractors must provide their company orientation as well as a job specific orientation for the work and area covered by the contract. It is the contractor's responsibility to ensure that worker certifications are up to date and valid, do competency checks and have documentation available for review by TSMC prior to starting work. This information will be held by the contractor and is a condition of the contractor's continued employment. Contractors will have to continue competence evaluation and field training specific to the trade and update TSMC when workers advance to other trades. Contractors will also have to give a mine/plant tour to all new employees. No employee will start on night shift unless a daylight mine/plant orientation has been completed.

Contractors will submit their orientation package to TSMC Safety for review prior to any work contract starting. TSMC will audit the presentation of the orientation at any time to ensure effectiveness of delivery and content consistency.

2.4.4 Visitors Orientations

Abbreviated DSO-Timmins site orientations must be completed by visitors and a full-time escort is required for the duration of the visit. Where visits exceed 48 hours, a regular orientation is required.

Escorted visitors may receive the abbreviated orientation at the Security Office at the site entrance.

2.4.5 Contractor Orientations

Each contracting company is expected to formally orient their employees to the relevant details of their specific safety program, including rules and the system of discipline used for rule violations. TSMC rules shall apply where there is a conflict or inconsistency. The contractor employees must also be provided an orientation to their physical work area including locations of lunch and toilet facilities, first aid and other emergency equipment and any restricted areas.

2.5 Safety & Qualifications Training

TMSC is committed to taking necessary steps to ensure that employees receive training necessary to perform their duties in a safe and responsible manner.

Formal training required for safe and productive operation of mobile and plant equipment, as well as legislated training required for hazardous task execution, shall be coordinated for all TSMC employees through the on-site training advisor.

Annual Training Needs Assessments are to be completed to determine the specific courses required for the operation in order to ensure adequate numbers of trained and certified workers are available to cover rotation and shift schedules. Supervisors are accountable for ensuring that:

- Training needs identify which employees should be trained in specific areas and courses;
- Employees are able to attend scheduled training sessions;
- No untrained employee is permitted to do tasks for which training is required, either by provincial regulations or TSMC policies.

Training and certification records shall be maintained by the on-site training advisor. New employees are required to submit proof of completion of any current, relevant courses and certifications that they already have. Copies of certificates and similar documents shall be filed in company training records.

2.6 Tool Box and Group Safety Meetings

2.6.1 Pre-shift Tool Box Meetings

TSMC and contractor supervisors shall conduct and employees shall participate in, pre-shift tool box meetings that focus on completion of the Field Level Risk Assessment (FLRA) and, as a result, the work to be done and any relevant health and safety issues.

Where a Job Safety Analysis (JSA), a Standard Operating Procedure (SOP), permit or similar document is relevant to the work to be performed, the supervisor shall review the identified hazards and the mitigating steps to be taken.

Other discussion items may include:

- Weather conditions;
- Any other TSMC workers or contractors in the immediate area;
- A relevant Safe Work Practice review;
- Emergency preparedness / rescue plans and protocols.

No written reports are required for daily pre-shift meetings held by TSMC operations and maintenance teams other than the FLRA which must be completed by employees and handed-in at the end of the shift.

Contractors may be required to record all meetings and submit copies to the activity supervisor, depending on the terms of the contract.

2.6.2 Weekly and Monthly Group Safety Meetings

Regular group safety meetings shall be held at least monthly at the DSO-Timmins site for all TSMC employees and contractors. Safety meetings for hourly employees are conducted by the crew supervisor with support from a safety advisor.

Meetings for staff employees are to be held weekly and facilitated by a safety advisor or a member of senior management.

The intent is to have every employee attend at least one formal group safety meeting each month.

The Health, Safety and Security Department shall provide support for all safety meetings by preparing suggested agenda topics, completing reports and facilitating meetings when requested.

Meetings shall be attended by senior site managers wherever schedules permit.

All attendees at group safety meetings shall sign the Group Meeting Report (Exhibit 2.5.2) to acknowledge attendance and understanding of the topics being discussed.

TATA STEEL MINERALS CANADA LIMITED

TATA

Safety Meeting Report

Meeting Leader: ____________________

Area / Team: ____________________

Date: ____________________

Type of Meeting

- ☐ Regular
- ☐ Special

Planned Topics for Discussion	Participant Names	Signatures

Issues and Recommendations Arising from Meeting

____

____

____

____

____

Action Follow-up

Action	Assigned to (name):	Planned Completion	Actual Completion

Next Meeting: ____________________ Leader Signature ____________________

6/12/15

Exhibit 2.5.2: Group Safety Meeting Report

3.0 INCIDENT MANAGEMENT

3.1 Policy

Tata Steel Minerals Canada is committed to ensuring that undesired events are adequately reported and investigated and that corrective actions are undertaken to prevent similar events in the future. To this end,

- All incidents that did or could have resulted in jury, property damage or other form of loss shall be reported and investigated in a timely manner;
- Investigations shall identify root causes and contributing factors;
- Corrective or preventive measures shall be identified and implemented in order to prevent recurrence.

3.2 Scope

This Policy applies to all incidents on TSMC property that result in time lost from work; medical aid, property damage, fire and environmental release, as well as incidents that had the potential to result in any of the above.

The standard for investigations specifies:

- What is to be reported;
- To whom it will be reported;
- How it is reported;
- Which incidents are investigated and to what degree;
- Who will investigate them;
- What forms are to be used;
- What records are to be kept;
- What summaries and statistics are to be developed;
- How often statistical reports are to be prepared.

The incident investigation process involves the following steps:

- Report the incident occurrence to a Health, Safety and Security Department representative within 30 minutes of occurrence;
- Investigate the incident;
- Identify the causes;
- Report the findings to the Health, Safety and Security Department within 24 hours;

- Develop a plan for corrective action;
- Implement the plan;
- Evaluate the effectiveness of the corrective action;
- Make changes for continuous improvement.

3.3 Incident Reporting

All incidents resulting in, or having the potential to have resulted in, lost time, medical aid or property damage in excess of $5000 must be reported on the TSMC Incident Investigation Form (Exhibit 3.2A) within 24 hours, unless extenuating circumstances dictate otherwise.

Minor incidents resulting in or having the potential to have resulted in first aid treatment or property damage less than $5000, shall be reported by the supervisor using the TSMC Minor Incident Report form shown in (Exhibit 3.2B)

An injury becomes reportable to the Workplace Health, Safety and Compensation Commission (WHSCC) when:

- An employee advises his/her immediate supervisor that a workplace injury has occurred and that medical attention has been, or will be, obtained and/or,
- An employee advises his/her immediate supervisor of lost time beyond the day of injury.

Workplace injuries and incidents, whether reportable to the legislative authorities or not, will be reported internally to the Health, Safety and Security Department.

Serious Incident Reporting:

An incident becomes immediately reportable under the OHS Act and Regulations, NL 70/12, as referenced below, whenever the severity of an injury or the potential severity is as described in the legislation.

> ***Reporting Incidents***
>
> *54. (1) Where an incident takes place at a workplace*
>
> > *(a) that results in serious injury to a person or results in the death of a person; or*
> >
> > *(b) that had, or continues to have, the reasonable potential of causing serious injury to or the death of a person*
>
> *the employer, or principal contractor shall immediately notify the assistant deputy minister of the incident.*
>
> *(2) Where an incident is reported under subsection (1), notification shall immediately be given to the committee, the worker health and safety representative or the workplace health and safety designate.*

(3) In this section [...] "serious injury" means

- a. *a fracture of the skull, spine, pelvis, femur, humerus, fibula or tibia, or radius or ulna;*
- b. *an amputation of a major part of a hand or foot;*
- c. *the loss of sight of an eye;*
- d. *a serious internal haemorrhage;*
- e. *a burn that requires medical attention;*
- f. *an injury caused directly or indirectly by explosives;*
- g. *an asphyxiation or poisoning by gas resulting in a partial or total loss of physical control; or*
- h. *another injury likely to endanger life or cause permanent injury,*

but does not include injuries to a worker of a nature that may be treated through first aid or medical treatment and the worker is able to return to his or her work either immediately after the treatment or at his or her next scheduled shift.

Such incidents must be reported immediately to the regulatory authorities through the Injury Reporting Hotline. It is the responsibility of the Manager, Health, Safety and Security to determine the reporting requirements and to see that the reporting is done.

TSMC will conduct investigations using both individual investigators and/or investigation teams, depending on the type of investigation required (determined by the severity of the incident and the potential for recurrence). All those with investigation responsibilities will be trained in incident investigation procedures, legislative requirements, and investigation techniques. The Health, Safety and Security Department will support and participate in investigations as described in this procedure.

Department Head Responsibilities

- Ensure that completed Incident Investigation reports are forwarded to the Health, Safety & Security Department within twenty-four hours of the incident. In cases where the investigation cannot be concluded within twenty-four hours, a preliminary report can be submitted, indicating that a thorough report will follow.
- Critically review all investigation reports submitted by supervisors.
- Ensure that immediate and underlying causes are found, recommendations are pertinent to the seriousness of the incident, the supervisor has signed off the investigation, and that corrective measures are taken to prevent recurrence.

- Assist or work in cooperation with the Health, Safety & Security Department and/or the Occupational Health and Safety Committee as needed, to implement the recommended actions to prevent recurrence of a similar incident.
- Include in departmental meetings, the review of action item status until closure.

Supervisor Responsibilities

- The supervisor's first priority is to ensure the well-being of his/her employees. Upon first becoming aware of an incident, evaluate the seriousness and nature of the incident.
- Where circumstances warrant an urgent response, ensure that medical attention is provided to any injured employees.
- Where circumstances and severity warrant, secure equipment to prevent further injury or damage and secure the area to ensure that evidence is not disturbed before an investigation is completed.

Employee Responsibilities

- Immediately report any work-related injury/illness. This includes immediate incidents (acute injuries) such as cuts, puncture wounds, sprains and burns as well as those that are of a gradual onset (chronic) i.e., back pain, repetitive strain.
- Immediately report any "near-miss" events and/or unsafe work situations and provide necessary details to the supervisor.
- Assist with the investigation and completion of the necessary reports when requested.

Health, Safety & Security Department Responsibilities

- Review all investigation reports to ensure information is complete, understandable, and based on factual evidence.
- Maintain copies of investigation reports for each incident and enters the details of incidents into a database as reports are received.
- Distribute reports to all areas requiring information for subsequent follow-up of additional corrective action.

- If an incident results in a serious injury as defined under the Occupational Health and Safety Act, Section 54 referenced above, the senior manager, health, safety & security will immediately notify the provincial authorities through the Serious Incident Hotline.

3.4 Incident Investigation Protocols

As little time as possible should be lost between the reporting of an incident and the beginning of the investigation. In this way, those responsible for the reporting and investigation are most likely to be able to observe the conditions as they were at the time, prevent disturbance of evidence, and identify witnesses.

The severity of the incident and potential for recurrence determines the level of investigation to be undertaken. The following protocol determines the type of investigation required:

Level 1 Investigation (Low Risk Category) – First-aid treatment injuries not resulting in lost time, damage to property greater than less than $5000, or the potential for the aforementioned shall be investigated by the area supervisor using the Minor Incident Report Form.

Level 2 Investigation (High Risk Category) – Required when there is a lost-time injury requiring medical aid treatment, damage to property greater than $5000 but less than $100,000, or had the potential for the aforementioned shall be investigated by the superintendent or manager of department in which injury occurred and a representative of the Health, Safety & Security Department who has been trained in incident investigation techniques.

Level 3 Investigation (High Risk Category): Required when there is a fatality, serious injury as defined by Section 54 of the NL Occupational Health and Safety Act, damage to property greater than $100,000, or had the potential for the aforementioned shall be investigated by a team consisting of:

- Head of the department in which the incident occurred;
- Senior manager of health, safety & security;
- Co-chairs of the OHS Committee;
- Technical specialists as required.

3.5 Follow-up Action Tracking

All actions resulting from incident investigations are to be assigned to individuals who will have prime responsibility for their completion. The Health, Safety and Security Department shall track actions to completion and report on the status of each until completed and signed-off.

TATA Incident Investigation Report

Report No.

PROJECT NAME:	PROJECT NUMBER:	Occurrence	Report Date

CONTRACTOR INVOLVED:	TIER CONTRACTOR INVOLVED:

Incident Type: FIRST AID ☐ MEDICAL TREATMENT CASE ☐ RESTRICTED WORKDAY CASE ☐
LOST WORKDAY CASE ☐ NEAR MISS ☐ PROPERTY INCIDENT ☐ ENVIRONMENTAL ☐
OTHER (DESCRIBE) ☐

AREA AND/OR UNIT INCIDENT OCCURRED:

INJURY INFORMATION: ACUTE ☐ CHRONIC ☐

Worker(s) Name:	Trade Craft & Class:	Experience:

Nature of injury:	Source of Injury
Part of Body:	Type of incident:

Treatment

INVESTIGATION TEAM PLEASE PRINT FULL NAMES

Name/Brass	Company	Position/Trade

PERSON(S) INVOLVED IN INCIDENT: (please Print)	Trade	Position	Years at Current Position

DESCRIPTION OF INCIDENT: Relevant events that happened prior to the incident, during the actual incident and immediate actions that followed the incident:

1

Exhibit 3.2A: TSMC Incident Investigation Report

TATA

Minor Incident Investigation Report — Report No.

DSO TIMMINS	Date of Incident	Time of Incident	
CONTRACTOR(S) INVOLVED:			
Incident Type: FIRST AID ☐ NEAR MISS ☐ PROPERTY DAMAGE ☐			
LOCATION INCIDENT OCCURRED:			
PERSON(S) INVOLVED IN INCIDENT: (please Print)	Trade	Position	Years at Current Position
DESCRIPTION OF INCIDENT: Relevant events that happened prior to the incident, during the actual incident and immediate actions that followed the incident:			
INJURY INFORMATION:			
Worker(s) Name:	Trade Craft & Class:	Experience:	
Nature of Injury:	Nature of Injury:		
Part of Body:			
Treatment			
PROPERTY DAMAGE INFORMATION:			
Equipment Type/No:	Serial No:		
Equipment Leased from:	Leasor Notified: ☐ Yes ☐ No	Name:	
Cost of repair:	☐ Est. ☐ Actual		

CORRECTIVE ACTIONS	Who	WHEN
Contractor Safety - PRINT	SIGNATURE	(YY/MM/DD)
Contractor Manager - PRINT	SIGNATURE	(YY/MM/DD)

Exhibit 3.2B TSMC Minor Incident Report Form

4.0 WORKPLACE INSPECTION PROGRAM

4.1 Policy

The purpose of the TSMC inspection program is to prevent injuries and illnesses by identifying and eliminating actual and potential hazards before they can cause harm. In addition to identifying hazards, inspection reports are used to monitor standards and procedures and recommend changes. An inspection program will only be successful when there is a process for follow-up so that substandard actions and conditions are corrected.

4.2 Scope

This section describes the four different kinds of inspections that are to be completed at TSMC operations:

- **Planned workplace inspections**: Inspect buildings, structures, grounds, excavations, tools, equipment, machinery, and work methods and practices for hazards that might cause injury or disease. These inspections are to be scheduled at appropriate intervals to prevent unsafe conditions developing.
- **Vehicle and Mobile Equipment inspections**: Employees are to be trained and instructed to inspect their vehicles and equipment regularly, following the manufacturer's recommendations. For example, heavy equipment, vehicles and elevating work platforms must be inspected by the operator before use on each shift.
- **Tool and Equipment Inspections**: There shall be a program of inspections to ensure that hand and power tools and equipment are inspected and tagged on a regular basis. Such tools and equipment include rigging and hoisting gear, grinders, welding machines and fall protection harnesses and attachments.
- **Annual Inspections and Certifications:** Equipment such as cranes – mobile and fixed – highway trucks, boom trucks and the like require annual inspections and certifications done by a government agency or a third party approved by the government to perform such inspections. Fire suppression systems shall be included in the annual inspection program.

4.3 Planned Workplace Inspections

4.3.1 Standards for Inspections

Monthly inspections shall be facilitated by safety advisors according to a schedule prepared by the Health, Safety and Security department. Area management, supervisors and workers at the job site shall be engaged in the inspections. A checklist (**Exhibit 4.2.1**) may be used as a guideline when conducting inspections.

On at least a quarterly basis, the Occupational Health and Safety Committee shall conduct inspections of selected worksites. Findings from each inspection shall be recorded in the minutes of committee meetings.

On-site contractors jobs of one week duration or longer shall be inspected by the TSMC activity supervisor in the first week and at least weekly thereafter. A representative of the contractor shall participate in the inspection.

4.3.2 Inspection Procedure

The following steps are recommended whenever planning, conducting and following up planned workplace inspections:

1. Review previous inspection records and note any commonly reported hazards.
2. Plan the inspection – what is going to be inspected, where, when.
3. Look at what is being done and how. Consider regulations, company policies and standards and best work practices as the basis for evaluation.
4. When unsafe conditions or behaviours requiring immediate action are observed, correct them immediately.
5. Document all sub-standard items and issues identified – even those corrected immediately on the inspection report (**Exhibit 4.2.2**).
6. Look for basic causes of sub-standard conditions, practices and procedures.
7. Review items with the Health and Safety representative and during toolbox talks and management meetings.

4.3.3 Behaviours and Conditions Requiring Immediate Attention

Where unsafe conditions, practices or procedures are noted:

- Take action immediately to rectify the problem, if possible.
- Place warning signs and barricades to keep workers away. Use verbal warnings if applicable.
- Notify management to rectify conditions, record actions taken and the date on the inspection form.
- Record and complete the Inspection Report and file it with safety documentation. <u>Ensure that any unsafe condition, practice or procedure is included in the report, even if corrective action has already been taken</u>.

Where an unsafe act is observed:

- Inform the worker(s) of the observation;

- Discuss the unsafe act with the worker(s) and supervisor;
- Advise on how to correct the unsafe act and the consequences of failing to correct the situation;
- Re-visit the area where feasible to check for change;
- Record the unsafe act and the corrective actions taken on the inspection report.

4.3.4 Completing Reports and Follow-up

Inspection reports should be reviewed with employees during toolbox safety talks and by committee members in OHS Committee meetings. Reports must also be copied to the Health, Safety and Security Department for compliance monitoring and analysis.

In completing the written report:

- List all identified non-compliance;
- Indicate if the item is reoccurring, based on the review of previous inspections;
- Rank each item using the ABC ranking system explained on the report form;
- Indicate the recommended action that should be taken (or has already been taken) to eliminate the problem and prevent recurrence;
- Assign a **person** responsible – provide the name of the individual who is in the best position to complete the action. Ensure that individuals who are assigned a responsibility are informed;
- Where work is required by the Maintenance Department, initiate a Work Request and record the number on the Inspection Report;
- Follow-up and record when each action has been completed.

4.4 Pre-use Equipment Inspections

A program of pre-use inspections shall be developed and maintained by the Health, Safety and Security Department. Employees shall be instructed to inspect their equipment and report any defects to their supervisor.

The following equipment is to be inspected daily before operation:

- All mobile equipment – tractors, graders, front-end loaders, off-highway trucks;
- Light vehicles such as pick-up trucks, SUVs, vans;
- Highway equipment such as tractor trailers, fuel trucks, tag trailers;

- Forklifts, aerial work platforms, mobile and overhead cranes.

Pre-use inspections are to be completed using a checklist (Exhibit 4.3) that is provided by each department. The checklists shall require the following information:

1. Name and signature of person performing the checks;
2. The date and shift;
3. Vehicle or equipment identification (Unit #)
4. Odometer reading or engine hours, where appropriate;
5. Fuel level;
6. Specific items to be checked (checklist items);
7. Remarks – noted defects that need to be attended by maintenance.

Checks to monitor compliance to the pre-use inspection program are the responsibility of each department but may also be done by the Health, Safety and Security Department at any time.

4.5 Tool and Equipment Inspections

All tools and equipment shall be properly maintained so as to reduce risk of injuries to employees or damage to property. Maintenance of tools and equipment will be performed as per the manufacturers' recommendations.

All supervisors and employees shall regularly check all tools and equipment that they are working with, and shall take out of service any tools or equipment that pose a hazard due to a need for repair. All equipment that has been removed from service will be tagged "OUT OF SERVICE". Any equipment tagged "OUT OF SERVICE" will not be returned to service until repaired by a qualified person.

Safety advisors will carry out random inspection of tools and equipment. Documentation will be kept of this inspection process.

The Maintenance Department shall be responsible and accountable for the development and implementation of a program for inspection of tools and non-mobile equipment. The program shall include:

- An inventory of applicable tools and equipment;
- A system of tagging or colour-coding such that each item can be readily identified as inspected in the current year, quarter, month or other required frequency;
- An established preventive maintenance program and schedule that is managed through SAP and complete with a work history of inspections done.

4.6 Annual Inspections and Certifications

Equipment requiring annual inspections shall be identified within SAP along with the provision for work order generation at the appropriate time to permit planning and scheduling of each inspection by authorities or technical specialists.

Tata Steel Minerals Canada

Workplace Inspection Checklist

Item / Category	What to Look For	Checked	OK ✓ Yes ☒ No	Non-compliance Issue (if not OK)	Item Number*
Housekeeping	General tidiness; materials stored properly; no unnecessary materials or equipment; walkways clear.	☐	☐		
Emergency equipment / preparedness	Emergency numbers posted; fire extinguishers; eye wash station; first aid supplies; designated first-aid people on site and names posted.	☐	☐		
Personal protective equipment & company rules	Full compliance; condition of equipment being worn / used.	☐	☐		
Worker training and certification	Workers are trained for tasks being performed – equipment operation; procedures for hazardous tasks.	☐	☐		
Equipment and tools	Adequate for the task; used properly; in good condition.	☐	☐		
Ladders, scaffolds, platforms	Condition; erected properly; work platforms are guarded and have toe boards.	☐	☐		
Construction Industry Critical Tasks: Fall Protection; Trenching & Excavating; Confined Space Entry; Power Line Hazards; Traffic Control; TDG; Asbestos Abatement.	Compliance to regulations and company procedures; equipment in good condition and appropriate for the situation; workers trained.	☐	☐		
Hazard controls	Hazards identified in the pre-job hazard assessment are being controlled as planned.	☐	☐		
WHMIS	MSDS availability for hazardous substances being used; labels on containers; PPE compliance per MSDS.	☐	☐		
Other (Specify)		☐	☐		
Other (Specify)		☐	☐		

* Transfer non-compliance issues to Workplace Inspection Report for follow-up actions – including issues corrected immediately.

Exhibit 4.2.1: Planned Inspection Checklist

Tata Steel Minerals Canada

Workplace Inspection Report

Job Site or Premises: ______________________ **Inspection Team:** ______________________

Inspection Date: ______________________ ______________________

Area(s) Covered: ______________________ ______________________

Observations					Follow-up		
Item & Location (from Checklist)	Non-Compliances Observed	Repeat Item		Priority* (A/B/C)	Recommended Action	Responsible Person	Date Action Completed
		Yes	No				
		☐	☐				
		☐	☐				
		☐	☐				
		☐	☐				
		☐	☐				
		☐	☐				
		☐	☐				
		☐	☐				
		☐	☐				
		☐	☐				

***Priority Ranking:** A = **Major** - requires immediate attention; B = **Serious** - requires action within 48 hours; C = **Minor** - requires action within 7 days.

Management Review:** ______________________ **OH&S Committee / H&S Representative Review**:** ______________________

**Note: Management and Health and Safety representative / committee member reviews should evaluate the quality of the inspection and appropriateness of the actions in addressing the hazards.

Revision 1.0 May 2015

Exhibit 4.2.2: Planned Inspection Report

PRE-OPERATIONAL CHECKLIST
LIGHT VEHICLES

Unit #________________ Date:________________

Operator: ________________

Shift: ________________

ITEMS TO CHECK

- ☐ Oil Level
- ☐ Coolant Level
- ☐ Fuel -Gauge
- ☐ Lights & Signals
- ☐ Brakes & Hand Brakes
- ☐ Wipers/Washer Fluid
- ☐ Vehicle Body
- ☐ Speedometer
- ☐ Fire Extinguisher
- ☐ First Aid Kit
- ☐ Spill Kit
- ☐ Horn
- ☐ Motor Oil Pressure
- ☐ Ammeter/Battery
- ☐ Wheels /Chocks
- ☐ Mirrors
- ☐ Suspension
- ☐ Seat Belt
- ☐ Buggy Whip
- ☐ Amber Light
- ☐ Reverse Alarm

Mileage ____________KM Fuel ____________Litres

REMARKS ________________

____

____

Signature: ________________

Exhibit 4.3: Pre-Use Inspection Checklist (sample)

5.0 HAZARD IDENTIFICATION & RISK MANAGEMENT

5.1 Policy

A hazard assessment is a thorough review of the work environment and the work being performed for the purpose of identifying actual and potential hazards.

At TSMC operations, hazard assessments will be conducted to identify actual and/or potential risks associated with the work environment and DSO-Timmins site activities. Identified hazards must be prioritized and addressed based on the associated risk. Assessments will be conducted under the following circumstances:

- An annual assessment of the entire operation is mandatory. This assessment should list all activities for each operating area, identify associated hazards, rank risk levels and identify controls that are in place or needed to reduce risks to an acceptable level;
- Where new, unfamiliar work activities are being introduced;
- Upon purchase or development of new machinery, equipment or work sites.
- Where changes as defined by the Change Management Program, are likely to cause injury to people or damage to physical assets.

5.2 Hazard Identification

5.2.1 Annual Comprehensive Hazard Assessments

It is the responsibility of the senior manager, health, safety and security to initiate an annual review of DSO-Timmins activities to:

- Determine the adequacy of existing programs and controls used to manage risks to people and company assets;
- Provide input for further program development, materials acquisition, and other changes and additions to be planned and executed in the year; and,
- Ensure that organizational due diligence in hazard identification and risk management is demonstrable.

All departments shall contribute to the development and review of the Annual Comprehensive Hazard Assessment.

5.2.2 Field Level Risk Assessments (FLRA)

A Field Level Risk Assessment is designed to examine work sites, tasks, tools and equipment and work methods to identify risks. Workers complete a FLRA prior to any work being done on site. They are expected to analyze conditions, identify possible hazards and risks, and identify ways of controlling such risk.

At the DSO-Timmins site, Field Level Risk Assessments:

- Are completed using the FLRA Pocket Cards provided through the HSS department; (**Exhibit 5.2.2**)
- Are required for all tasks – at the start of shift for operators doing normal operating and start of task for other workers who physically interact with tools, materials and equipment to accomplish specific purposes;
- May be done by individuals or small groups (work teams assigned to the same task);
- Must be completed at the work site – where weather and other physical conditions, equipment tools and surrounding influences can be assessed;
- Must be audited daily by the supervisor. The supervisor must complete the ``Supervisor Daily FLRA Audit" section on the Pocket Card;
- Are kept at the job site during work and returned to the supervisor at the end of the shift;
- Are collected, sampled and analyzed by the HSS Department for quality and statistical reporting.

Management employees are expected to spot check Field Level Risk Assessments when encountering works or work teams at their job sites and provide encouragement and constructive feedback in support of the process.

5.2.3 Contractor and Project Hazard / Risk Assessments

No contractor is permitted to work on-site at DSO-Timmins operations unless there has been an adequate assessment of the risks associated with the work being done or the service being provided and the potential impact on TSMC employees and assets.

Contractors must submit a written assessment before work can begin as specified in **Section 13- Contractor Management.**

5.3 Hazard Control

The Hierarchy of Hazard Control seeks to protect workers by ranking the ways in which hazards can be controlled, providing a framework for reducing the risk. The hierarchy is as follows:

- The best way to control a hazard is to **eliminate** it. This can be achieved by making changes to the work process so that the task is no longer carried out, or by physically removing the hazard altogether. Elimination is the most effective way to control hazards and should be used whenever possible.

- **Substitution** is the second most effective method for controlling hazards. It is similar to elimination but involves the substitution of one risk for another. For example, one hazardous chemical could be swapped for one with less risk.
- **Isolation** involves separating the hazard in time or space from the person or persons at risk. This can be achieved by isolating the hazard through containment or enclosure. These methods aim to keep the hazard "in" and the worker "out" or vice versa. For example, an enclosure can be built around a piece of equipment to reduce the hazards associated with noise.
- **Engineering controls** are implemented by making changes to the design of an equipment or process to minimize its hazard. The two basic types of engineering controls are process control and ventilation. Process control involves changing the way a job activity or process is performed to reduce hazards, such as the use of electric motors rather than diesel motors to eliminate diesel exhaust emissions. Ventilation is a method of control that strategically "adds" and "removes" air in the work environment, such as the use of local exhaust fans to control dust or gasses.
- **Administrative controls** involve making changes to the way in which people work and promoting safe work practices via education and training. Administrative controls may involve training employees in operating procedures, good housekeeping practices, emergency response in the event of incidents and personal hygiene practices such as the washing of hands after contact with hazardous materials.
- The use of additional **personal protective equipment (PPE)** is the least effective method of controlling hazards. PPE can often be uncomfortable, which can place an additional physical burden on the worker. Therefore, PPE should only be used in combination with other control measures from the hierarchy or if there are no other more effective ways to control the hazard. Examples of additional personal protective equipment include respirators, gloves, face shields, goggles and ear plugs.

5.4 Written Practices and Procedures

5.4.1 Definitions

Safe Work Practices are generalized statements of what you should or should not do in order to do a job or task safety. Safe work practices are great topics for toolbox talks, as they serve as good reminders of the 'right' way to do things. A number of generalized safe work practices are provided and others are freely available through the Internet. Departments should ensure that:

- Safe work practices are available in writing;
- All employees understand the safe work practices that apply to them;
- Practices are reviewed with employees in Tool Box Meeting on a regular basis so that all relevant topics are covered at least once per year.

- Supervisors require that safe work practices are followed.

A **Safe Job Procedure** is a written, step-by-step description of how to complete a job safely and efficiently from start to finish and is often developed after completion of a Job Hazard Analysis. A Safe Job Procedure might be developed for clearing a plugged chute on the Secondary Sizer or changing the screening panels on a Stack Sizer Screen.

A **Standard Operating Procedure** (SOP) is considered a compulsory instruction which describes regularly recurring, often critical, operations. The purpose of a SOP is to carry out the operations correctly and always in the same manner. For example, an SOP is provided for unloading diesel fuel from rail tank cars to the DSO-Timmins site storage tanks.

5.4.2 Process & Responsibility

The processes for creating job and operating procedures are similar. The steps involve:

Safe Job Procedure	Standard Operating Procedure
1. Identify/select the job to be analyzed	1. Identify/select the operation to be analyzed
2. Break the job down into a sequence of basic steps	2. Break the operation down into a sequence of **required** steps
3. Identify potential hazards in each step, along with mandatory requirements such as permits required.	3. Describe the detailed instructions on how to perform each step – including any health and safety hazards that may arise.
4. Determine preventive measures to overcome these hazards and emergency procedures to be followed.	4. Describe how to document or report on completion of the operation and its results where applicable.

To clearly define responsibility for development, content input, review, approval and dissemination, a matrix of responsibilities as shown in Table 5.4.2 may be used.

Document Title or Subject	Department / Area	Who is Responsible	Who Can/Should Contribute	Who Should Review the Draft	Who Must Approve it for Use	Scheduled Finish Date

Table 5.4.2 Responsibility Matrix for Procedure Development

The area manager is responsible and accountable to ensure that the process is tracked to completion.

5.4.3 Document Dissemination & Control

Once completed and approved for distribution, Safe Job Procedures and Standard Operating Procedures are to be filed electronically in pdf format in shared folders that may be accessed by all employees who are given the appropriate rights.

A system of custodial responsibility is appropriate so proper document control can be assured. Management shall appoint a primary responsibility and define the process in their respective areas.

A library of Safe Work Practices shall be maintained by the Health, Safety and Security Department and recommended topics made available to supervisors for use in safety meetings throughout the year.

5.5 Personal Protective Equipment

5.5.1 Requirements

All employees, contractors and visitors at Tata Steel Minerals Canada sites shall wear the basic personal protective equipment described below unless working in an office or cab of a vehicle or heavy equipment:

- **Protective eyewear** meeting the requirements of CSA Standard *CAN/CSA Z94.3* "Industrial Eye and Face Protectors".

- **Head protection** that meets the requirements of CSA Standard *CAN/CSA-Z94.1* "Industrial Protective Headwear" or, in the case of emergency response personnel, the applicable National Fire Protection Association Standard.
- **Approved footwear** with minimum 8” height shall meet the requirements of CSA Standard *CAN/CSA -Z195*, Protective Footwear.
- **High visibility clothing** that meets or exceeds CSA Standard *CAN/CSA-Z96-02*. **Only high-visibility clothing with an orange, red or yellow background is acceptable**.

Acceptable

Not Acceptable

Special personal protection equipment and apparel shall be used as required by the task or area specific hazards and risks.

5.5.2 Special Personal Protective Equipment

Hearing protection

Hearing protection shall be supplied and used in areas where noise levels exceed the TLV (Threshold Limit Value) established for the duration of the exposure. Signage shall be posted in areas where hearing protection is mandatory.

Training shall be provided to all users of disposable hearing protection so that proper fitting can be achieved and the equipment made effective in reducing exposures.

Respiratory protection

When a worker is or may be exposed to harmful concentrations of air contaminants such as silica dust, appropriate respiratory protection equipment shall be used. The determination of the need for and type of respirator shall be made in consultation with the Environment Department and based on the sampling program required under the Silica Management Plan and other data.

The requirement for respiratory protection shall be posted in applicable areas and strictly enforced.

Respiratory training and fit testing is mandatory before any person enters an area where protection is required.

Inspection and maintenance of respiratory protection equipment

Non-disposable respiratory protection equipment that is issued to an employee shall be cleaned and disinfected as often as necessary to maintain it in a sanitary condition.

Employees shall be instructed on the cleaning, inspection and general care of respiratory protection equipment to ensure that equipment used in routine situations is inspected before each use and after cleaning.

Special breathing apparatuses used for emergency response and other applications shall be inspected and maintained by first responders/fire fighters/rescue teams according to the instructions provided in their training programs.

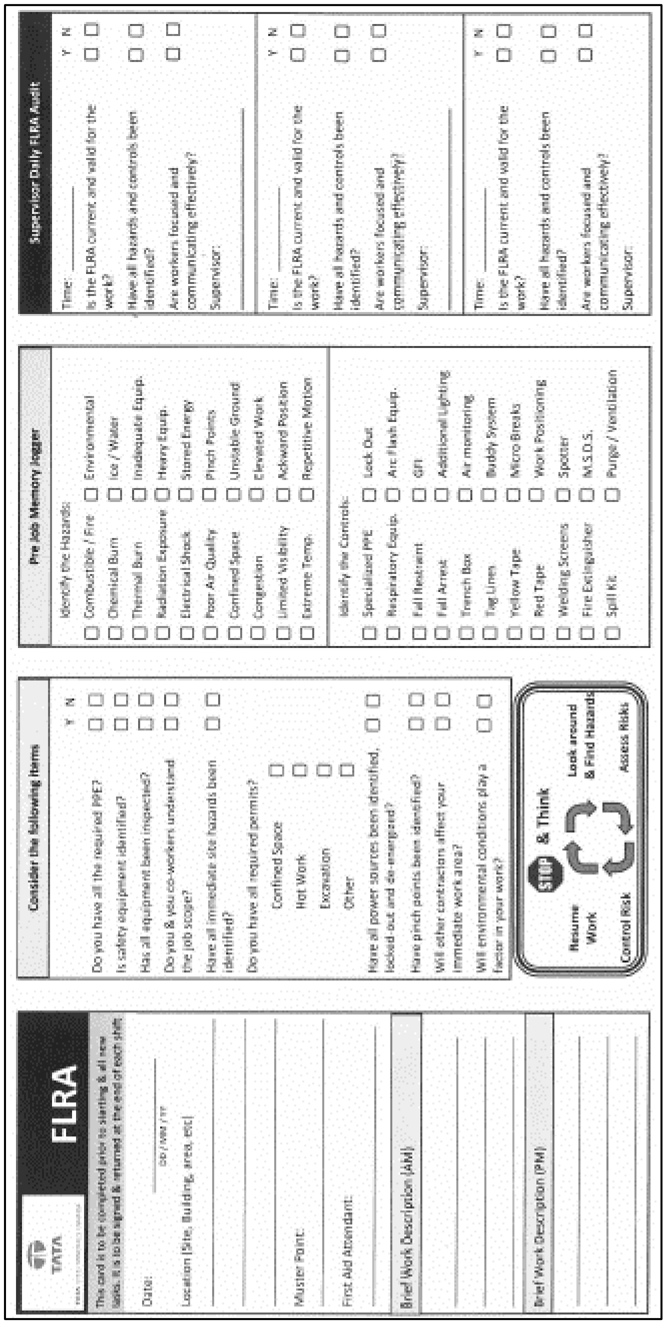
Arc-flash protection

The Maintenance Department shall determine, based on the hazard and risk level to which workers may be exposed, the appropriate protective clothing to be worn for electrical switching and other applicable tasks. The requirements identified in CSA Standard Z462 shall be used to determine the level of caloric protection required for each risk category.

Arc-flash protective clothing and equipment shall be supplied by TSMC and used and maintained by employees. Compliance shall be strictly enforced.

Personal flotation devices (PFD)

Where any person is required to work over or near water where there exists a potential for falling into the water, an appropriately sized, CSA approved, personal flotation device shall be used.



TATA

FLRA

This card is to be completed prior to starting & all new tasks. It is to be signed & returned at the end of each shift

Date: ____________ DD / MM / YY

Location (Site, Building, area, etc)

Muster Point:

First Aid Attendant:

Brief Work Description (AM)

Brief Work Description (PM)

Consider the following items

	Y	N
Do you have all the required PPE?	☐	☐
Is safety equipment identified?	☐	☐
Has all equipment been inspected?	☐	☐
Do you & you co-workers understand the job scope?	☐	☐
Have all immediate site hazards been identified?	☐	☐
Do you have all required permits?		
Confined Space	☐	
Hot Work	☐	
Excavation	☐	
Other	☐	
Have all power sources been identified, locked-out and de-energized?	☐	☐
Have pinch points been identified?	☐	☐
Will other contractors affect your immediate work area?	☐	☐
Will environmental conditions play a factor in your work?	☐	☐

STOP & Think

Look around & Find Hazards

Assess Risks

Control Risk

Resume Work

Pre Job Memory Jogger

Identify the Hazards:

- ☐ Combustible / Fire
- ☐ Chemical Burn
- ☐ Thermal Burn
- ☐ Radiation Exposure
- ☐ Electrical Shock
- ☐ Poor Air Quality
- ☐ Confined Space
- ☐ Congestion
- ☐ Limited Visibility
- ☐ Extreme Temp.
- ☐ Environmental
- ☐ Ice / Water
- ☐ Inadequate Equip.
- ☐ Heavy Equip.
- ☐ Stored Energy
- ☐ Pinch Points
- ☐ Unstable Ground
- ☐ Elevated Work
- ☐ Ackward Position
- ☐ Repetitive Motion

Identify the Controls:

- ☐ Specialized PPE
- ☐ Respiratory Equip.
- ☐ Fall Restraint
- ☐ Fall Arrest
- ☐ Trench Box
- ☐ Tag Lines
- ☐ Yellow Tape
- ☐ Red Tape
- ☐ Welding Screens
- ☐ Fire Extinguisher
- ☐ Spill Kit
- ☐ Lock Out
- ☐ Arc Flash Equip.
- ☐ GFI
- ☐ Additional Lighting
- ☐ Air monitoring
- ☐ Buddy System
- ☐ Micro Breaks
- ☐ Work Positioning
- ☐ Spotter
- ☐ M.S.D.S.
- ☐ Purge / Ventilation

Supervisor Daily FLRA Audit

Time: ____________	Y	N
Is the FLRA current and valid for the work?	☐	☐
Have all hazards and controls been identified?	☐	☐
Are workers focused and communicating effectively?	☐	☐
Supervisor:		

Time: ____________	Y	N
Is the FLRA current and valid for the work?	☐	☐
Have all hazards and controls been identified?	☐	☐
Are workers focused and communicating effectively?	☐	☐
Supervisor:		

Time: ____________	Y	N
Is the FLRA current and valid for the work?	☐	☐
Have all hazards and controls been identified?	☐	☐
Are workers focused and communicating effectively?	☐	☐
Supervisor:		

Exhibit 5.2.2: Field Level Risk Assessment Pocket Card

6.0 HIGH RISK ACTIVITY MANAGEMENT

6.1 Policy

TSMC will strive to continually identify activities that are inherently more hazardous than the norm and therefore need to be given special consideration in order to reduce risks to tolerable levels. A suitable program of controls shall be developed, maintained and evaluated for all activities deemed to be in this higher risk category.

6.2 Scope

This section covers:

- Working with Electricity;
- Hot Work;
- Cranes, Rigging and Hoisting Operations;
- Working Over Water;
- Working in Extreme Temperatures;
- Working Alone.

Other activities including **work at heights**, **confined space entry** and **energy isolation** have been provided special sections in this Safety Program.

6.3 Working with Electricity

6.3.1 Qualification of Workers

All work performed on electrical equipment and devices above 70 volts shall be performed by a qualified person as defined by the OHS Act and Regulations. Proof of worker qualification shall be maintained in training records at the site.

6.3.2 Arc-Flash Protection Program

An arc flash protection program shall be developed to determine incident energy and define appropriate personal protective clothing and procedures required to mitigate the hazard as noted in Section 5.5 of this document. CSA Z462 shall be used as the standard under which the program is developed.

The program shall include Arc flash Awareness training provided by a competent person to electrical workers and supervision. Refresher and update training shall be provided at least every three (3) years.

Arc flash rated personal protective clothing and equipment specified under Z462 for each hazard category, shall be provided to workers who are exposed to the risks.

6.3.3 E-Room/E-House Access Control

Electrical rooms shall be declared "controlled" areas. Where it is necessary for non-electrical personnel to enter E-rooms to lock isolating devices, training on electrical hazards awareness must be provided.

Doors to E-rooms are to be labelled to identify the controlled area and announce the restricted entry requirements.

6.4 Hot Work

Where welding, open-flame heating, oxy-acteylene cutting, grinding and other forms of hot work are done, a Hot Work Permit (**Exhibit 6.2**) is required, unless the area has been designated as a Hot Work Permitted area such as a welding shop. In this latter case, a risk assessment of the area will have been done and appropriate standard operating procedures and controls put in place to mitigate fire risks.

6.5 Cranes, Rigging & Hoisting Operations

6.5.1 Pre-use inspections

The operator shall inspect the crane or hoist at the beginning of each shift and shall test control and safety devices in accordance with the manufacturer's specifications and the applicable regulations.

A defect found by an operator during the inspection or during the use of the crane or hoist shall be:

1. Recorded in the inspection and maintenance record log; and
2. Reported to the supervisor who shall determine the course of action to be taken.
3. Where a defect affects the safe operation of the crane or hoist, the equipment shall not be used until the defect has been remedied.

A crane or hoist shall be maintained in accordance with the manufacturer's specifications and the applicable CSA standard and inspected at a frequency and to the extent required to ensure that each component is capable of carrying out its original function with an adequate margin of safety.

A crane or hoist shall not be used until a condition that could endanger workers is remedied.

A repair to a load bearing component of a crane or hoist shall be certified by a professional mechanical engineer or the original equipment manufacturer. This certification will confirm that the unit may be returned to service and the component in a condition capable of carrying out its original design function with an adequate margin of safety.

6.5.2 Inspection and maintenance records

A log book or other record shall be provided and maintained for a crane, derrick or similar hoisting equipment showing the maintenance history and structural modification and inspection of the equipment.

The log book or record shall be available at all times to the operator and to a worker concerned with the maintenance and safe operation of the equipment, and that worker shall be responsible for recording defects, operating difficulties, and the need for maintenance and all maintenance and modification work performed.

6.5.3 Multiple crane lift

A multiple crane lift shall be considered a critical lift and be done only under the direction of a qualified supervisor who shall be responsible for the safe conduct of the operation.

A written procedure shall be prepared for a mobile crane lift where the load on a crane exceeds 75% of its rated capacity or where other factors make the lift complex.

A written procedure shall be prepared for a lift in which 2 or more cranes are used at one time to hoist a load.

Multiple crane lift procedures shall address rigging details, wind speed, hoist line speed, crane travel speed, load distribution and other considerations that may be necessary.

The procedures for a multiple crane lift shall be communicated to all persons involved before hoisting operations are commenced by the supervisor.

A means of effective communication shall be established and maintained between all persons involved during a multiple crane lifting operation.

6.5.4 Rigging

Rigging and slinging work shall be done by or under the direct supervision of a qualified worker familiar with the rigging to be used and with the code of signals generally acceptable in the industry and understood by the signal person and crane and hoist operators.

6.6 Working Over Water

If the work surface is less than 3 m above the water, the worker must be provided with a personal floatation device. In this situation a means of rescuing the fallen worker must be in place. This must include a life buoy with 15 m of polypropylene rope that is at least 10 mm in diameter (or another equivalent material), a boat hook and an audible alarm system to initiate a rescue procedure.

Workers must be designated and available to perform a rescue should it be necessary. These workers must be trained in the safe use of rescue equipment and rescue procedures. In addition, there must be enough rescue workers on site to do the rescue safely.

Workers must wear the personal floatation devices issued to them when working less than 3 m over water. The devices must comply with CGS Standard 65.11-M88 Personal Flotation Devices.

In situations where work is done above water that has a fast current and where it is practicable, a 10 mm diameter rope made of polypropylene or an equivalent material must be placed across the water with a buoy or some other flotation device attached.

A worker who is protected by a means of fall protection is not required to wear a personal flotation device as well.

6.6.1 Purpose

To define the safe operating procedures in a manner that informs and instructs TSMC employees/subcontractors of the key health and safety points and controls when working on and/or near water.

6.6.2 Application

Regulations require measures to be taken in situations where a worker is performing work over water and where there is a risk of drowning if the worker falls.

This procedure also applies to any worker(s) who at any point can potentially be exposed to the hazard of falling into a body of water with a depth of 60 centimeters (24 inches) or more, as well as any body of water with an unknown depth.

6.6.3 Responsibilities

TSMC

- Provide information, instruction and supervision to a worker(s) to protect their health and safety;

- Ensure new workers are trained regarding the provisions and requirements of this procedure;
- Review the provisions and requirements of this procedure at least annually;
- Identify potential sources of hazard identification and provide written rules and procedures to prevent incidents and injuries.

Supervisors

- Periodically check, and effectively enforce, compliance with this procedure, including the use of corrective disciplinary measures where necessary;
- Ensure outside contractors who will be performing work on TSMC premises are aware of their responsibility to comply with this procedure;
- Ensure that at least annually, this procedure is reviewed in a tool-box talk or other safety meeting by all workers to whom the procedure applies;
- Ensure that worker(s) know how to use rescue equipment such as pole & life hook, ring buoy, full body harness and retractable or life line before permitting employees to perform work within a distance of 2 meters from the edge of a body of water or over a body of water. In a case where work is required around a body of water with a depth of 60 centimeters or more, the supervisor must ensure all workers involved know how to use required rescue equipment listed above;
- Ensure that all required equipment is readily available for workers;
- Ensure all hazards have been identified and communicated with workers involved with the operations;
- Ensure that Security has been advised of work to be done, before commencing.

Authorized Workers

- Follow the provisions and requirements of this procedure;
- Report to their supervisor whenever they are aware that a provision or requirement of this procedure is not being, or cannot be followed for any reason;

- Participate in the Field Level Risk Assessment;
- Abide by all safe work procedures.

Contractors

Outside contractors performing work on TSMC premises must comply with this procedure;

6.6.4 Additional Personal Protective Equipment Required

- Personal flotation device
- Protective gloves
- Pole and life hook
- Ring buoy
- Life line/ rope
- Radio communication
- Full body harness and self-retracting lanyard

6.6.5 Procedure for Working Near Water

- Supervisors must perform visual inspections of water hazard areas noting potential overhead and other hazards that are not in the normal field of vision.
- Supervisors must perform detailed risk assessments with all workers involved, highlighting and documenting all identified hazards, controls and assigned responsibilities. All required documentation must be reviewed with worker(s); examples include safe work procedure, isolation procedure, rescue procedure, work permits etc.
- When work is being conducted within 2 meters of a body of water, an additional worker will be required to act as a spotter and remain away from the identified danger (fall) zone. The spotter must remain in constant communication with the other worker(s). The spotter must be equipped with a radio at all times and may not leave the worker(s) unattended for any reason.
- Certified and properly sized floatation devices must be worn by any guard and all workers working above water or within 2 meters of water’s edge. Prior to each use, the floatation devices must be inspected for defects which would alter

their strength, buoyancy, or fastening capability. Defective units must be taken out of service immediately;

- Should a risk assessment identify that the water source has a potential for high risk to workers, engineering and administrative controls must be implemented as well as further levels of PPE/ rescue equipment such as full body harness with life line.
- Precautions:
    a. Be aware of soft shoulders on edge of the water and slipping or falling into the water.
    b. Surfaces may be slippery when wet. Walk with care.
    c. Ensure that housekeeping is maintained to prevent slip and trip hazards.
    d. Do not work around water during a thunder/ lightning storm.

6.6.6 Procedure for Working on the Barge

Where workers are required to work in an unprotected area of the Barge, certified and properly sized floatation devices must be worn. Unprotected areas include those where normal protection such as guardrails or flooring have been temporarily removed.

A WORKER IS NOT PERMITTED TO WORK ALONE IN ANY UNPROTECTED AREA WHERE THERE IS A DANGER OF FALLING INTO THE WATER. A SECOND PERSON (SPOTTER) WITH THE MEANS TO EXECUTE A RESCUE AND SUMMON HELP MUST BE PRESENT AT ALL TIMES.

Prior to each use, the floatation devices must be inspected for defects which would alter their strength, buoyancy, or fastening capability. Defective units must be taken out of service immediately.

6.6.7 Rescue Procedure for Worker Falling in Water

1. Spotter will immediately contact Emergency Response Team (ERT) by radio, using Channel 1 Security and call EMERGENCY, EMERGENCY, EMERGENCY.
2. Once contact has been established with security personnel, spotter will provide all details of the emergency including # of people involved, location and nature of emergency.
3. Once spotter has provided ERT with all necessary details, spotter will attempt to rescue the victim using the rescue equipment on site.
4. Spotter should attempt, if possible, to direct victims to attempt self- rescue by way of verbally guiding them to a safe point. i.e: shoreline/ extraction point.

5. If victims are able to reach a rescue point on their own or have been retrieved from the water, the Spotter or other personnel present will immediately begin first aid as required, until arrival of ERT.
6. If spotter is unable to perform a rescue/retrieval of the victim, the Spotter should remain calm and maintain constant communication with individual(s) involved in the crisis, reassuring them that ERT has been contacted and are on the way.
7. If other personnel are present, the spotter will designate someone to meet the ERT to direct them to the scene.
8. Once ERT arrives at the scene, they will take command or rescue/recovery efforts.

6.7 Working in Extreme Temperatures

The operations shall ensure workers are protected, as much as possible from the effects of extreme cold.

Appropriate and suitable monitoring equipment shall be provided in the workplace where the thermal environment is likely to pose a hazard to a worker.

Under unusually cold working conditions the supervisor shall make further provision for the health and safety and reasonable protection of a worker, which may include:

(a) Regular monitoring, posting of warning devices and additional first aid measures;

(b) Provision of special equipment and clothing;

(c) Provision of shelters;

(d) Medical supervision, hot or cold drinks and acclimatization procedures;

(e) Limited work schedules with rest periods; and,

(f) Other appropriate controls and measures.

In a workplace, an open flame, steam pipes or other high temperature source shall be identified at the source and positioned or shielded to prevent contact by a worker, unless the exposed source is necessary for work processes and cannot be appropriately controlled by engineering means.

Where a source of heat is necessarily exposed, a worker shall wear appropriate personal protective equipment.

6.8 Working Alone

6.8.1 Working Alone Definition

Regulations define “work alone or in isolation" as work in circumstances where assistance would not be readily available to the worker in case of an emergency or in case the worker is injured or in ill health.

6.8.2 Requirements

The DSO-Timmins operations shall identify where workers may be required to work alone and conduct an assessment (Exhibit 6.8.1) to identify hazards that may place the worker at risk. Appropriate controls shall be implemented to eliminate, or where elimination is not practicable, minimize the risk associated with each hazard.

Operational areas where workers are working alone shall develop and implement a written procedure for checking the well-being of the workers. Procedures shall include the time interval between checks and the procedure to follow in case the worker cannot be contacted, including provisions for emergency response.

A person shall be designated to establish contact with the worker at predetermined intervals and the details and results of each contact shall be logged.

The required procedure shall be developed in consultation with the worker assigned to work alone and be reviewed and approved by the Occupational Health and Safety Committee.

Working alone procedures shall be reviewed at least annually, or more frequently if there is a change in work arrangements that may adversely affect a worker's well-being or any indication that procedures are not working effectively.

TATA

HOT WORK PERMIT

(applied only the area specified below)

DATE: ____________________

LOCATION OF JOB: ____________________

NATURE OF JOB: ____________________

FIRE GUARDS REQUIRED? YES ❑ NO ❑

PERMIT AUTHORIZED BY: ____________________

The worker has examined the above location. The required precautions to prevent fire have been checked off on the reverse side of this permit.

Time started: __________ Time finished: __________

FIRE CHECK:
Work area and all adjacent areas to which sparks and heat might have spread were inspected during and for thirty minutes after the work was stopped and was found fire safe.

Signoff by workman or fireguard: ____________________

UPON COMPLETION OF SIGNOFF RETURN PERMIT TO ISSUER.

CHECKED BY: __________ TIME: __________

DATE: ____________________

LOCATION: ____________________

TEAR OFF HERE RETAIN WITH ISSUER

HOT WORK PERMIT: ____________________

DATE: __________ TIME: __________

LOCATION: ____________________

PERMIT ISSUED TO: ____________________

REQUIRED PRECAUTIONS

CHECK Fire fighting equipment suitable for extinguishing any potential fire shall be available.

YES	NO	
❑	❑	Fire Extinguisher available.
❑	❑	Water hose available and tested.
❑	❑	Fire guard and/or worker trained in the use of fire fighting equipment and sounding fire alarm.
❑	❑	Cutting and welding equipment in good order.
❑	❑	Ground clamp carefully connected if using electric arc welding equipment.
❑	❑	Confined space entry permit required. Electrical cable tray protected.
❑	❑	"Combustible Material/Liquids" removed or covered.
❑	❑	Wall and floor opening protected.
❑	❑	Inspect area on the other side of wall for combustibles.
❑	❑	Combustibles removed or protected on other side of wall.
❑	❑	Area wet down prior to hot work activity and/or fire blanket to be used.

PRECAUTIONS WHEN FIRE GUARD IS REQUIRED

Fire guard must be present during hot work operations and for 30 minutes after work is stopped, including coffee and lunch breaks.

Note: Fire guard and/or worker must watch for dangerous sparks in the area and on floors above and below. Necessary fire fighting equipment must be readily available.

PRECAUTIONS WHEN BURNING/WELDING ON RUBBER LINED EQUIPMENT

YES	NO	
❑	❑	Is equipment rubber lined? **Note:** If yes, then follow procedures outlined in the JSA

WORKERS SIGNATURE: ____________________
(when all the above is completed)

SPECIAL INSTRUCTIONS:

____

____

____

Exhibit 6.2 Hot Work Permit

Tata Steel Minerals Canada

Working Alone Hazard Assessment			
Factor	**Questions**	**Response**	**Actions / Responsibility**
Length of time the employee will be working alone:	What is a reasonable length of time for the employee to be alone?		
	Is it reasonable for the employee to be alone at all?		
	How long will the employee be alone to finish the job?		
	Is it legal for the employee to be alone while doing certain activities? (For example: Newfoundland & Labrador regulations restrict working alone in certain situations).		
	What time of the day will the employee be alone?		
Communication	What forms of communication are available?		
	Is it necessary to "see" the work, or is voice communication adequate?		
	Will emergency communication systems work properly in all situations?		
	If the communication systems are located in a vehicle, do you need alternate arrangements to cover the employee when away from the vehicle?		

1

Exhibit 6.8.1 Working Alone Hazard Assessment

7.0 WORK AT HEIGHTS

7.1 Policy

Falls are a leading cause of death and a major cause of disabling injuries in industry. The implementation of a proactive Working at Heights program will maximize employee safety and minimize the hazards associated with falls on the job. Tata Steel Minerals Canada, (TSMC), recognizes the necessity of establishing and maintaining effective fall protection procedures. TSMC will make every reasonable effort to ensure the safety of all workers including subcontractors, visitors, and other individuals on site who may be exposed to fall hazards.

There will be a written fall protection plan for the workplace if work is being done at a location where workers are not protected by permanent guardrails, and there is a danger of a fall from 2 meters or more. If the risk assessment indicates a serious risk of a fall from lessor heights, then fall protection will be required at the lesser height.

There will be zero tolerance for non-compliance with the requirement for fall protection.

7.2 Scope

This program provides the standards under which all work at heights is to be performed on TSMC properties by employees, contractors, service providers or any other persons. These standards apply to, but are not limited to activities such as: erecting, installing, constructing, repairing, adjusting, inspecting, unjamming, setting-up, troubleshooting, testing, cleaning, dismantling, servicing and maintaining machines, commissioning equipment or processes.

7.3 General Provisions

Senior site management in the Mine and Processing Plants have the ultimate responsibility to ensure all personnel are adhering to the written requirements within this program. In the event compliance is not achieved, management will take immediate action to rectify the situation.

7.4 Definitions

i) **Authorized Workers:** Those individuals, including outside contractors, who have completed a Newfoundland and Labrador certified fall protection course and have been requested by the supervisor to perform work at heights.

ii) **Competent Person:** A person who:

- (a) Is qualified because of knowledge, training and experience to organize the work and its performance;
- (b) Is familiar with the Occupational Health and Safety Act and the Regulations that apply to the work; and,

(c) Has knowledge of any potential or actual danger to health or safety in the workplace.

iii) **Fall Arrest system:** A systems that consists of:

(a) A harness;

(b) Method of attachment, (lanyard, retractable line, etc.);

(c) Point of attachment;

7.5 Legislation

Legislative references for this procedure are contained in the Newfoundland and Labrador Occupational Health and Safety Regulations, PART X Fall Protection as well as Part XI Scaffolds, Stages and Work Platforms.

7.6 Responsibilities

Employer (TSMC)

- Provide information, instruction and supervision to their workers to protect the health and safety of their workers;
- Ensure that outside contractors are prequalified prior to performing maintenance work on TSMC premises;
- Ensure new authorized workers are trained regarding the provisions and requirements of this procedure, and that this training is updated every three years;
- Identify potential sources of hazard identification and provide written rules and procedures to prevent incidents and injuries.

Supervisors

- Periodically check, and effectively enforce, compliance with this procedure, including the use of corrective disciplinary measures where necessary;
- Facilitate and/or provide proper instruction to workers on protection requirements and training;
- Ensure workers have required training;

- Ensure hazard analysis has been completed;
- Ensure a detailed rescue plan has been developed and all workers involved are familiar with the plan;
- Ensure that at least annually, this procedure is reviewed in a tool-box talk or other safety meeting with employees;

Workers

- Must have completed current training that is approved by the Workplace Health, Safety and Compensation Commission (NL);
- Be fully conversant with fall protection systems;
- Ensure understanding of the capabilities of fall protection equipment;
- Ensure barricades, ribbons, and signs identify restricted areas;
- Ensure proper anchor points are identified and used;
- Inspect your fall protection equipment prior to use;
- Use appropriate tools and equipment for attaching to beams and girders, (do not wrap the lanyards and/or rope around beams or girders;
- Utilize buddy system and continually check each other's harness and D ring to ensure that the harness in not too loose and or the D ring has not slipped down the back;
- Ensure understanding the procedures for rescue of workers who may be unable to rescue themselves from an elevated work area.

Contractors

- Contractors performing work on TSMC premises must comply with this procedure and provide proof of training before being granted permission to perform work at heights.

7.7 Compliance Monitoring

This procedure is meant to educate workers and ensure their safety when working at heights. The information provided must be followed and adhered to by all persons working at heights on any work location belonging to, or under the control of TSMC. Should an individual(s) knowingly disregard the information provided; those individuals involved will receive disciplinary action. As working at heights is considered to be among one of the most hazardous practices, individuals who disregard this procedure will be denied access to TSMC work sites.

7.8 Fall Restraint

The intent of restraint protection is to limit or restrict movement of employees only as far as the sides and edges of the walking/working surface. Temporary anchorage points used for fall restraint must be engineered to be capable of supporting four times the intended load, with a minimum strength requirement of 364 kg (800 lbs). When using fall restraints, workers must:

- Ensure that work is performed within the confines of a safe perimeter and not at risk of falling over the edge;
- Be attached to securely rigged restraint lines;
- Wear a safety belt and/or harness that conforms to all CSA (Canadian Standards Association) Standards
- Inspect fall restraint components before each use, for wear, damage and other deterioration
- Remove defective components from service when the component's function or strength has been adversely affected
- Ensure fall restraint components are compatible
- Tie restraint lines, independently of other lines, to the anchorage point

7.9 Fall Arrest

Employees exposed to a free fall distance of 2 meters or more (without restraint) must wear fall arresting equipment, using a full-body harness system. Employees must inspect components of the fall arrest system before each use for wear, damage and other deterioration. Defective components are removed from service when the components' function or strength has been adversely affected

Fall arrest equipment must meet the minimum criteria:

- Hardware used must be drop-forged, pressed or formed steel, with a corrosion-resistant finish, with surfaces and edges smooth to prevent damage to the attached body harness or lanyard
- Vertical life-lines must have a breaking strength specified by the manufacture as 27 KN (6000lbs); termination knots or splices cannot reduce the strength of lifeline to less than 22 KN (5000lbs)
- Horizontal life-lines must be 12 mm diameter wire rope with a manufacturer's specified strength of at least 89kN (20000 lbs.)

- Increase the above forces by 25% if two workers are connected to the same horizontal static line
- Lanyards must have a minimum tensile strength of 2449 kg (5400 lbs.)
- Body harness components must be CSA-approved
- Secure full-body harness systems to anchorage points capable of supporting 2272 kg (5000 lbs.)
- Protect safety lines and lanyards against cuts or abrasion
- Limit the free fall distance (through rigging) to a maximum of 1.2 m without a shock absorber or 2 meters with a shock absorber.
- Only one employee may be attached to any one vertical lifeline
- Connect only one snap hook to any one D-ring

7.9.1 Application

No person shall work at heights unless the proper protective mechanisms have been put in place. These protective mechanisms include:

- Guard Rails
- Fall Restraint/Travel restrict
- Safety nets
- Caution/danger taped areas, (boundaries)
- Fall Arrest
- Permit System
- ERP (Emergency response plan)
- Fall protection plan
- PPE
- Safe work procedures
- Barricades and warning signs to protect workers below.

7.9.2 Selection & Use

Before starting work at heights, the safest method of conducting the work must be determined. The preference will be to eliminate the need for working at heights if the location of work will allow engineering and design changes, (i.e. handrails). Fall restraints will be the next best solution with fall arrest systems being the last line of defence. The use of a fall arrest system should only be considered if there is no other feasible option.

7.10 Ladders

7.10.1 General

- Only fibreglass ladders are permitted on site, (aluminum and job built wooden ladders are not permitted);
- Do not paint ladders except for numbering purposes;
- Do not use ladders for any purpose other than that specified by the manufacturer;
- Ladders must be held or tied off top and bottom when in use;
- Always face the ladder when climbing, descending or working;
- Maintain 3-point contact with the ladder at all times;
- Keep your body between the rails;
- Minimize your work time on a ladder to 30 minutes;
- Change the position of the ladder as often as necessary;
- If you must place a ladder in or over a doorway, barricade the door and post warning signs;
- Return the ladder to the rack after use;
- Inspect your ladder before each use for anything defective or damaged;
- Tag damaged ladders and remove from service, report it to your supervisor;
- A safety harness with a lanyard and a point of attachment is required when a ladder is positioned near an opening that would significantly increase the fall distance or the danger of impalement exists or there is a danger of falling into a hazardous product.

7.10.2 Straight and Extension Ladders

- Place the ladder so that the vertical distance is four times the horizontal distance (4 to 1 ratio);
- Ladders must have a tie-off rope and non-skid safety feet and must be secured in position;
- Straight and extension ladders must be tied-off;
- The top of the ladder must extend at least three feet/one meter beyond the supporting object;

- After an extension section has been raised to the desired height, check to see that the safety dogs or latches are engaged and that the extension rope is secured to a rung on the base section of the ladder;
- Ensure secured covers over grating when there is a danger of ladder feet slipping through grating holes;
- Extension ladders must be overlapped a minimum of three rungs or one meter. Refer to Manufacturers' instructions;
- Do not take extension ladders apart to use either section separately.

7.10.3 Step Ladders

- Step ladders must be fully opened and set level on all four feet, with spreaders locked in place;
- Never use as a straight ladder;
- Stay off the top two steps and avoid placing tools or material on the steps or platform;
- The top platform is not considered a step.

7.11 Holes and Openings

- No holes are to be dug without first completing a risk assessment. Protect employees from falling into an open hole by using a guardrail, cover with plywood, and use other suitable materials or berm the area. Do not store material or equipment on a hole cover.
- Stairway floor openings, with the exception of the entrance, must be guarded by standard railings, equipped with mid rails and toe boards.
- Temporary covers must be able to support a minimum of 2.4 KN per square meter or 50 lbs. /sq. ft., or a greater load of intended workers and equipment if required.
- Hole covers must have a sign reading, DANGER-OPEN HOLE. Covers must be cleated, wired, or otherwise secured to prevent slipping sideways or horizontally beyond the hole. Covers must extend adequately beyond the edge of the hole.

7.12 Scaffolding

7.12.1 General

All tube and clamp scaffolding, as well as "H" frame scaffolding over the height of two tiers can only be erected by a certified scaffolding erector. Two tiers of "H" frame scaffolding can be erected by workers who have been deemed competent by their respective supervisors.

All employees who are required to perform work on scaffold must perform a visual inspection on the scaffold to ensure that scaffold has not been altered or damaged, or other hazards present that may have not been previously identified since the last formal inspection. Inspect the scaffold to determine that handrails, mid rails, toe boards, and decking are in place. All wheels must be locked on moveable scaffolds when in use. Check to see if lock pins are in place.

READ THE SCAFFOLD TAG PRIOR TO ACCESSING.

When working on any scaffold platform not equipped with standard guardrails and/or not equipped with a complete deck, wear a safety harness with lanyard. Tie-off to a substantial object capable of supporting 5,000 pounds per working attached. Example: use the rose bud of the scaffold. **The railing itself does not qualify as an adequate anchor point.**

If you are working near energized electrical lines or equipment, ensure that no part of the scaffold, or your body, can come in contact with the electrical lines, equipment, or within statutory clearance limits. **Workers must adhere to overhead power line process.**

- ✓ Do not alter or remove scaffold members unless authorized. Only certified scaffolders are permitted to in anyway assemble, modify or disassemble a scaffold.
- ✓ Do not ride on a rolling scaffold when it is being moved. Remove/secure all tools and material on the deck before moving.
- ✓ Do not climb on, or work from, any scaffold handrail, mid rails or brace member. Use a ladder following the ladder procedure as listed in section 13 of this procedure.
- ✓ Heights, capacities or designs of scaffolds exceeding the manufacturers' limitations or those imposed by provincial OH&S legislation must be designed by an engineer.
- ✓ All scaffolds must be erected level and plumb on a firm base.
- ✓ Only use rolling scaffolds on level, smooth surfaces or the wheels must be contained in wooden or channel iron runners. Watch for overhead clearance when moving a rolling scaffold.
- ✓ Scaffold is only to be used by authorized personnel who are required to access scaffold in order to perform authorized duties.

7.12.2 Scaffolds - Tagging

Scaffolding must be inspected and erected by a qualified Scaffolder. Once the scaffold has been inspected, the scaffold must be tagged with one of the following:

Red "Danger" tags must be used when it has been determined that scaffold is not safe for use, either due to structural integrity of scaffold or other exisiting life threatening hazards. The identified hazard must be listed, along with the date of inspection and the name of the individual who conducted the inspection.

Yellow "Caution" tags must be used when a hazard has been identified that workers must be aware of, but is not considered to be life threatening. The hazards/ risks must be listed on the tag. The tag must also be dated with the date of the inspection, along with the name of the individual who conducted the inspection.

Green “Safe” tags are to be used when the scaffold has been inspected, and there have been no hazards identifed. This scaffold will be considered safe for use. The tag must be dated and as well have the name of the individual who conducted to inspection

If a scaffold is discovered to not have a tag, or that the tag has expired, it will be considered unsafe for use and must not be used. The scaffold must be flagged with Danger tape and reported so that the scaffold can be formally inspected and tagged by a qualified Scaffolder.

Scaffold must be formally inspected once a week by a qualified Scaffolder and then have the tags updated.

7.13 Crane Baskets, Aerial Work Platforms (AWP)

- All equipment must be certified and inspected prior to use.
- All workers entering equipment for the purpose of working at heights above 2 meters must be trained in NL 2 day fall protection course.
- All workers who will be operating equipment must hold a valid certificate for specific equipment.
- Detailed emergency response plan specific to work and location must be developed and reviewed with all workers involved before commencing work.
- Detailed field level risk assessment (FLRA) highlighting all hazards and controls must be developed prior to commencing work and discussed with all workers involved. Review and update FLRA regularly throughout shift and if job scope changes.
- All fall protection equipment must be inspected prior to use.
- Ensure fall protection equipment is properly donned and the right rating for individual body type.
- If potential fall height is less than 6 meters, a self-retracting lanyard must be used, and not an energy absorbing lanyard.
- Workers are not permitted to stand on the mid rails or top rails of crane basket or AWP.
- While positioning and traveling equipment, a Spotter must be utilized.
- When traveling a AWP, care must be taken to lower the man basket to the lowest possible height before moving.
- Tie off points must be above head whenever reasonably practical.
- Tie off points for working inside the AWP man basket are located on the deck.
- Mid rails and top rails are not suitable anchor points.

- Danger barricades must be erected underneath equipment so as to prevent workers from walking under workers working at height.
- AWP and Crane baskets are only to be used as per manufacturer's recommendations.

7.14 Emergency Response

Before any work commences at heights over six feet, a job specific emergency response plan must be developed and communicated to all workers involved.

7.14.1 Emergency Response Plan

If a worker falls and is suspended by a safety harness, the emergency response plan is as follows: *Please note the respective roles*

1. The site supervisor (or alternate foreperson) takes control of the situation.
2. The site supervisor sounds the emergency alarm—three long blasts from a horn. All workers in the immediate vicinity of the incident stop working. The site supervisor quickly evaluates the situation and identifies any further hazards that could arise.
3. The site supervisor or designate goes to get help if workers are close by. If no assistance is available, the site supervisor calls for help.
4. The site supervisor contacts the Emergency Response team by using 1 Security, and announcing "Emergency, Emergency, Emergency"
5. The site supervisor (or a worker assigned to the task) isolates the incident zone and its perimeter to limit further exposure.
6. The site supervisor (or a worker assigned to the task) moves all non-affected personnel to a safe zone or directs them to remain where they are.
7. Security enables radio silence on the jobsite, except for crisis communications from emergency responders.
8. The site supervisor sends a designated worker to meet the response team to ensure that they have a safe access path to the incident scene.
9. For the person in the fall arrest position, he/she should attempt self-rescue where possible and safe to do so.

7.14.2 Rescue Procedures

The following rescue procedures are ordered (A) through (D), with (A) being the preferred method and (D) being the method used when there is no other means of rescue.

AERIAL Work Platform (AWP) rescue—If an elevating work platform (AWP) is available in the immediate location and the suspended worker can be reached by the platform in a maximum of 10 minutes, follow the procedure below.

1. Bring the AWP to the incident site and use it to reach the suspended worker.
2. Ensure that rescue workers are wearing full-body harnesses attached to appropriate anchors in the AWP.
3. Ensure that the AWP has the load capacity to handle the rescuer(s) and the fallen worker(s).
4. If the fallen worker is unconscious, two rescuers will be needed to safely handle the weight of the fallen worker.
5. Position the AWP platform below the worker and disconnect the worker's lanyard when it is safe to do so. When the worker is safely in the AWP, re-attach the lanyard to an appropriate anchor point on the AWP if possible.
6. Lower the worker to a safe location and administer first aid.
7. Once the victim has been lowered to a safe location, the ERT will treat the worker for suspension trauma and any other injury and transport to the site wellness clinic.
8. If it is believed that the injuries sustained cannot be managed by the site nurse, the ERT will transport the victim to the Schefferville clinic.

7.14.3 Ladder Rescue

If an elevating work platform is not available, use ladders to rescue the fallen worker with the procedure outlined below.

1. If the fallen worker is suspended from a lifeline, move the worker (if possible) to an area where rescuers can access safely with a ladder.
2. Set up the appropriate ladder(s) to reach the fallen worker.
3. Rig separate lifelines for rescuers to use while carrying out the rescue from the ladder(s).
4. If the fallen worker is unconscious or cannot reliably help with the rescue, at least two rescuers may be needed to safely handle the victim.
5. If the worker is conscious, he/she may be able to use the supplied ladder to attempt self-rescue.
6. If the fallen worker is suspended directly from a lanyard or a lifeline, securely attach a separate lowering line to the harness.
7. Other rescuers on the ground (or closest work surface) should lower the fallen worker while the rescuer on the ladder guides the fallen worker to the ground (or work surface).

8. Once the victim has been lowered to a safe location, the ERT will treat the worker for suspension trauma and any other injury and transport to the site wellness clinic.
9. If it is believed that the injuries sustained cannot be managed by the site nurse, the ERT will transport the victim to the Schefferville clinic.

7.14.4 Rescue from Work Area or Floor Below:

If the fallen worker is suspended near a work area and can be safely reached from the floor below or the area from which the worker fell, use the following procedure.

1. Ensure that rescuers are protected against falling and falling debris or other hazards.
2. If possible, securely attach a second line to the fallen worker's harness to help rescuers pull the fallen worker to a safe area. You will need at least two workers to pull someone up to the level from which they fell.
3. Take up any slack in the retrieving line to avoid slippage.
4. Once the victim has been lowered to a safe location, the ERT will treat the worker for suspension trauma and any other injury and transport to the site health clinic.
5. If it is believed that the injuries sustained cannot be managed by the site nurse, the ERT will transport the victim to the Schefferville clinic.

7.14.5 Crane and Basket Rescue

If a worker has fallen and is suspended in an inaccessible area, you may need to perform a crane and basket rescue. If after performing a risk assessment, it has been identified that a crane basket rescue may be necessary, all steps required to outfit and position the rescue basket must be completed prior to initiating work.

For basket rescues, the basket must be designed by a professional engineer in accordance with good manufacturing processes to withstand all loads to which it may be subjected. Fit the rescue basket with appropriate rigging for quick hook-up by the crane operator.

Always keep the following items in the rescue basket:

1. Three lanyards equipped with shock absorbers
2. Tag line attached to the basket at all times
3. Secondary safety line to tie the basket above the headache ball of the crane

To perform a basket rescue, the following steps must have already been completed, prior to starting work:

1. Have crane operator attach the basket to the crane.

2. The crew leader checks that all safety rigging is done and all the required safety equipment is available.

If a rescue is required, the following steps are to be followed

1. With two rescuers in the basket, hoist it to a position that is above and as close as possible to the fallen worker. Where possible a designated worker on the ground guides the basket with a tag line. A designated worker must ensure that when the rescue basket reaches the right elevation, the door of the basket is facing the structural steel to provide an easy exit for rescuer #1.
2. Rescuer #1 exits the rescue basket and gets into a position to reach the fallen worker. When doing this, rescuer #1 must be tied-off at all times to either the structure or the rescue basket.
3. Rescuer #2, who is still in the rescue basket, lowers the line that will be used to retrieve the worker. Rescuer #2 attaches an extra lanyard to the line if required.
4. Rescuer #1 assesses the fallen worker for injuries and then decides how to proceed (i.e., treat injuries first, guide the fallen worker into the rescue basket, or lower the basket to the ground with the fallen worker attached to it).
5. Once the victim has been lowered to a safe location, the ERT will treat the worker for suspension trauma and any other injury and transport to the site wellness clinic.
6. If it is believed that the injuries sustained cannot be managed by the site nurse, the ERT will transport the victim to the Schefferville clinic.

If the basket rescue is the method used, the rescue workers must keep the following points in mind:

- Perform a basket rescue only when it is not possible to use conventional equipment to rescue the fallen worker in a safe manner.
- Never exceed the maximum number of workers in the basket as indicated on the nameplate.
- Ensure that a competent worker inspects the crane and equipment being used prior to lifting rescuers.
- Always equip the crane with a fail-safe mechanism to prevent the boom from descending in the event of a power source or system failure.
- Maintain an adequate means of communication between the rescuers in the basket and the crane operator at all times.
- Ensure that workers in the rescue basket wear full-body safety harnesses attached to a lanyard and anchored to appropriate points in the basket at all times.

- Make sure that all rigging used to attach the rescue basket to the hook of a load line has a safety factor of 10 against failure. There should be a safety line attached to the load line directly from the basket.
- Do not allow cranes to travel while rescuers are in the basket.
- Do not use suspended rescue baskets during high winds, electrical storms, snow, ice, sleet, or other adverse conditions that could affect the safety of personnel on the platform or in the basket.

8.0 CONFINED SPACE ENTRY

8.1 Policy

Tata Steel Minerals Canada will protect employees, contractors and other on-site workers from confined space hazards through a program of hazard identification and assessment, signage, training and entry procedures and permits.

8.2 Scope

This Confined Space Procedure covers the definition of confined spaces, the identification of confined spaces and the precautions to be taken to prevent workers who are required to perform work in confined spaces. Specifically, this procedure will:

- Define confined space and restricted space;
- Establish a procedure to safely manage all confined space and restricted space work on TSMC property to prevent exposure to harmful vapours, gasses, fumes, mists, dusts or explosive substances and oxygen deficiency;
- Provide detailed actions to be undertaken before, during and after any required confined space work; and,
- Provide for the safety of TSMC workers, contractors and subcontractors.

It is imperative that all workers who enter a confined space and a restricted space are trained through the approved Confined Space Entry course. The process of identifying all existing, pipe, culverts, manholes or other areas that may meet the criteria of a confined space will be managed by a designated Confined Space Administrator who will facilitate the risk assessments in order to classify areas as confined spaces or restricted spaces. He/she will identify and list the hazards and any special procedures to minimize the risk posed by the hazards to workers.

The administrator can be the safety advisor or area supervisor and must be trained in confined space entry.

The hazard identification will include:

- The conditions which may exist prior to entry due to the design
- Location or use, or which may develop during work activity inside the space
- Potential for oxygen enrichment and deficiency
- Flammable gas
- Vapour or mist
- Combustible dust
- Other hazardous atmospheres

- Harmful substances requiring lockout and isolation
- Engulfment and entrapment
- Other hazardous conditions associated with the specific space and work to be conducted in it.

The inventory of confined spaces and their hazards will be stored electronically on a common database that will be managed by the Safety Department but will be accessible to all TSMC. The confined spaces/restricted spaces will be identified by appropriate signage.

8.3 General Provisions

Whenever hazardous substances such as dusts, fumes, mists, vapours, or gasses exist or are produced in the course of activities, their concentration shall not exceed the limits specified in Newfoundland OH&S Legislation and Canadian Standards Association, (CSA). When ventilation is used as an engineering control method, the system shall be installed and operated according to the requirements of that section.

8.4 Definitions

Confined space:

A confined space means an enclosed or partially enclosed space that

a) Is not designed or intended for human occupancy except for the purpose of performing work;

b) Has restricted means of access and egress; and

c) May become hazardous to a person entering it as a result of

   i. It's design, construction, location or atmosphere,

   ii. The materials or substances in it, or

   iii. Any other conditions relating to it.

Restricted access work space:

A restricted access space means an enclosed or partially enclosed space that

a) Is not designed or intended for human occupancy except for the purpose of performing work;

b) Has restricted means of access and egress; and

c) Based on the original risk assessment of the space and the JHA (Job hazard analysis) of the work to be performed, there is no potential for an immediately dangerous to life or health (IDLH) atmosphere to exist or to develop immediately prior to any worker entering the space or during work within the space, nor any risk of entrapment or engulfment to workers entering or working in the space.

d) Based on the original risk assessment of the space and the JHA (Job hazard analysis) of the work to be performed, there is no potential for an immediate danger due to the materials/ conditions to be used or created during the planned work, through the use of other safe work practises i.e. LOTO

Enclosed or partially enclosed work space: Large enough and so configured that an employee can bodily enter and perform assigned work. Has a limited or restricted means of entry or exit that might complicate the provision of first aid or extrication of an injured worker.

SCBA (Self-contained Breathing apparatus): Sometimes referred to as a compressed air breathing apparatus (CABA), or simply breathing apparatus (BA), is a device worn by rescue workers, firefighters, and others to provide breathable air in an "Immediately Dangerous to Life or Health" atmosphere (IDLH).

8.5 Hazard Assessment for Confined Space/ Restricted Space Entry

Hazard assessments related to Confined Space/Restricted Space Entries are conducted by various levels of employers and employees involved in the preparation of and entry of the Confined Space/Restricted Space.

Multiple levels of hazard assessment are required to determine if a space is a Confined Space or a restricted access work space. Identification of the type of space will be determined by the inherent risks of the space and the specific tasks conducted within the space.

a) Initial Hazard Assessment for Entry:

    a. Normally performed by a member of TSMC Management;

    b. Considers current and past service of the equipment;

    c. Considers the design, access and egress limitations;

    d. Considers all preparation and controls required if applicable, to permit safe entry.

b) Work Scope Hazard Assessment (e.g. Job Hazard Analysis):

    a. Performed by the supervisor of the crew undertaking the task with worker involvement;

    b. Considers the detailed scope of work to be performed and the impact that the work may have on the atmosphere within the space or the personnel entering or working in the space;

    c. Identifies the hazards associated with the detailed scope of work to be performed and details the required controls to address the hazards identified;

    d. Any changes in work scope at any time must be relayed back to TSMC Management so that the classification can be re-examined to ensure the correct classification of the space. Introduction of hazardous activities immediately cause a restricted space to change classification to Confined Space.

c) Field Level Risk Assessment, (FLRA):

   a. Normally performed by all workers involved in the task

   b. Considers immediate ambient conditions in the task area prior to commencement of work;

   c. Identifies hazards related to the specific task(s) being performed and details the required controls to address the hazards identified;

   d. Shall be updated to reflect any changes in the task identifying any new hazards.

8.6 Confined Space/ Restricted Space

The classification of a work place being considered a Confined Space or a restricted work space shall be based on the conditions present at the time of entry with consideration for potential changes of conditions as identified in the hazard assessment of work to be performed. Exhibit 8.1 at the end of this section provides a decision chart to aid in distinguishing between the two classifications of spaces.

8.6.1 Confined Space

A work place will be considered a Confined Space if *any* of the following applies:

a. The hazards in the Confined Space or in its proximity are either not known or have not been determined;

b. Oxygen concentration is less than 20% or more than 22.0% by volume;

c. Explosive or flammable atmosphere is equal to or greater than 10% of the Lower Explosive;

d. The area atmosphere exceeds a worker's exposure to harmful substances in accordance with the TLVs established by ACGIH;

The following controls must be put in place to perform a Confined Space entry:

a. An approved hazard assessment

b. A competent Confined Space Monitor in attendance at all times

c. A valid Confined Space Entry Permit

d. A log-in, log-out sheet is used for entry and exit and maintained at the entrance

e. A valid Rescue Plan

f. PPE as per the approved hazard assessment

g. Confined Space Signage

h. Pre-access and continuous atmospheric testing

i. Supplied breathing air available and worn (If deemed necessary by the pre entry gas test and hazard assessment)

j. All Entrants and Monitors must be trained in the use of supplied breathing air equipment if required by hazard assessment.

Note:

1. *If the flammable or explosive atmospheric concentration is greater than 25% of the LEL, the space must be ventilated with no entry permitted until the levels go down below 25%.*
2. *If flammable or explosive atmospheric concentration reads between 10% and 24% of the LEL, only inspection activities are permitted.*
3. *If flammable or explosive atmospheric concentration reads between 5% and 9% of the LEL, only cold work is permitted that does not produce a spark or an ignition source.*
4. *If flammable or explosive atmospheric concentration is less than 5% of the LEL, hot work is permitted as long as the oxygen levels do not exceed 23%.*

NOTE: ANY TIME A CONFINED SPACE ENTRANCE IS LEFT UNATTENDED THE ENTRANCE MUST BE BARRICADED PHYSICALLY AND A "DANGER DO NOT ENTER" SIGN DISPLAYED ACROSS THE ENTRANCE.

8.6.2 Restricted Work Space

1. A work place will be considered a Restricted Work Space when the following apply:

   a. The location is not designed or intended for human occupancy except for the purpose of performing work;

   b. The location has restricted means of access and egress;

   c. It can be confirmed that there is absolutely no potential for an immediately dangerous to life or health (IDLH) atmosphere to exist or to develop immediately prior to any worker entering the space or during work within the space, nor any risk of entrapment or engulfment to workers entering or working in the space;

   d. Based on the original risk assessment of the space and the JHA (Job hazard analysis) of the work to be performed, there is no potential for an immediate danger due to the materials/ conditions to be used or created during the planned work, through the use of other safe work practises and procedures. i.e. Isolation of all energy sources.

2. The following controls must be put in place to perform a Restricted Work Space entry:
    a. Restricted work space signage;
    b. A competent confined space attendant at the entrance to the space at all times;
    c. A valid rescue plan;
    d. PPE as per the approved hazard assessment;
    e. Pre-access atmospheric testing;

Note: If the planned work changes in anyway, workers must immediately exit the restricted space and perform another hazard assessment as per the FLRA process.

At any time a restricted work space can be reclassified to a confined space if the work being performed introduces new hazards. In this case the controls necessary must follow section 4.1.

8.7 Confined Space Entry Permit System

The Entry Permit System contains several components; An Entry Log which employees must sign in before entering a confined space, the Safe Work Permit for Entry and specific Confined Space Signage.

8.7.1 Entry Log

Before entry to a confined space, employees must sign their name in the entry log which is to be maintained by the confined space attendant at the entrance to the space. Employees must sign out when they leave the confined space.

*Note: While a permit is not required to conduct work in a **restricted space**, an entry log and an attendant are required*.

8.7.2 Entry Permit

1. A person must not enter a confined space without a valid entry permit;
2. An employer must establish an entry permit system for a confined space that:
    a. Maintains a list of the names of each worker who enters the confined space
    b. Gives the location of the confined space
    c. Specifies the time during which an entry permit is valid
    d. Takes into account the work being done in the confined space

e. Takes into account the Code of Practice NL requirements for entering, being in and leaving a confined space

f. Ensures all required documents are collected and maintained for retention;

3. An employer must ensure that, before a worker enters a confined space, an entry permit is properly completed, signed by a competent person and a copy kept readily available at the confined space location

8.8 Confined and Restricted Space Signage

Whenever an entrance to a confined space is left unattended, two 2 types of signs, ("Danger Do Not Enter" and "Permit Required for Entry"), are used as indications of the status of the space and the requirements for entry.

Do not overlap confined space entry signs or allow the signs to be attached to each other where they can inadvertently cover up a valid entry sign.

When a work space has been identified to be a restricted work space, signage stating "Restricted Work Space, Authorized Workers only" must be placed at all entrances to the work space.

DANGER, DO NOT ENTER

THIS SIGN OVERRIDES ALL OTHER SIGNS AT ENTRANCES TO CONFINED SPACES. WHEN IT IS IN PLACE NO ONE IS TO ENTER THE SPACE UNDER ANY CIRCUMSTANCES. OPERATIONS PERSONNEL ARE THE ONLY PERSONNEL WHO ARE ALLOWED TO REMOVE THIS SIGN.

This sign will be placed immediately upon opening the space by the equipment owner and if an event occurs that could compromise the conditions in a confined space.

For all confined space entries the "DANGER, DO NOT ENTER" sign must be hung at the entrances every time the space is left unattended.

If entry is required into a confined space, operations personnel must be contacted to evaluate the conditions of the confined space, test the atmosphere of the space, and remove the sign if everything meets the standards to enter and work.

Confined Space - Permit Required for Entry

Working personnel will hang a "Confined Space - Permit Required for Entry" sign to signify that a space is safe to enter. People authorized to enter must have a valid Safe Work Entry Permit and have logged in to the entry log. There must be a confined space attendant present at the entrance prior to entering and must stay there until all occupants have evacuated the confined space, unless there is immediate danger to life or health.

This sign can be removed by the confined space attendant provided all the permit criteria are met and all personnel have exited the confined space.

For confined space entries, when the space is left unattended, provided the status of the space has not changed, this sign must be hung at the entrance by the confined space Attendant when leaving.

Restricted Space - Permit not required for Entry

8.9 Confined Space Attendant

8.9.1 Confined Space Entry

1) For every confined space entry, a competent attendant will be assigned.
2) The attendant will:
   a. Possess an approved Confined Space Training Certification from the province of Newfoundland and Labrador.
   b. Be trained and competent as a confined space attendant;
   c. Be capable and equipped to summon rescue personnel, if required. A means of communication is mandatory;
   d. Be in communication or visual contact with personnel inside the confined space at all times;
   e. Initiate evacuation as necessary, and ensure proper signage is posted at the entrance(s) to the confined space;
   f. **NEVER** leave the entrance to the space with people inside unless properly relieved by another qualified attendant;
   g. **NEVER** enter the confined space for any reason;
   h. **NEVER** become directly involved in any activity that distracts from the primary duty as an attendant;
   i. After verifying all personnel have exited the confined space, ensure correct signage is in place prior to leaving the entrance(s) unattended (e.g. breaks and end of shift);
   j. Control the number of personnel allowed in the confined space, as identified by hazard assessment;
   k. Maintain a Confined Space Entry and Exit Log for the duration of the job. The logs must be safely stored for record retention purposes;
   l. Ensure entry and exit points are kept clear and clean;

m. Maintain awareness of potential hazards in the vicinity of the confined space that may affect the health and safety of the worker(s) inside;
n. Contact emergency personnel in the event of an emergency or due to reasonable cause, (lack of movement, verbal contact, unusual movements, etc.).

8.9.2 Restricted Space Entry

1) For every restricted space entry, a competent attendant will be assigned.
2) The attendant will:
    a. Possess an approved Confined Space Training Certification valid in the Province of Newfoundland and Labrador;
    b. Be in communication or visual contact with personnel inside the space at all times;
    c. Initiate evacuation as necessary;
    d. **NEVER** leave the entrance to the space with people inside unless properly relieved by another qualified attendant;
    e. **C**ontrol the number of personnel allowed in the space, as identified by hazard assessment;
    f. Ensure entry and exit points are kept clear and clean;
    g. Maintain awareness of potential hazards in the vicinity of the space that may affect the health and safety of the worker(s) inside
    h. Be capable and competent to summon emergency personnel in the event of an emergency or due to reasonable cause, (lack of movement, verbal contact, unusual movements, etc.). A means of communications is mandatory.

8.9.3 Confined Space Entrant Tracking

For all confined space entries, all personnel who enter the space will sign the entry log located at the entrance. Personnel are expected to enter and leave a confined space by the same entrance. If this is not possible, then they must return to their point of entry to log out as soon as they exit.

All confined spaces require the Entrant Tracking Log to be in place at the entrances to the confined space, and maintained for all entries.

Restricted spaces do NOT require entrant tracking. However, the monitor must maintain visual or verbal contact with the entrants on a regular basis.

8.9.4 Retraining Records

TSMC must ensure that all records with respect to entry and work in a confined space, including entry permits and entry or exit logs are retained for at least one year if no incident or unplanned event occurred during the entry.

8.10 Atmospheric Dangers in a Confined Space

When entering a confined space, workers are faced with three (3) primary atmospheric hazards:

- The space may not contain sufficient oxygen or the oxygen levels could be elevated.
- The space may contain gases which are, or have the potential to be, within the explosive range.
- The space may contain toxic gases or there is a potential of release of toxic gases.

8.10.1 Oxygen Deficiency

The confined space may not contain enough oxygen to sustain life. Here are some facts:

- Normal air contains 20.9% oxygen.
- Atmosphere containing less than 20% oxygen requires the use of appropriate respiratory protection.
- All confined spaces, which have been closed, should always be suspected of containing insufficient oxygen. Confined spaces should be tested, ventilated, and retested to ensure an adequate oxygen level (greater than 20% oxygen) before entry.

A confined space containing less than 20% oxygen should not be entered without a self-contained breathing apparatus (SCBA) or a supplied air respirator (SAR).

An "oxygen-enriched" atmosphere contains more than 22% oxygen and results in a highly flammable environment. The slightest spark could result in the violent burning of clothes or any other combustibles.

8.10.2 Explosive Gas

The atmosphere in the confined space may be extremely flammable. Carelessness in this situation could result in an explosion.

The lowest concentration at which a gas can ignite is called its Lower Explosive Limit (LEL). At concentrations lower than the LEL, the gas in the air will not burn.

The vapours in the confined space must be less than 10% of the LEL for the entry to occur. If testing reveals the LEL to be greater than 10%, the area must be ventilated until the explosive vapours' concentration is below 10% LEL. Note that 10% LEL is the minimum acceptable concentration level of the explosive gases for safe entry, and the space should be ventilated to 1% LEL.

8.10.3 Toxic Gases

The confined space or the surrounding area may contain toxic gases such as hydrogen sulphide (H_2S) or carbon monoxide (CO). At high enough concentrations, these toxic vapours can kill in an instant.

The atmosphere must always be tested with monitoring equipment no more than 20 minutes before entering a confined space.

Characteristics of gases:

Some toxic gases are heavier than air and tend to settle at the bottom of the confined space; still others are lighter than air and tend to collect at the top of the confined space. And there are some gases (Like CO) that are around the same weight as air and are present throughout the confined space. This can lead to what is known as a "stratified atmosphere". In a stratified atmosphere, the atmosphere is "layered" and the composition of the atmosphere (oxygen, explosive gases and toxic gases) changes throughout the height of the space. Therefore, it is important to test the atmosphere at the top, bottom, and middle levels of the confined space a.

A common toxic gas is hydrogen sulphide. Hydrogen sulphide gas is a natural by-product of decomposing sewage. It has a "rotten egg" smell and is heavier than air, so it tends to collect at the bottom of spaces.

Acceptable Levels:

The short-term exposure limit", (STEL) of H_2S is 10ppm (parts per million). "STEL" means the time weighted average (TWA) concentration of a substance in air which may not be exceeded over any 15 minute period, limited to no more than 4 such periods in an 8 hour work shift with at least one hour between any 2 successive 15 minute excursion periods. Any operation where H_2S limit is 10 ppm or above will require worker to use an SCBA or like device.

Carbon Monoxide gas (CO) is a by-product of the combustion process, and is present in the exhaust of petroleum driven motors, generators, etc. If CO is a potential hazard in a confined space, the space must be ventilated until the CO level is less than its TWA (Time weighted average) of 25 ppm.

8.11 Confined Space/Restricted Space Entry Determination

Prior to entering a space it must be determined if is a confined space or a restricted space, and what are the hazards in the space? This is accomplished by following the steps listed in section 3, Hazard Assessment- CONFINED SPACE CHECKLIST

8.11.1 Identification

All points of entry to a confined space must be identified by signage which indicates that the space is a confined space and prohibits entry by unauthorized workers.

8.11.2 When & Where Permits are Required

(1) An entry permit must be completed and signed by the area supervisor before a worker enters a confined space:

(2) An entry permit must be posted at each designated point of entry to a confined space.

8.11.3 Updating Information

1. Once issued, the information on an entry permit may only be altered by:
    a. The supervisor who signed the permit to update it in accordance with subsection 3 below or
    b. The standby worker to update the list of workers inside the confined space, or
    c. The tester to record test results.
2. An entry permit must be reviewed and updated as necessary to ensure the ongoing safety of the workers inside the space.
3. The permit must be re-authorized and signed by the supervisor:
    a. If there is a change in the work crew,
    b. After each shift change, or
    c. After a change of the supervisor.
    d. After a change in work, (i.e. Bolting to gluing)
4. Every worker affected must be informed of any alteration to an entry permit which involves a change in the required precautions or work activity.

8.12 Confined Space/ Restricted Space Prerequisites

8.12.1 Training

All employees involved in confined space/restricted space entries must complete a Confined Space Safety Training course that is recognized by the Government of Newfoundland and Labrador before participating in actual confined space entry operations. **This includes Management, Visitors, Contractors and Employees. NO ONE**

IS PERMITTED INSIDE A CONFINED SPACE/ RESTRICTED SPACE WITHOUT THE APPROPRIATE TRAINING.

8.12.2 Confined Space Entry Procedure

Initial Testing:

Prior to opening or entering any designated confined space, the supervisor in charge shall ensure that an initial test of the atmosphere within the space in the following order:

1. **Oxygen level;**
2. **Explosive gasses level (LEL);**
3. **Toxic gas level(s).**

Gas monitors used in the testing must be used in accordance to the manufacturer's specifications. Should testing reveal any unsafe conditions, ventilate the space until it is safe for entry. If after ventilation it has been determined that the atmosphere cannot be corrected to safe concentration, the use of SCBA`s (self-contained breathing apparatus) will be necessary to perform the entry.

Because some gases are heavier than air and some are lighter, it is possible for the atmosphere inside the space to be stratified, or layered. For this reason, it is important to test the atmosphere at different levels (top, middle bottom).

8.12.3 Restricted Space Entry Procedure

Initial Testing:

Prior to opening or entering all restricted spaces, the supervisor in charge shall ensure an initial test of the atmosphere. The atmosphere within the space shall be tested in the following order:

1. **Oxygen level;**
2. **Explosive gasses level (LEL);**
3. **Toxic gas level(s).**

Gas monitors used in the testing must be used in accordance to the manufacturer's specifications. Should testing reveal any unsafe conditions, ventilate the space until it is safe for entry. If after ventilation it has been determined that the atmosphere cannot be corrected to safe concentration, the use of SCBA`s (self-contained breathing apparatus) will be necessary to perform the entry.

Because some gases are heavier than air and some are lighter, it is possible for the atmosphere inside the space to be stratified, or layered. For this reason, it is important to test the atmosphere at different levels (top, middle bottom).

If an unsafe atmosphere has been created due to the work being performed, the work space classification will be reclassified to a Confined Space.

8.12.4 Isolation

Before employees enter a confined space or restricted space, the space shall be isolated to prevent the entry of hazardous materials or contact with other hazards such as energized electrical circuits.

The supervisor in charge shall take steps to:

1. Depressurize the space;
2. Eliminate incidental introduction of hazardous materials into the space through interconnecting equipment such as piping, ducts, vents, drains, or other means; by blanking or blinding the piping. If the piping contains non-toxic materials, the line must be isolated as per appropriate isolation procedures.
3. De-energize and lockout and tag out machinery, mixers, agitators, or other equipment containing moving parts that are in the space; and
4. Prevent incidental introduction of carbon monoxide gases from engine driven equipment.

8.12.5 Ventilation

If required by the hazard assessment, the confined space shall be ventilated with either stationary or portable ventilation blowers provided for this purpose prior to entry and at all times during occupation of the space.

During entry the ventilation equipment will be powerful enough to provide 50 cfm of clean breathable air for each entrant. The ventilation system must be designed to provide the air to the breathing zone of the worker.

The confined space shall be purged of contaminants with normal, breathable air.

NEVER use pure oxygen to ventilate a space. Doing so will result in an oxygen-enriched atmosphere, in which flammable materials (like clothing and hair) could easily catch fire and burn violently.

When flammable contaminants are to be purged, explosion-proof ventilation equipment designed for use in hazardous locations shall be used and precautions taken to eliminate all sources of ignition.

The supervisor, or a person designated by the supervisor, shall check periodically to ensure that contaminated air from the space is exhausted to a location where it does not present a hazard to employees or equipment. Any hazardous concentrations shall be diluted by the use of additional blowers or additional ducting as necessary.

Note: If ventilation is required, a restricted space will be reclassified as a confined space.

8.12.6 Retesting

A second test of the atmosphere within the confined space shall be made after the space is ventilated.

Take readings at the top, middle, and bottom of the space.

Test in the following order:

1. Oxygen;
2. Explosive gases; and
3. Toxic gas(s) levels.

Results are to recorded on the entry permit.

If testing reveals any gases to be at an unacceptable level, continue ventilating until the hazard is controlled as per risk assessment requirements.

8.13 Confined Space General Entry Procedure

All pre-entry procedures shall be completed before entry into the confined space.

The Confined Space Entry Permit shall be posted at the entrance to the space and shall be made available to all employees involved with the permitted work.

Confined spaces with side and top openings shall be entered from side openings when practical (i.e., within 1.1 meters of the bottom of the space).

If the atmosphere cannot be brought to a "safe entry" condition through ventilation (between 20% and 22% oxygen, less than 10ppm H_2S, less than 25 ppm for CO), approved respiratory protective equipment, such as Self-Contained Breathing Apparatus (SCBA) or a Supplied Air Respirator (SAR),shall be provided and worn.

To facilitate non-entry rescue, a full body harness shall be used whenever an authorized entrant enters a confined space, unless said equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant.

A retrieval line shall be attached at the centre of the entrant's back to a D ring or above the entrant's head. The other end of the line shall be attached to a mechanical device or fixed point outside the confined space which will be tended at all times by the standby worker.

A mechanically assisted device shall be available to retrieve personnel from vertical type confined spaces. Where use of such a device is not practical, three people above ground (or as many as needed to lift entrant) may substitute for a mechanically assisted device.

Any other appropriate safety equipment shall be provided and worn. The entry permit will state the minimum equipment that is necessary.

8.14 Restricted Space General Entry Procedure

All pre-entry hazard analyses including job specific rescue plan shall be completed before entry into the restricted space. All appropriate safety equipment that was identified during the hazard assessment shall be provided and worn.

8.15 Communication Method

In case of emergency situations, the attendant shall have the means to contact rescue personnel (Channel 1 Security) without leaving his/her post.

Recommended methods include:

- An attendant, equipped with a telephone/radio, can immediately call for emergency response by calling on the radio at Security Channel 1.
- Attendant may send a standby entrant to call for help and notify appropriate rescue personnel. This will delay any emergency procedures until the standby entrant returns.
- At no time will the attendant enter the confined space or leave the confined space entry point unless there is immediate danger to life and health.

The authorized entrant and the attendant shall maintain periodic verbal communications every 5 minutes for confined space/ restricted space. This may be unnecessary if the monitor can observe the entrants through direct line of sight. In the latter case, the monitor must be vigilant in maintaining sight of the operations.

If the above communication methods are not practical (due to high ambient noise levels, etc.) alternate communication devices (such as two-way radios) shall be used.

If at any time there is any questionable action or non-movement by the worker inside, a verbal check will be made. If there is no response, the attendant shall order an evacuation of the workers and follow rescue procedures as outlined in the rescue plan.

8.16 Emergency/Rescue Procedures

8.16.1 Confined Space Emergency Rescue Procedures

1. An employer must ensure that a worker does not enter or remain in a confined space unless an effective rescue can be carried out.

2. A worker must not enter or stay in a confined space unless an effective rescue can be carried out.
3. An employer must ensure that the emergency response plan includes the emergency procedures in place to evacuate the space immediately.
   a. When an alarm is activated,
   b. If the concentration of oxygen inside the confined space drops below 20% by volume or exceeds 22% by volume, or
   c. If there is a significant change in the amount of hazardous substances inside the Confined Space.
   d. In an emergency situation, i.e. Engulfment, entrapment, etc.

8.16.2 Restricted Space Emergency/Rescue Procedures

1. An employer must ensure that a worker does not enter or remain in a Restricted Space unless an effective rescue can be carried out.
2. A worker must not enter or stay in a restricted space unless an effective rescue can be carried out.
3. An employer must ensure that the emergency response plan includes the emergency procedures in place to evacuate the space immediately when:
   a) An alarm has been activated.
   b) Should an entrant become unresponsive

Note: In this particular case it would be assumed that it is because of either a medical condition or an unknown hazard that had not been detected. In either case, assume that the cause is an unknown hazard and as a result treat the space as a confined space with respect to conducting a rescue. Follow section 8.18 Emergency Rescue Plan.

8.16.3 Confined Space Emergency/Rescue Plan

Scenario 1; Evacuation alarm sounds in immediate area of confined/ restricted space

Alarm sounds, signalling for work area to evacuate. The steps to follow are:

1. Entrant attendant informs workers in the confined space that they must evacuate
2. Workers inside stop all operations, evacuate the confined space immediately and head to their designated muster station.

3. Once all workers have exited the confined space, the entrant attendant must place the Danger Do Not Enter sign in front of the entrance before he/ she exit the area and proceed to the designated muster station.

Scenario 2; Worker(s) down inside the confined space

1. Entrance attendant immediately contacts the emergency response team via the 1 Security emergency radio channel and communicates all known information to Security:
   a. What has happened (if known)
   b. Number of injured and severity (if known)
   c. How many people are involved
   d. The exact location
2. If possible, the entrance attendant sends another worker to meet the ERT and direct them to the location.
3. At **NO** time can the entrance attendant enter the confined space.
4. Security will announce the emergency on all channels; at this point all operations must stop.
5. Once the ERT arrive on location, the ERT will take over control and perform the rescue if safe to do so.

Restricted Space Emergency/Rescue Plan

1. Entrant attendant informs workers in the restricted space that they must evacuate.
2. Workers inside stop all operations, evacuate the restricted space immediately and head to their designated muster station.
3. Once all workers have exited the restricted space, the entrant attendant must exit the area and proceed to the designated muster station.

Scenario 2; Worker(s) down inside the restricted space

1. Entrance attendant immediately contacts the emergency response team via the 1 Security emergency radio channel and communicates all known information to Security:
    a. What has happened (if known)
    b. Number of injured and severity (if known)
    c. How many people are involved
    d. The exact location
2. If possible, the entrance attendant sends another worker to meet the ERT and direct them to the location.
3. **The entrance attendant must never enter the confined space.**
4. Security will announce the emergency on all channels; at this point all operations must stop.
5. Once the ERT arrive on location, the ERT will take over control and perform the rescue if safe to do so.

8.17 Reasons for a Confined Space Entry Permit to Become Void

There are numerous reasons for a permit to become void. Listed below are some common reasons but if any change occurs to the procedure or operation then the confined space permit is no longer valid. Any re-entrance will require all testing steps and procedures listed above to be followed.

Permits must be taken from service at the completion of the job, end of shift or whenever changes occur in scope of work, supervision or confined space attendant.

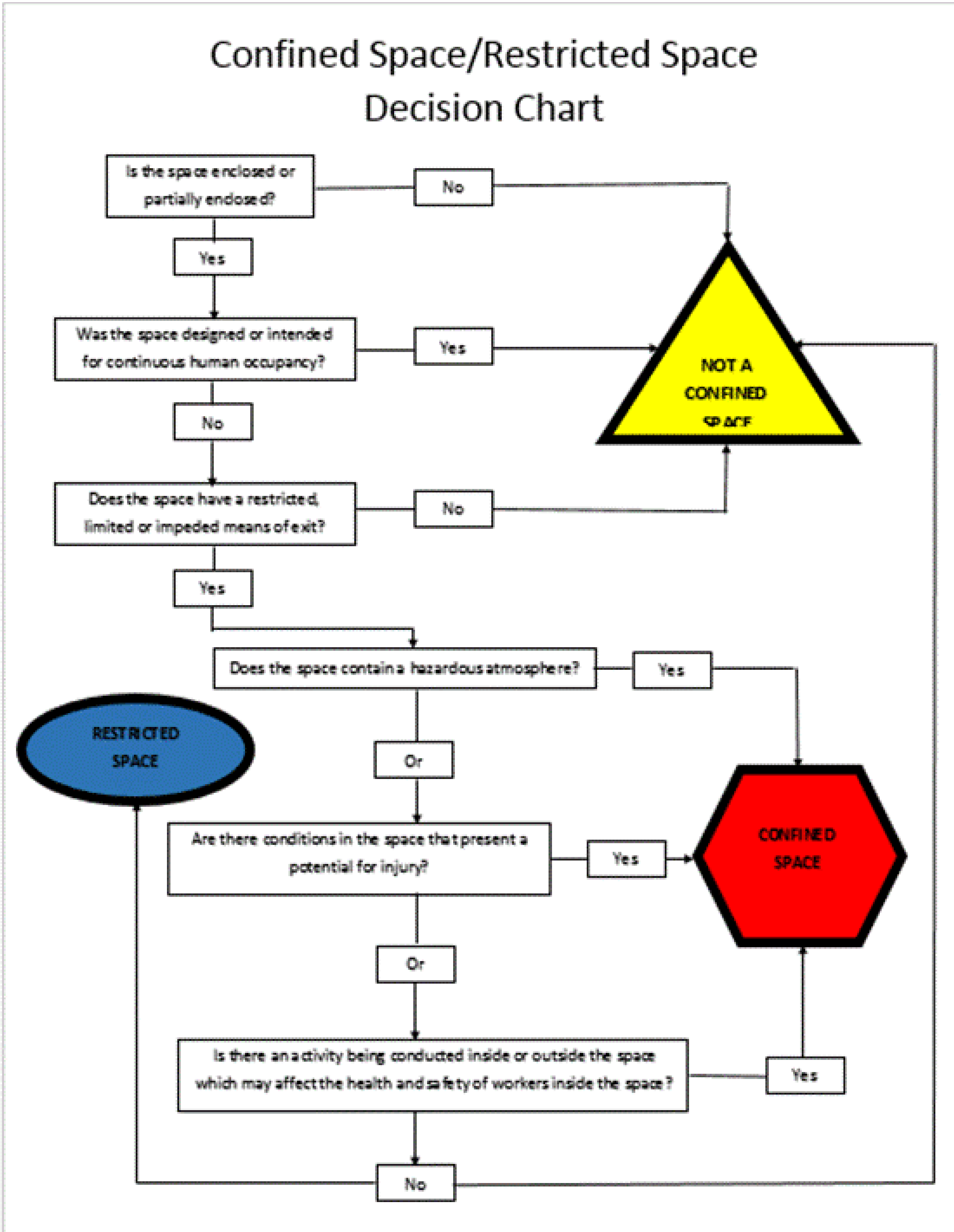


Exhibit 8.1: Confined Space/Restricted Space Decision Chart

9.0 LOCKOUT/TAGOUT (ISOLATION)

9.1 Policy

TSMC aims to minimize the risk of exposure to hazardous energy where unexpected start-up of equipment or the inadvertent release of stored energy could occur and cause injury. This shall be accomplished through a rigid set of isolation standards that ensure compliance with applicable regulations and meet or exceed industry best practices.

9.2 Scope

This program covers all DSO-Timmins site operations and applies to all employees, sub-contractors and any other persons who work on company sites. This program must be applied in its entirety and without exception by all.

9.3 Program Description

9.3.1 General Requirements

Energy isolating device identification

All energy-isolating devices used to control hazardous energy sources must be capable of being locked out. All equipment and all energy-isolating devices covered by this program must be clearly coded and labelled on an identification tag. The label format and wording must be standardized. It is prohibited to remove these identifications. If it is necessary to remove these identifications to complete the work, the worker doing the work must reinstall the identification correctly. If an identification tag is missing, the employee must report it to the area supervisor immediately.

Regulation and standards

This program is compliant with:

- The requirements of the "Newfoundland and Labrador Regulations with respect to Occupational Health and Safety", specifically clauses 127 through 137;
- Standards related to isolation in Canada (CSA Z460-13).
- Internal standards and rules adopted by the organization.

Activities

This program applies to all of the following activities, including, maintenance, operations, upkeep, repair, construction, assembly, installation, implementation, adjustment, inspection, recalibration, emergency service, unblocking, testing, cleaning and disassembly carried out inside the hazardous area of a machine or equipment.

9.3.2 Definitions

Affected individuals: Persons who are not directly involved in the work requiring the hazardous energy control, but who are (or may be) located in the hazardous area or are affected by the equipment isolation.

Appointed lockout person: Authorized representative of the equipment owner (operation division) who will participate in the implementation of the isolation procedure. The appointed lockout person must be qualified on the operation of the equipment and must be trained, tested and qualified on the isolation procedures.

Authorized person: Person assigned to hazardous energy control because of the person's training, knowledge and experience in his/her sector of activity.

De-energized: Disconnected from all energy supply sources and not containing residual or stored energy.

Energy isolating Device: Mechanical device that physically prevents the transmission or release of energy, including but not limited to the following:

- Breakers, disconnect switches and manually operated switches;
- Line valves;
- Blind flanges (or shutters); and
- Chocks or other devices used to block or isolate energy sources.

Energy sources: The hazardous energy types covered by the program are: electrical, mechanical, pneumatic, hydraulic, residual (i.e. pressure, springs, batteries), potential, kinetic, thermal, chemical, radiation, nuclear or others, which can cause injury or act on a machine or piece of equipment, regardless of their magnitude.

Hazardous substances: Any solid, gas, vapour, liquid, chemical product, dust or material representing an immediate danger because of the high possibility of causing injuries and damage immediately after contact or inhalation (i.e. toxic, corrosive, flammable, explosive or infectious substances). Also, any gas, vapour or liquid whose pressure or flow may cause injuries and damage or, any radioactive substance.

Information tag: A warning label used in the application of an isolation, that usually indicates the nature, purpose, time of the isolation and the identity of the authorized person.

Isolation: Set of activities and actions resulting with the total control of all energy sources.

Isolation procedure approver: Person who has the responsibility to ensure that:

- The isolation procedure has followed the validation process;
- The modifications required by the validation team were properly made;
- The procedure validation team was qualified to establish the conformity of the isolation procedure for the specified equipment.

Mobile equipment: Stand-alone machine or equipment that moves on its own or is pushed or pulled by a tractor or other device that uses an electric or fuel motor to produce a driving force (i.e. loader, backhoe, excavator, skidder, dozer, compactor, etc.)

Multiple isolation: Isolation involving two or more isolating devices and/or two or more people who want to isolate a single piece of equipment. The use of the isolation box and equipment padlocks is mandatory.

Padlock: An individually keyed mechanical means of locking an energy-isolating device in a position that prevents energization of a machine, equipment, or a process. The padlock is installed directly on energy-isolating device if this one is designed for that purpose or on the mechanism installed on the isolating device. Only padlocks provided by TSMC are authorized, with exceptions for contractor padlocks.

Person in charge of radiation protection (PCRP): The term "PCRP" refers to the two persons designated to isolate radiation sources. These people must have received "Radiation Protection" training and appear as designated resources in the Emergency Measures Program.

Person in charge of the work (lockout witness): An authorized person, working alone or as a representative for a group of workers, assigned to the verification and confirmation of the isolation carried out by the appointed lockout person, before the execution of the work.

Single isolation: Isolation involving only one isolating device and one person. This type of isolation can be achieved using the employee's personal padlock.

Shutdown (power interruption) device: Control devices such as pushbuttons, selector switches, switches, remote controls, human machine interfaces and other devices used in normal shutdown for machines and systems. Shutdown devices ARE NOT energy-isolating devices.

Temporary isolation procedure approver: The Operation's Supervisor and the worker's Supervisor have the responsibility to ensure that:

- The temporary isolation procedure has followed the validation process;
- The procedure validation team is qualified to establish the conformity of the isolation procedure for the specified equipment.

9.3.3 Isolation tools

Temporary isolation procedure: Blank isolation procedure that is used to document the isolation steps for equipment or task that is not already covered by a written isolation procedure. This temporary form must be approved by the Operation's Supervisor and by the Supervisor in charge of the workers.

Isolation procedure: Detailed isolation procedure (**Exhibit 9.3.3**) indicating and explaining, step by step, how to eliminate or control all energy sources for a piece of equipment and to maintain them in a safe state throughout isolation. The isolation procedure can be improved at any time following a revision process. The isolation procedure shall include the following:

- Identification of the machine, equipment, or process;
- Listing of all required energy-isolating devices, their locations and their identification codes;
- For each energy-isolating device listed, the type and magnitude of the controlled energy;
- Procedural steps for shutting down, isolating, blocking, securing, and relieving stored or residual energy;
- Procedural steps for placing and removing padlocks and isolation mechanisms;
- Requirements for verifying that isolation and de-energization have been accomplished;
- Requirements related to personal protective equipment and apparatus to be used or trades to be involved during the isolation if necessary; and
- Requirements for verifying that all personnel have cleared the hazardous area and that the machine, equipment, or process has been inspected to ensure that it is ready for return to service.

Electronic documents are available through the CONFORMiT® management software via isolation stations.

Specific rules:

- It is prohibited to cross-out information on permanent or temporary forms;
- If an isolation procedure is missing, a new one must be prepared;
- Temporary isolation procedures must be hand written;
- All energy sources must be listed on permanent forms and must be controlled; and,
- When purchasing and installing new equipment, it is mandatory to have a permanent form before starting up the equipment.

9.3.4 Padlocks (Isolation Locks)

An isolation lock or padlock is an individually keyed mechanical means of locking to secure an energy-isolating device in a position that prevents intentional or incidental energization of a machine, equipment, or a process. Only padlocks provided by TSMC are authorized, with exceptions for contractor padlocks.

Personal padlock (gray): A gray padlock registered to the employee using his/her name and employee number and used in accordance with the SINGLE and MULTIPLE isolation policies. Every person who has to work on a piece of equipment has a uniquely keyed padlock with a single numbered key.

Specific rules:

It is prohibited to use gray personal padlocks for any purpose other than to maintain an isolation. It is prohibited to lend personal padlocks or keys to someone else, as the use of another person's personal padlock.

Equipment padlocks (red): A red padlock is used in multiple isolations to lock (in most cases) an isolating device. Found at the isolation station, they are usually available in series of 5 identically keyed padlocks with only one key. Each series is uniquely keyed.

Specific rules:

It is prohibited to use the equipment padlock as an equipment protection padlock (see department padlock) or as a personal padlock.

Temporary visitor padlocks (blue): A blue, uniquely keyed padlock with a single, numbered key. It is provided temporarily to a person for the duration of the isolation in progress or the borrower's shift. Borrowed padlocks are available in isolation stations across the site and must always have a borrowing tag attached to them.

Specific rules:

Temporarily registered to the borrower of the padlock, it must be accompanied by one of the halves of a borrowing tag in order to identify the temporary owner. The other half of the borrowing tag must remain in the isolation station from where it was borrowed. The temporary visitor padlock is otherwise used and subject to the same conditions as a personal lock.

Department padlocks:

- GREEN for Operations;
- BROWN for Mechanical Maintenance;
- ORANGE for Electrical Maintenance
- BLACK for Project / Engineering Team.

Padlock series belonging to a specific department. Each department has its own colour and unique keying with multiple keys. It is used to isolate equipment when there are no other locks attached. It acts as an equipment protection padlock only, preventing personnel from a different department to operate the isolating device. It is available through each department and must always be accompanied by an explanatory label.

Specific rules:

Department padlocks can be used for the following activities:

- Condemnation of equipment;
- Control equipment energization
- Long term equipment shutdown or isolation from shift to shift;
- Visual cut confirmation by electricians
- Project team

This type of padlock cannot be used to ensure the security of workers.

Contractor's padlocks, (yellow): Uniquely keyed, yellow padlock with a SINGLE KEY, identified with the contractor's and the employee's names. The padlock must be labelled with an emergency phone number.

Specific rules:

- The contractor is responsible for providing his personnel with the required isolation hardware.
- The contractor padlock is subject to the same conditions as a personal padlock.
- In case of non-compliance with the program with a contractor's employee, the situation will be managed according to appropriate disciplinary action.

9.3.5 Seal

Uniquely numbered, it is used to confirm that a multiple isolation has not been altered if there are no more personal padlocks in the following circumstances:

- Work that has not been completed in a single shift;
- Lengthy shutdowns; and
- Continuation of the isolation by the Supervisor.

The exact seal number must be indicated on the isolation procedure. The seal must be the first element to be placed on the isolation.

Specific rules:

It exclusively ensures the integrity of the isolation. In no circumstances can a seal replace a personal padlock to ensure worker safety; therefore, seals cannot be used alone.

9.3.6 Isolation station

Identified station where all the necessary accessories to perform an isolation are available.

9.3.7 Padlock Storage Cabinet

A cabinet where equipment and borrowed padlocks can be found. It can sometimes include isolation mechanisms and accessories for smaller isolation stations.

9.3.8 Isolation box

Box (fixed or portable) in which the key(s) of the padlock series used as well as the padlocks unused in the same series are stored.

Numbered and assigned to an isolation station. Employees install their personal padlock on it to ensure their safety.

Note: when a portable box is used, a control tag must be completed and attached to the box's original location in the isolation station indicating where it is being stored.

9.3.9 Isolation mechanism

Mechanism added to an energy isolating device in order to make it lockable, such as a chain, wheel cover, a valve cover, a plug cover, a block or other means.

9.3.10 Lockout Scissors

The first authorized person who installs his/her personal padlock must first install a lockout scissors on the isolating device, in case of a simple isolation or on an isolation box.

It is used to install a maximum of 5 padlocks, the 6th hole being used to install another isolation scissors.

9.4 Responsibilities

9.4.1 Tasks and responsibilities

Employee in charge of the work or lockout witness

- Must accompany the appointed lockout person to ensure that all identified sources of energy listed on the procedure are locked out in the proper position;
- Must sign the isolation procedure to confirm that all steps have been followed and that the isolation is safe.

Appointed lockout person

- Must apply the isolation procedure and follow each step listed on the isolation;
- Must use the isolation procedure and verify the accuracy of all the information;
- Must report any deficiency found during the isolation to his/her isolation area;
- Must "guide" the lockout witness during the padlock installation;
- Must install the seal on the isolation box;
- Must complete the isolation procedure and sign it to confirm that all steps have been followed and that the isolation is safe.

Person who is working on locked out equipment

- Is responsible for his/her own safety;
- Must read and apply the isolation procedure;
- Must report any deficiency found to their Supervisor;
- Must cooperate, if necessary, in evaluating the efficiency of the procedure;

- Must make sure to put his/her personal lock on the proper energy isolating device or proper isolation box and sign the isolation procedure;
- Must come back immediately to remove his/her personal padlock after his/her work is completed.

Supervisor

- Must provide the necessary resources to efficiently apply the procedure; Must approve any amendments to an isolation procedure before it can be used;
- Must verify (in the field) the accuracy of all the information of a temporary isolation procedure before approving it;
- Ensures that all employees know and apply the lockout program;
- Ensures that isolation equipment is properly identified and functional;
- Notifies the Technical Services of any changes to a piece of equipment;
- Can sign an authorization to remove a forgotten padlock, but only after taking the necessary precautions to ensure that the employee is no longer on site and cannot come back to personally remove his/her padlock and that the risks are controlled;
- Participates in the evaluation of an isolation procedure's efficiency;
- Visits, when required, the site before the work begins.

Person in charge of approving the isolation procedure

- Approves the isolation procedures, permanent or temporary;
- Ensures that the isolation checklists have been validated.

Training Services:

- Provide training on the program to TSMC's employees and contractors;
- Provide refresher training sessions on-demand and a reminder training session;

  Ensure that all employees have a minimum score of 90% on the exam every 3 years for all employees;

- Ensure that all employees and Supervisors have received training before starting work

Business leader, Superintendent

- Ensure that approvals are made with precision and that the lockout program is adhered to at all times;
- Carry out audits on the application of the isolation;
- Are responsible for the implementation and enforcement of the lockout program;
- Validate the content, tools and resources in place for the implementation of the lockout program;
- Must ensure that all personnel in their respective sector received adequate training before performing the work;
- Provide the resources needed to implement and maintain the lockout program;
- Ensure continuous improvement of the isolation process;
- Ensure that the isolation procedures creation, validation and approval process is followed;
- Issue annual guidelines and objectives for the application of the lockout program;
- Ensure the annual assessment of the lockout program efficiency.

Health and Safety services

- Ensure that the lockout program is applied as a whole;
- Manages the distribution and control of personal padlocks;
- Actively participate in the modifications to the lockout procedure;
- Coordinate and make sure that each party respects their respective roles and responsibilities;
- Ensure that the isolation procedure management system (CONFORMiT®)is working and is accessible to all authorized personnel;
- Ensure the conformity of the isolation procedure approval system;

- Participate in the preparation and evaluation of lockout procedure support documents;
- Evaluate the quality of the isolation procedures and preventive measures issued as well as the implementation of the lockout program and the methods used;
- Advise the stakeholders and provide the necessary support to continuously improve the application of the isolation program;
- Participate in or lead the annual evaluation of the program.

9.5 Isolation Procedure

This procedure has two different ways to apply an isolation based on the number of hazardous energy sources to control and/or the number of people applying their isolation locks. The choice of how to apply isolation is mainly dictated by the number of energy isolating devices shown on the isolation procedure.

There are also small variants of the two main methods that can apply to complex isolations or special situations. Theses variants are described in further sections. Nevertheless, the core principle stays the same in those variants.

9.5.1 Single isolation

Principle:

When there is a single source of energy controlled through a single energy isolating device, being isolated by one person, the isolation can be achieved with the installation of the personal padlock of the employee directly on the energy isolating device. This only applies to specific types of work:

- Trouble shooting performed by electro technicians;
- Welding units; Hydraulic rock breakers;
- Laboratory equipment.

Detailed procedure:

- ✓ The worker confirms the isolation device number and location from the isolation checklist;
- ✓ If the voltage is 600 volts or less, the worker will find the appropriate breaker, confirm with Operations that the unit is not running and disconnect the isolation device.
- ✓ The worker will attach his/her personal padlock on the isolation device to ensure that it cannot be re-energised.

- ✓ The worker will go to the equipment location and perform a bump test to confirm that there is zero energy to the equipment by pushing the local stop/start button.
- ✓ When the energy isolating device is located in an electrical room, the presence of an electrician is required if the magnitude of the energy is greater than 600V. The electrician will perform the switching off manoeuver in order to de-energize the equipment. The appointed lockout person and / or the person who performs the task will witness the manoeuver done by the electrician. Once the visual break is confirmed, the electrician will install the worker's lock on the isolation device as the worker observes, (the worker must be attendance during the full procedure.
- ✓ The isolation check sheet must remain at the workplace at all times;
- ✓ Upon work completion, the worker must remove his/her personal padlock, verify the integrity of the equipment or section of equipment they were working.
- ✓ The last worker to remove his/her personal padlock from the hasp performs a start-up test on the equipment with an appointed lockout person or a delegate from the operations;
- ✓ They then go to the isolation station to confirm the end of the work;
- ✓ If the work is not completed or prolonged over one shift, the worker must affix a department padlock.

9.5.2 Multiple isolation procedure

Principle:

When there is more than one energy isolating device to isolate in order to achieve complete energy isolation for the work zone, the use of an isolation box and equipment padlocks are mandatory.

Detailed procedure:

- ✓ If more than one worker is part of the team, they must appoint a person in charge of the work (witness).
- ✓ The witness goes to the isolation station and prints out the isolation procedure identified for the equipment they will be working on;
- ✓ The appointed lockout person, starting with a series of five locks, determines the kind of equipment padlocks and mechanisms required for the isolation;
- ✓ The appointed lockout person and the witness proceed with the isolation steps as described in the isolation procedure. They must write the padlock number used on each energy isolating device;

- ✓ When the energy isolating device is located in an electrical room, the presence of an electrician is required if the magnitude of the energy is greater than 600V.
- ✓ The electrician will perform the switching off manoeuver in order to de-energize the equipment. The appointed lockout person and / or the person who performs the task will witness the manoeuver done by the electrician. Once the visual break is confirmed, the electrician will install the lockout scissors and an orange department padlock. The appointed lockout person will then install an equipment padlock on the lockout scissors.
- ✓ The appointed lockout person and witness must ensure that the bump tests and release of the residual pressure are properly performed.
- ✓ The appointed lockout person and witness return to the isolation station and place the unused equipment padlocks and keys in an isolation box.
- ✓ The appointed lockout person and witness take a numbered seal, write the number on the isolation procedure and place the seal on the isolation box.
- ✓ The appointed lockout person and witness insert the isolation procedure into a plastic bag attached to the isolation box. Each worker puts his/her personal padlock on the isolation box.
- ✓ Each worker who leaves the work zone must remove his/her personal padlock.
- ✓ If the work is not completed in one shift, see section 7.7 Shift change, assignment change or work shutdown.
- ✓ Once the work is completed, an authorized person assigned by the team performs the unlocking steps as described on the isolation procedure. He then verifies the integrity of the equipment and performs the start-up test
- ✓ The authorized person goes to the isolation station and informs the necessary personnel that work has been completed and that the equipment is ready to use.

9.5.3 Isolation procedure for radioactive sources

i. The appointed lockout person informs the Person in Charge of Radioactive Protection, (PCRP) that a nuclear gauge has to be isolated. The PCRP brings with him a Ludlum3 radiation survey meter and ensures that the calibration of the latter is still valid (less than one (1) year since the last calibration);

ii. The appointed lockout person has the appropriate isolation procedure in hand.

iii. When the electrician, the appointed lockout person and the witness are on the scene, all three validate that they are in front of the right gauge to be isolated.

iv. The electrician takes two radiation level readings while the gauge is in the open position (at the gauge’s output, its scintillator). The results are recorded on the isolation form along with the survey meter's serial number and its last calibration date.

REMINDER: Do not stand directly in the particle beam and minimize the reading time (about 10 sec.)

Note: *If the gauge is already isolated by another procedure, find the relevant procedure and transcribe the values onto the new sheet. Continue to step 8.*

v. The electrician removes the orange seal present on the closed gauge.

vi. The electrician then turns the gauge's caliper 180 degrees. The gauge's status indicator will change from ON to OFF in the process;

vii. In the OFF position, the electrician applies the scissors and affixes an ORANGE padlock. The appointed lockout person adds an equipment padlock from his/her equipment padlock series.

viii. The electrician takes the radiation level readings again now that the gauge is in the closed position (at the gauge's output and at its scintillator) and records the results on the form;

NOTE: *Even if the gauge is already isolated, the radiation level readings must still be taken in the gauge's closed position.*

ix. The radiation level should have decreased and the output value should be less than 15 mSv / h.

x. The electrician, the appointed lockout person and the witness confirm that the gauge is in the closed position by writing down their initials on the form.

xi. The appointed lockout person contacts the control room to validate that the source is not in the open position anymore (an alarm is active on the screen and the transmitter reading confirms its closure).

***IMPORTANT NOTE:* The PCRP or designated / delegated person must be informed immediately of any situations considered abnormal (mechanism trouble, unconventional reading levels, closed position not validated by the control room, etc.). Isolation is then considered invalid and work is to be suspended until the situation is corrected.**

xii. Once the work is completed, the gauge is unlocked and switched back ON (work to be performed jointly by the electro technician and the appointed lockout person).

xiii. An orange seal is installed to maintain the gauge open.

9.5.4 Cascading isolation

Cascading isolation is used occasionally for multiple isolations involving more than one person. This method is used particularly during major shutdowns, because several pieces of equipment can be isolated together and this method allows employees to switch from one piece of equipment to another while remaining isolated.

Example: Isolation box CV-01 contains the unused equipment padlocks and key from the series that was used to isolate the local switch and the valve. This isolation box is in turn isolated by an equipment padlock that comes from the main isolation box series. A blank isolation form must be completed for the main isolation box.

9.5.5 Isolation procedure for contractors

Implementing rule for contractors:

In all isolations cases where contractors are involved, the isolation must be performed under the supervision of a Tata Steel Mineral Canada representative. Only the multiple isolation procedure is applicable. **The personnel employed by the contractor have no right to operate an energy isolating devices, even in a simple isolation case.**

Detailed procedure:

- ✓ The contractor designates his/her highest ranking worker to act as the contractor lockout witness;
- ✓ The project manager or the owner of the equipment and the contractor lockout witness head to the isolation station to inform the appointed lockout person of their isolation needs. They all then proceed to follow the steps indicated on the appropriate isolation form.
- ✓ In the case of major maintenance involving several work groups in the same hazardous area, the isolation will be performed by an appointed lockout person, a witness and an electrician. By designating a witness, any participating group can request a review of the isolation.

9.5.6 Shift change, assignment change or work shutdown

- If the work has not been completed by the end of the shift and is to be continued by one or more authorized persons:
- Each authorized person who is leaving must remove his/her own personal padlock.
- The authorized person must notify the Supervisor of the nature of the work to be completed.
- The Supervisor must attach a department lock to maintain the isolation.

In the case of a multiple isolation:

The last authorized person to leave the hazardous area can only remove his personal padlock after he clearly stated the reasons for maintaining the isolation to the area supervisor.

9.6 SPECIAL SITUATIONS

9.6.1 Padlock removal procedure

A PERSONAL PADLOCK MAY ONLY BE REMOVED BY ITS OWNER

However, there are two exceptional circumstances that may justify the forced removal of a padlock, or in other words, cutting the padlock.

9.6.2 The worker has forgotten his/her padlock

In the event that a worker forgot to remove his/her padlock at the end of his/her work shift, the Supervisor will try to locate the owner.

IF THE WORKER IS STILL ON SITE, HE/SHE MUST COME BACK TO REMOVE HIS/HER PADLOCK

If the worker has left the site, the supervisor must try to contact him. If the worker is reached, he/she must come back to remove his/her padlock.

If it is impossible to reach the worker, the Supervisor of Operations, the qualified electrician and a mechanic must then perform a complete visual inspection of the equipment to ensure that it is safe and that nobody is still in the hazardous area. Only the manager on duty, (a person above the Supervisor level) can give permission to remove a padlock when the worker is not reached.

When the Manager on duty or his/her substitute has given his/her permission, the Operations Supervisor, the qualified electrician and the mechanic complete the "PADLOCK REMOVAL FORM" and proceed with the removal of the padlock.

Only the Operations' Supervisor is authorized to cut a padlock after the "PADLOCK REMOVAL FORM" is signed by all parties. The removed padlock is recovered by the health and safety department and the key will be recovered at the worker's return to the site.

This procedure can be applied for a contractor's personal padlock as well.

9.6.3 Lost or broken key or broken padlock

The worker who has lost or broken his/her padlock and/or key must inform his/her Supervisor.

They both complete the "PADLOCK REMOVAL FORM" and proceed with the removal of the padlock. The removed padlock is recovered by the Health, Safety & Security department.

9.6.4 Equipment already locked out:

Each person joining a work team must:

SINGLE ISOLATIONS

- Visually check the energy isolating device.
- Sign the form.
- Install his/her personal padlock on the scissors.

MULTIPLE ISOLATIONS

- Ensure that the used equipment padlocks series number matches the keys in the isolation box.
- Ensure that the numbers from both the isolation form and actual seal match.
- Install his/her personal padlock on the isolation box.

If a worker wishes to verify the isolation, he/she may ask the main authorized person for this particular isolation to accompany him with the isolation checklist.

9.6.5 Temporary isolation interruption

In situations where isolation devices have to be temporarily removed from an energy-isolating device, the following steps must be performed:

- Notify all personnel that the machine will be partially or totally re-energized.
- Assess the work completion status to ensure that the machine is in a safe state and ready to be re-energized.
- Obtain approval from all involved personnel that are working in the area.
- Ask all involved personnel that are working in the area to remove their personal padlocks and to stay clear of the hazardous area.
- Partially or totally re-energize the machine.
- Using a new copy of the isolation procedure, re-apply the isolation.

9.6.6 Isolation procedure not available

When the equipment's isolation procedure is not available, a temporary procedure must be prepared before any type of work can begin. The following steps must be performed by an authorized person:

- Obtain a blank isolation form;
- Identify the machine's energy sources and appropriate energy isolating devices, keeping in mind any residual or stored energy and log on a blank isolation form;
- Identify any risks inherent to the work and if necessary, add the appropriate instructions to the isolation form.
- The completed procedure must be approved by both the area Operations' Supervisor and by the Maintenance Supervisor on duty. If any radioactive energy source is identified in the isolation process, the procedure must also be approved by the person in charge of radiation protection (PCRP).
- Apply the isolation following the standard procedure for its type (single, multiple, contractor, etc.).
- Once the unlocking steps are completed, return the isolation procedure to the Supervisor who will then submit it to data entry in CONFORMiT®.

9.6.7 Mobile equipment isolation

The isolation of mobile equipment must be performed using an isolation procedure that has been developed in accordance with the following steps:

Identification of hazardous energy present:

Identify and assess all hazardous energy, considering, but not limited to, the following aspects:

- Electrical energy, Chemical energy, Pressurized fluid, Mechanical, Kinetic,
- Free moving sections of the machine,
- Mobile equipment or work pieces supported, held or controlled by a device that could move or cause movement of the machine.
- Possibility of remote start-up.

Hazardous energy control:

If the engine providing the driving force of the machine must be isolated:

- Identify the master switch and lock it out;

- If the switch is not lockable or if there is no switch, and if appropriate, disconnect the cables from the battery and isolate both cables;
- Chock the wheels and block any moving parts;
- Lower all attachments to the ground.

Identify isolating devices controlling energy sources.

Isolate the devices according to the requirements of the single or multiple isolations.

In all cases, place a control tag on a suitable control device.

9.6.8 Isolation on a medium or high voltage line or equipment

When the work requires the control of energy on a medium or high voltage line or equipment, it must be performed by an electrician who is specially trained in working with high voltage lines and he/she must use the appropriate equipment. Once the electrical power has been disconnected and has been visually verified (including a 3-step verification of the absence of voltage) and isolation of the system is carried out, grounding cables (GND), meeting the requirements of ASTM F855-09, must be installed upstream and downstream of the hazardous area. Tools and PPE appropriate to the task must be used.

The grounding cables must always be connected in the following order:

1. Connect the cable to the ground.
2. Connect the cable to the line or equipment.

Removal of grounding cables must be performed in the reverse order.

9.6.9 Adjustment, repair, freeing up, maintenance and apprenticeship

When a worker must access a machine's hazardous area for adjustment, freeing up, maintenance or repair purposes, including for detecting abnormal operations, and to do so, he must move or remove a protector, or neutralize a protective device, the machine shall only be restarted by means of a manual control or in compliance with a safety procedure specifically provided for allowing such access. This manual control or this procedure shall have the following characteristics:

- It causes any other control mode or any other procedure, as the case may be, to become inoperative;
- It only allows the operation of the dangerous parts of the machine by a control device requiring continuous action or a two-hand control device;
- It only allows the operation of these dangerous parts under enhanced security conditions, for instance, at low speed, under reduced tension, step-by-step or by separate steps.

9.7 Training Requirements

9.7.1 General Requirements

All authorized persons must be trained on this lockout procedure before they can carry out any repair and maintenance tasks or be potentially exposed to hazardous energy.

Periodic refresher training must be offered to authorized and affected persons at an interval not exceeding 1 year to maintain the appropriate knowledge.

Additional training must be provided for all authorized persons and affected persons whenever an assessment reveals, or whenever there is other reasons to believe, that the authorized persons' knowledge or use of energy control procedures is inadequate or inconsistent with the requirements of this program. The name and training dates for each authorized person must be recorded.

9.7.2 Training assessment

The effectiveness of the training must be assessed by the way authorized persons demonstrate:

- Knowledge of the program;
- Recognition and understanding of hazardous energy types; and
- Use of appropriate energy control procedures.

Authorized persons who do not demonstrate an adequate level of knowledge or use of appropriate hazardous energy control procedures must be retrained. At a theoretical or practical assessment, authorized persons must obtain a passing grade of at least 90%.

9.8 Program Review

9.8.1 Isolation Procedure Review

The isolation procedures unused for more than eighteen (18) months must be reviewed by an authorized person before being used again. This is done in order to ensure that these procedures are still appropriate, considering the processes in place for procedure application control and hazardous energy deficiencies identification.

9.8.2 Program Evaluation

The condition and effectiveness of each element of the program must be assessed every 3 years or less. The assessment must include: the written program, the specific isolation procedure for each piece of equipment, the isolation accessories (inspection of isolation station inventory, cleanliness and working condition), the energy-isolating devices and the training.

9.8.3 Isolation Procedure Application Review (audit)

The effectiveness of the isolation procedure application must be verified continuously. The verification must be randomly performed and address all functional characteristics specific to the organization.

The verifications must be done once in a period of twelve (12) months with the results compiled into the CONFORMiT® software and maintained for at least three years.

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TATA Tata Steel Minerals Canada

LOCKOUT PROCEDURE

APPROVAL PENDING

1234-GBM-01 Gum ball machine	Procedure title [1] COMPLETE LOCKOUT
Location: West of the popcorn machine	

Written

Created by: User: GROUPEID\jocelynt   Date: 2015-05-08

Revised by:

Verified by:	Trial	Date
	☐	
	☐	
	☐	
	☐	

CONTROL SECTION

Lockout reason: ______________________________

____

____

____

Seal Number : ____________________

LOCKOUT

	DATE (DD / MM / YYYY)	Name (block letter)	Sign
Primary autorized person:	___/___/___	____________	____________
Witness:	___/___/___	____________	____________

ISOLATION VERIFICATION OF ENERGY SOURCES

	DATE (DD / MM / YYYY)	Name (block letter)	Sign
Others:	___/___/___	____________	____________
	___/___/___	____________	____________

LOCKOUT REMOVAL

	DATE (DD / MM / YYYY)	Name (block letter)	Sign
Primary autorized person:	___/___/___	____________	____________

Printed on: 2015-05-08 16:25:41   PAP: Primary autorized person   Page 1 of 4

By: GROUPEID\jocelynt   WIT: Witness   LR: Lock removal   CONFORM

Exhibit 9.3.3: Lockout Procedure (Isolation Checklist) Form

10.0 LIGHT VEHICLE AND MOBILE EQUIPMENT OPERATION

10.1 Policy

This policy is intended to reduce the incidence of vehicular injury and property damage resulting from poor driving practices such as:

- Distracted driving;
- Improper operation of vehicles and mobile equipment;
- Disregard for rules of the road;
- Aggressive and imprudent driving.

10.2 Distracted Driving

Distracted driving presents serious risks to our employees, contractors, other workers, the general public where off-site driving is concerned, and to the operation and reputation of the company.

Cell phones, other electronic devices, and distracted driving in general are major causes of incidents involving personal injury and property damage.

Drivers and mobile equipment operators are prohibited from holding, operating, communicating, or watching the screen of a hand-held communication device:

- While driving a company vehicle
- While driving a personal or contractor vehicle on company property
- While operating mobile equipment, such as a forklift, haulage truck or other heavy mining equipment.

10.3 Responsibilities

- In addition to electronic devices, consider all forms of driver distraction. Apply this information to your company safety and/or site safety policy.
- Ensure that drivers and other workers have the training and/or the education they need.
- Support the safety activities of supervisors, workers, and joint committees.
- Support the investigation of fleet and grey fleet (i.e., personal vehicles driven for work purposes) vehicle collisions that occur during company business.
- Provide a copy of and promote the adoption of this policy to all employees, contractors, and other workers.

- Review all elements of your firm's driving policy on an annual basis.
- Reduce the risks associated with driving. Where practical, support alternatives to driving, such as teleconferencing, videoconferencing, or public transportation.
- Lead by example. Don't allow yourself to be distracted while driving, and never use an electronic device when driving.

10.4 Vehicle Rules:

Use of seat belts by drivers and all vehicle occupants is a condition of employment. It is the responsibility of the driver but also the duty of any employee, to ensure that all vehicle occupants are wearing seatbelts.

Driving a vehicle while under the influence of alcohol or any drugs or narcotics is strictly prohibited and subject to disciplinary action including termination of employment.

At all times it remains the responsibility of the usual driver of a company vehicle to ensure that the vehicle is correctly maintained and in a roadworthy condition. The vehicle should be kept clean, both inside and out. Any damage to the vehicle must be reported to the maintenance supervisor.

Other driving rules include the following:

- Smoking is not permitted in company vehicles.
- Back into parking spaces when possible, or position in a manner that always allows for a forward first movement;
- All vehicles to be equipped with operational back-up alarms, buggy whips & amber strobe lights;
- Use a spotter if necessary when reversing or when operating in congested areas;
- Pre-use inspections must be completed daily;
- Properly store & secure all tools & equipment transported in vehicles;
- No cell phone use while driving;
- Unattended vehicles must be turned off & keys left in the vehicle (at -5*C or warmer);
- Vehicle headlights must be switched on when moving;
- All drivers must obey the traffic rules. Speed limits are posted for multiple speed zones;
- Always slow down near construction activities;

10.5 Vehicle Usage in the Mine

- Demonstrate a requirement to drive in the Mine;

- Receive approval from mine superintendent;
- Possess a valid Driver's License;
- Complete Mine Orientation training;
- All regular vehicle requirements apply;
- Driver must maintain two way radio communications on the designated channel;
- Two way radio communications with the mine supervisor and other vehicles at all times;
- Permission via two way radio must be obtain before entering the Mine Road and the Mine;
- All radio communication is conducted in English;
- Light vehicles are to stay 60m behind heavy equipment - 4 haul truck lengths;
- Controlled roadway – when signs are present
- Uncontrolled roadway- no signage
- Controlled Roadway - haulage trucks obey all signs;
- Uncontrolled roadway- haulage trucks have right of way;
- Always remain in a disabled vehicle -radio for assistance;
- An amber light must be flashing on the highest point on the vehicle;
- A buggy whip with a florescent flag must be of sufficient height to extend at least 1 meter above the highest point on the vehicle;
- Headlights must be on at all times.

11.0 EMERGENCY PREPAREDNESS

11.1 Policy

It is policy to systematically evaluate the need for emergency preparedness and base the program on the results of that evaluation. To this end, a risk assessment shall be conducted to determine the need for and contents of, a Disaster Management and Recovery Plan for the DSO-Timmins site. The assessment shall consider the potential for a disaster event using a risk-probability matrix.

Priorities for development of procedures for disaster scenarios shall be determined sequentially from the risk-probability matrix.

11.2 Scope

This program of emergency preparedness includes possible events for which provincial regulations specifically require planning, preparation and special equipment and training. It also defines the process to be followed to identify and prepare for other emergencies.

11.3 Emergency Response Planning

Based on the Annual Comprehensive Risk Assessment and the Disaster Management and Recovery Risk Assessment, the need for specific emergency preparedness will become evident. As required by regulation, once the need for emergency response planning is identified, an employer is obligated to develop written procedures and appoint a person to coordinate the implementation.

AN EMPLOYER SHALL CONDUCT A RISK ASSESSMENT IN A WORKPLACE IN WHICH A NEED TO RESCUE OR EVACUATE WORKERS MAY ARISE.

WHERE THE RISK ASSESSMENT SHOWS A NEED FOR EVACUATION OR RESCUE, APPROPRIATE WRITTEN PROCEDURES SHALL BE DEVELOPED AND IMPLEMENTED AND A WORKER ASSIGNED TO COORDINATE THEIR IMPLEMENTATION.

Written rescue and evacuation procedures are required for but not limited to

(g) work at heights;

(h) work in confined spaces or where there is a risk of entrapment;

(i) work with hazardous substances;

(j) work in close proximity to power lines;

(k) work on or over water; and,

(l) any other circumstance identified in the risk assessment;

Where a workplace is a low risk workplace in the opinion of an employer, the employer shall post information about escape routes and conduct emergency drills considered appropriate.

At least once a year an emergency drill shall be held to ensure awareness and effectiveness of the emergency exit routes and procedure, and a record of the drill shall be kept for a period of 5 years.

11.4 Emergency training

The senior manager, health, safety and security shall develop curricula for site workers expected to respond to emergencies identified in the site hazards assessments and required under regulations.

Employees who are expected to respond to emergencies shall be given adequate instruction in the procedures to be followed and the equipment to be used. Such procedures include:

- Firefighting;
- Confined space rescue;
- Arrested fall (work at heights) rescue;
- Rescue from water.

Employees assigned to firefighting duties in a workplace shall be given adequate training by a qualified instructor in fire suppression methods, fire prevention, emergency procedures, organization and chain of command, firefighting crew safety and communications applicable to the workplace in accordance with National Fire Protection Association standards.

Retraining for firefighting duties shall be provided periodically, but not less than once a year.

Training on Confined Space Rescue and High-Angle Rescue shall be provided for the scenarios identified at the DSO-Timmins site. Retraining for entry into confined spaces and the use of personal fall protection equipment shall be provided every three years as required under the applicable regulations.

Drills and practices that simulate the various likely scenarios shall be conducted on a suitable frequency to ensure that responders are prepared in the event of an emergency. As a minimum, semi-annual drills of all rescue scenarios should be conducted.

11.5 Workplace Practice Drills

The Health, Safety and Security Department is responsible for planning and coordinating periodic drills at work sites to practice evacuations with workers and to evaluate response efficiency by first responders.

Records of all emergency practice drills shall be maintained as evidence of due diligence.

11.6 Mutual Assistance Agreements

Wherever feasible, the DSO-Timmins operations shall establish mutual aid agreements with other stakeholders in the area. Potential parties to agreements include:

- Local communities where fire and other emergency services are maintained;
- Larger contractor companies inside or outside TSMC operations.

12.0 INJURY & ILLNESS MANAGEMENT

12.1 Policy

TSMC is committed to assisting employees who have been injured in the course of employment to return to work in a timely and safe manner. TSMC will continuously strive to reduce and/or eliminate workplace injuries and illness through maintaining a safe and healthy work place and promoting safe work practices.

In the event of an injury, TSMC has outlined an effective injury reporting system for maintaining effective communication with the injured employee through contacting the worker as soon as possible after an injury occurs and offering employment consistent with the worker's functional abilities. Potential employment options will be identified using the Workplace Health, Safety and Compensation Commission (WHSCC) Hierarchy of Return to Work as identified in the WHSCC Policy RE-18 and in accordance with Section 89 and 89.1 of the Workplace Health, Safety and Compensation (WHSC) Act.

All employees of TSMC have a responsibility to report injuries before leaving the worksite and to actively participate and cooperate in the return to work process when required.

TSMC is dedicated to accommodating injured employees through Return to Work (RTW), and supporting rehabilitation efforts that foster and enhance safe return to work efforts that will benefit all employees in the workplace. Where necessary, TSMC may seek external advice from other parties involved in the RTW process including WHSCC and external healthcare providers, to facilitate success of RTW.

Any personal information received or collected that aids in the identification of an injured worker will be held in the strictest confidence. Information of a personal nature will be released only if required by law, or with the approval of the worker who will specify the nature of any information that may be released and to whom it can be released.

The development, monitoring, evaluation and revision of the RTW Program will be carried out through joint consultation between management and the Occupational Health and Safety Committee.

12.2 Scope

This program covers the requirements under Early and Safe Return to Work regulations in establishing a formal process by which employees affected by workplace injuries or illnesses may be successfully reintegrated into the active workforce. Also outlined in this section, are the procedures to be followed in the event of a workplace injury or illness.

12.3 Definitions

Disability: The loss of earning capacity of a worker as a result of an injury;

Early and Safe return to Work Program: A program developed by the Workplace Health, Safety and Compensation Commission to encourage cooperation in minimizing the time lost from work due to workplace injuries. All employers and workers are obligated under Section 89 of the Workplace Health, Safety and Compensation Act (the Act) to co-operate in a worker's early and safe return to suitableand available employment with the injury employer.

Modified Work: An employer's accommodation of injuries and temporary disabilities through customizing the duties to the worker's capabilities.

Return to Work Accommodation: Helping an injured employee to get back into the workplace as soon as possible after a job related injury or illness by matching their functional ability with any suitable job that may be available.

12.4 Modified Work Program

Tata Steel Minerals Canada has a genuine concern for the safety and well-being of its employees. We appreciate the value of each worker's knowledge and experience as well as the important role that each worker plays in his/her family and society.

The purpose of TSMC's Return to Work Program is to work with employees and medical professionals to safely get employees back to meaningful work as soon as possible without exposing the individual to any further risks.

Having an injury does not mean that the worker cannot work. It means that the job duties must match the functional abilities of the worker. Continuing to work is a critical component of injury recovery, rehabilitation and prevention of disability.

The focus of this Return to Work Program is on what the worker can do, not what they cannot do. An effective Return to work Program is a "win-win" situation.

12.5 Communications

For the Return to Work Program to be successful there must be ongoing communication and consultation between the employer, employees and health care providers. Only then can each person support and participate in both the planning and the implementation of the program.

12.6 Confidentiality

Any personal information received or collected that can lead to the identification of an injured worker will be held in the strictest confidence. Information of a personal nature will be released only if required by law or with the approval of the worker who will specify the nature of the information to be released and to whom it can be released.

12.7 Responsibilities

It is essential to the success of the program that all parties are involved and cooperate with each other to ensure a timely return to work. All parties have a responsibility in the success of the Return to Work Program.

TSMC

As the employer, TSMC has the responsibility:

- ✓ Provide alternative working arrangements (i.e. modified duties) to be evaluated by a medical professional for suitability and to regularly communicate with employees;
- ✓ Provide WHSCC with pertinent information through completion of Form 7 and other requested documents;
- ✓ Provide job descriptions for all occupations to facilitate the selection of suitable tasks in the Modified Work or Early and Safe Return to Work programs.

Employees

Employees are responsible to:

- ✓ Immediately report an incident / injury;
- ✓ Actively participate / cooperate in the return to work program (i.e. medical aid, treatment, etc);
- ✓ To take all reasonable steps to reduce or eliminate any permanent impairment or loss of earnings resulting from an injury;
- ✓ Provide the WHSCC with all relevant information (Form 6-WHSCC).
- ✓ Notify their case worker immediately of any change in circumstances that may affect entitlement to compensation;
- ✓ Explore alternative working arrangements

12.8 Benefits

Employer:

No one benefits when an employee is off work due to illness or injury. From a company perspective there is a loss of productivity, scheduling problems and an increase in medical cost.

Employee:

Minimize the loss in income which can have a serious financial impact and emotional problems that can occur due to being unable to perform duties / activities that are a part of normal life,

- ✓ The disruption to the individuals "normal" life is minimized
- ✓ Worker maintains contact with co-workers and important social networks
- ✓ May reduce the risk of re-injury and provide a sense of job security
- ✓ Maintains the workers sense of belonging, purpose and confidence.

Also, research and practical experience has shown that the longer an employee is absent from the workplace, the likelihood of them returning greatly declines.

12.9 Procedure In the event of an Incident/Injury

The severity of the incident will determine what procedure below will be used for providing employees with the necessary treatment. In saying that, the prime consideration of our actions is the **safety and health of employees**. If employees are concerned about the actions that are about to take place, the employee should be informed that the final decision regarding what they can or cannot do will be that of the health care provider. All the company is doing is providing the health care provider with additional information that will help make the most informed decision.

It is recommended that, if possible, the requirements of the Return to Work Program should be reviewed with the employee prior to them seeing a physician. This is done to let the employee know that there may be jobs available to suit their abilities as determined by the medical provider. The company will make reasonable efforts to accommodate employees at work. The employee should be told that this decision would ultimately be based on the medical providers' recommendations and the availability of any suitable jobs.

*It is imperative that all incidents, whether serious or minor, be reported to the Safety Office as soon as reasonably possible.

The nature and severity of the incident will determine the appropriate step(s) to be taken.

Minor Injuries

Basic health care treatment may be required. The individual should be taken for medical treatment. The Safety team should be notified.

Serious Injuries

In the case of a serious incident all steps will be taken to get an employee medical attention as soon as possible.

After the arrangements have been made to get the employee the medical care required the incident ***must*** be reported to the Safety team.

Once notified, the Safety team will coordinate the investigation to determine measures to prevent reoccurrence and make any other contacts as required.

The Supervisor will either accompany or arrange for someone else to accompany the injured employee to a medical facility.

12.10 Modified Duties

The goal of this program is to get an individual back to work to their regular job as soon as possible. If this is not an option, the possibility of modified (restricted) duties will be explored. In consultation with the medical provider and reviewing all documentation regarding this case, the company will look at any available opportunities that may match the individual's abilities.

12.11 Work Related Vs. Non-Work Related Injuries / Illnesses

This program tries to accommodate employees whether or not the injury / illness is work related or non-work related. Work related injuries are injuries that occur during working hours related to the employees' regular work duties. Non-work related injuries are injuries that occur at any other location other than the workplace or during non-work hours. It is important to note that an injury that occurs at work that is not immediately reported may be treated as a non-work related incident.

12.12 Early and Safe Return to Work Program

Injury Reporting and Return to Work Flow Chart

The following outlines TSMC's procedures that must be utilized by both employees and management in the event of a work related injury.

- Get first aid, if necessary;
- Report incident/injury to management immediately before leaving the workplace if seeking medical attention;
- Bring a copy of Company Modified Duty Program Form to Doctor;
- Provide copy of the Doctor's report (8/10) of injury and modified duty form to your employer within 24 hours;
- Communicate and cooperate with management to identify safe RTW options;
- Notify Company immediately when a doctor gives clearance to return to pre-injury employment;

- Notify management immediately if issues arise with RTW Plan;
- Ensure Form 6 and Company modified duty forms are available and completed by employee;
- Complete Form 7 and fax to Company Advisor to identify potential accommodation and develop a RTW plan;
- Inform co-workers of job modifications;
- Review form 8/10 with employee and implement RTW planning;
- Forward copies of all relevant information to the on-site nurse (originals will be stored at the workplace);
- If necessary, ensure employee receives medical treatment.
- Employee and management actively participate in RTW Plan Communicate and cooperate with employee to identify safe RTW options actively participate in RTW Plan
- Notify Company advisor immediately when issues arise with RTW Plan.

13.0 CONTRACTOR MANAGEMENT

13.1 Policy

TSMC's vision of safety extends to our contractors, subcontractors and suppliers. This policy aims to ensure that risks are minimized, when contractors are engaged through diligent application of proven standards of risk management which fully integrate health and safety evaluation, planning and design. TSMC requires all contractors to commit to and abide by these standards to maintain superior levels of health, and safety performance.

It is imperative that TSMC and contractor senior management demonstrate their sustained commitment to this policy in a visible and vigorous manner.

13.2 Scope

The scope of the this policy extends to all contractors that provide services or perform work on TSMC property (on site) and may include, at the discretion of the responsible TSMC manager, locations which are not on TSMC property where work is being performed for, or on behalf of, TSMC (off site). The scope specifically applies to the prequalification, selection, monitoring, evaluation, and administration of health and safety capability and performance of contractors.

13.3 Purpose

The Contractor Management program is intended to supplement all applicable laws, rules, regulations and other corporate policies.

The purpose of this document is to define the requirements and provide guidelines for the prequalification, selection, monitoring, evaluation, and administration of the health and safety capability and performance of all levels of contractors, subcontractors, and suppliers (referred to as contractors in this document.) Special attention must be paid to short term "emergency repair" type contractors.

The objectives of this guideline are to ensure the health and safety of workers, prevent loss to property and maintain compliance with all rules and regulations.

For the purpose of this Policy, a "contractor" is defined as being a company or person contracted to provide, and receiving payment for, services for any aspect of operations including exploration, development, construction, operations and reclamation.

For all aspects of this policy, each region, project, mine or reclamation site shall have their own, more detailed policies or procedures that shall be based on the policy statements contained herein.

13.4 Categories of Contractors

A risk assessment shall be carried out on the scope of work to be undertaken by the contractor to determine the risk group.

13.4.1 Group 1 – Low Exposure

This category is used where contractors are not exposed to facility (operations) hazards and/or work in low risk environments. Examples include administrative staff, office janitorial work, catering, delivery vehicles to warehouse, consultants (not performing work in active mining and processing areas of the site or active areas of an exploration or reclamation site).

13.4.2 Group 2 – Moderate Exposure

Group 2 contractors carry out tasks which may include exposure to facility hazards that have been identified as moderate risk or where contractors introduce moderate risks into a low risk area as identified in the preliminary risk assessment.

13.4.3 Group 3 - High exposure

High exposure contractors are required to undertake extreme or high risk tasks or perform tasks in areas that have inherent extreme or high risks such as), working in confined spaces, hazardous materials, fragile environment, public exposure, etc. working at heights or depths, working in mine traffic, performing hot work (not a workshop environment)

All contractors shall develop health and safety management plans appropriate for the scope of work and identified exposure levels. This plan shall provide a thorough description of how a contractor (and their subcontractors) will ensure that injuries, illness, and damage are prevented.

13.5 General (All Contracts)

A review of the health and safety performance of a contractor must occur before this contractor is employed. Attached documents will provide tools for that review and an outline of what must be considered in the contract.

Where the contractor does not have an established written health and safety program, TSMC may assist with the development and implementation of a program or the contractor shall adopt the TSMC programs.

All contractors shall report to a designated TSMC site representative (“TSMC Representative”), herein called the Activity Supervisor, who is familiar with the details of the contractor’s scope of work and the health and safety requirements associated with this work. The TSMC Representative is responsible and accountable for the oversight of all aspects of the contract.

- Pre-qualifying a contractor prior to the bidding and/or award of a contract or the start of a job will result in a higher level of health and safety performance. The following classification system is suggested; Class A = fully qualified contractors who have already been trained, Class B= partially qualified contractors who need re-training: Class C= provisional contractors who must be allowed access to the site to perform unique or specialized tasks but who require 100% escort and/or supervision.
- The requirements for a contractor health and safety program are determined through a risk analysis that will measure the job requirements against contractor capabilities.
- Contractor performance must be evaluated on a regular and ongoing basis throughout the duration of the contract.
- It is the contractor's responsibility to fully understand the health and safety requirements of any job and to have the necessary programs in place, operational and communicated to employees.
- Health and safety must be considered to be aspects of quality management and have similar weighting as scheduling and costs.
- It is the responsibility of the TSMC Activity Supervisor to monitor and evaluate the performance of the contractor.
- Major projects requiring a capital expense justification will be evaluated and signed by the appropriate health and safety staff prior to final approval from senior management.
- Health and safety staff will be involved in the contract process during the pre-bid, contract award, and project oversight stages appropriate to the level of risk identified by the TSMC Activity Supervisor.
- A contractor who is unable to demonstrate a record of acceptable and continuously improving health and safety performance shall not be awarded a contract without approval of the appropriate senior management
- Contractor health and safety responsibilities shall be clearly communicated in the scope of work document.

13.6 Responsibilities

General, Operations, or Project Management

- The Project or Operations Manager shall assign a knowledgeable, trained and competent employee (TSMC Activity Supervisor) direct responsibility for management and oversight of each contract prior to signing and awarding a contract. This person and/or position shall be identified in the contract.
- The Project or Operations Manager shall require Risk or Management of Change Assessment and occupational health and safety review of any AFE's, capital expense justifications, and contract awards prior to submission for final approval.

TSMC Activity Supervisor

- The TSMC Activity Supervisor must be thoroughly familiar with the nature and location of the work to be performed by contractors. The expected duration of the project, the type of work to be performed and location of the work (off or on-site) are some of the factors the TSMC Activity Supervisor must consider prior to developing the health and safety requirements for the bid package. Emergency work may result in additional hazards which must be identified.
- Expected hazards should be identified by the TSMC Activity Supervisor with the assistance of the contractor. The contractor is expected to submit written procedures to manage the identified hazards. In all cases, unless otherwise specified in writing, TSMC procedures and requirements will take precedence over the contractors' procedures.
- With assistance of Health and Safety Professional, Contractor and/or other applicable parties conduct preliminary risk assessment of scope of work to be undertaken by contractor and complete Attachment A.
- The risk of injury or illness to contractors and TSMC employees is an important consideration in determining how to apply components of the contractor health and safety program. Factors to consider may include:
  - ✓ Nature of work to be performed
  - ✓ Location of work performed
  - ✓ Altitude and climate
  - ✓ Potential for the contractor performing the work to expose themselves, other contractors or TSMC employees to hazards
  - ✓ Duration of the work to be performed
  - ✓ Contractor's experience and expertise in performing similar type of work
- The TSMC Activity Supervisor and the Contractor must agree on the scope and delivery of emergency services for contractor employees for the duration of the contract.

- The TSMC Activity Supervisor and the Contractor are responsible for communicating information regarding workplace hazards, health, and safety requirements to all employees working on the project and site employees affected by the project. The communication of this information may include many formats such as medical screening, orientation, training, Material Safety Data Sheets (MSDS), safe work permits, signs, posters, procedures, and other written materials.
- The TSMC Activity Supervisor for the contract will ensure that:
  - ✓ Health and 'safety management plans are completed, reviewed and approved prior to starting work;
  - ✓ Contractor's management is a safety leader and is actively involved in the Safety and Health process on an ongoing basis;
  - ✓ A process is in place to review health and safety performance, systems, and plan as part of the contractor selection process;
  - ✓ Each contractor provides an adequate health and safety plan for the required work based on a risk assessment for the scope of work.
  - ✓ All pre-qualification checks are complete prior to opening a Purchase Order or the contractor may not be paid for work.
  - ✓ The contractor has conducted the appropriate training for their employees prior to starting work;
  - ✓ The contractor demonstrates he has sufficient quantities of Personal Protective Equipment (PPE) and specialized (I.e. cold weather) clothing systems to provide for the sustained safe execution of the work;
  - ✓ The contractor has completed a risk assessment of the job and has effectively communicated the hazards and required controls to all personnel working on that job;
  - ✓ The work is conducted in a safe and responsible manner in compliance with standards and applicable regulations;
  - ✓ Daily work permits are issued that identify scope of work, names and occupations of the employees working on that particular job, specific hazards associated with the work to be performed, and precautions to be taken to minimize the hazards to an acceptable level, (i.e. hot work permits, confined space permits, etc.);
  - ✓ There is timely, effective reporting, investigation and review of all incidents;
  - ✓ Ongoing performance monitoring of the contractor by the Company includes health and safety performance review, evaluation and corrective actions;
  - ✓ Inspections and audits will be conducted on a scheduled basis throughout the term of the contract.

- At the close of each contract, health and safety performance will be reviewed and documented by the TSMC Activity Supervisor with a copy forwarded to the Contracts Administrator;
- The TSMC Activity Supervisor has the authority and obligation to close down any work that is deemed unsafe to workers or property, or which represents a significant risk to the environment;
- If applicable by contract, the TSMC Activity Supervisor shall be responsible to produce the recommendation for safety performance penalties or bonuses with sufficient backup information and financial approval.

Safety Advisor

- Provide technical assistance in evaluating hazards present or that may be introduced by a contractor;
- Provide assistance in facilitating risk assessments conducted by the TSMC activity supervisor and contractor;
- Assist in reviewing past health and safety performance of bidding contractors;
- Assist in developing performance improvement plans for contractors who are accepted with conditions;
- Assists in developing KPI's;
- Review and approve contractor health and safety management plans;
- Review and approve AFE's, capital expenditures and contracts for health and safety aspects.

Commercial Representative

- Identify potential contractors or suppliers;
- Prepare and distribute Request for Quote;
- Receives bids and prepares bid evaluation;
- Assists in developing KPI's, deliverables, such as hours worked, Lost-time injury rate, etc.;
- Negotiate and develop contracts;

- Identifies TSMC Activity Supervisor by name and/or position to be included in contract language;
- Ensures all documentation is received and complete prior to signing contract;
- Assists in completing risk assessments;
- Maintains documentation;
- Maintains list of pre-qualified contractors;
- Participates in audits.

Contract Originator

- May be the TSMC Activity Supervisor;
- Writes scope of work (specifications) to be used in a Request for Quote;
- Assists in evaluating potential contractors;
- Assists in evaluating bids for technical and safety criteria;
- Assists in developing KPI's for contract performance.

Contractor Representative

- Responsible for full site performance of Contractor against full requirements of contract
- Interface with TSMC Activity Supervisor frequently and as required in order to meet contract specifications
- Ensures contractor employees are adequately trained and training is properly documented
- Ensures all contractor employees work within the boundaries of the contract
- Understand the full requirements of the contract
- Maintains all documentation required
- Immediately notify TSMC of any site regulatory inspection and provide copies of health and/or safety inspection reports within 5 days of receipt

- Ensure appropriate equipment, materials, protective devices and personal protective equipment, necessary for protection of worker, is provided and properly used and maintained.
- Provide required safety statistical information as required.

13.7 Contractor pre-qualification

Prequalification of a contractor shall be performed by TSMC to formally evaluate all contractors prior to signing a contract. Qualifications should be reviewed at least annually for changes.

The final choice of contractor should be based on their technical, commercial, and health and safety competence which should include:

A good record of health and safety performance that demonstrates continuous improvement over the past 3 years

Active program for the management, to TSMC standards, of subcontractors which the contractor may employ:

- ✓ Demonstration of a health and safety management plan;
- ✓ Well-controlled worker's compensation costs (if available);
- ✓ Compliance with legislation;
- ✓ Demonstration of the contractors' senior management commitment to their health and safety program, incident reporting and risk management.

The check sheets in Attachment A (two pages) must be completed by the TSMC Activity Supervisor (person requesting services or providing oversight on contract) to identify the potential hazards and risks that may be introduced to contractors and/or to TSMC. Once the potential risks are identified, the Commercial Representative and the TSMC Activity Supervisor will agree to the level of risk assessment and documentation required from the contractor.

The Contractor will be notified of required documents prior to submitting a bid. Attachment B may be given to the contractor for a self-assessment. Attachment B must be completed by the TSMC Activity Supervisor and Commercial Representative during review of the contractor's qualifications before the contract is signed.

After review of Attachments A and B, TSMC must provide feedback to the contractor on areas that need improvement. If the contract is awarded with conditions for improvement, a schedule must be established before the contract is signed.

Health and safety performance must be considered if early completion bonuses are offered.

Contracts awarded for emergency work may result in performing a less stringent pre-qualification step. The TSMC manager must approve emergency work prior to starting work and develop management plans to ensure work performance is to TSMC standards. Pre-qualification can be used to maintain a list of contractors who meet standards for emergency calls.

In cases where contractors may not be able to meet TSMC's health and safety criteria, because they are small or may be the only contractor available within reason, it is possible to offer conditional acceptance. Conditional acceptance shall have a specific time period and additional requirements or controls appropriate to the level of risk in the work to be performed.

Contractors who use subcontractors must establish a pre-qualification process for all subcontractors sufficient to meet TSMC standards. For significant contracts, managers should visit the contractor's facilities to observe how the business is being operated and to question senior management on their role and attitude to safety.

13.8 Procedures

Regardless of the category of contractor (i.e. Low, Moderate or High exposure) the following procedures, at a minimum, must be followed:

- ✓ **Contractor safety record.** The contractor must provide details of their safety record as well as the safety record for all subcontractors.
- ✓ **Daily work permits.** Daily work permits are issued that identify scope of work, names and occupations of the employees working on that particular job, specific hazards associated with the work to be performed, and precautions to be taken to minimize the hazards to an acceptable level, (i.e. hot work permits, confined space permits, etc.)
- ✓ **Documented safety requirements.** The written contract must include the requirements for adherence to applicable site and regulatory safety standards.
- ✓ **Emergency procedures.** Contractors and subcontractors must be trained in site emergency procedures during induction. In addition, contractors and subcontractors shall have written emergency procedures specific to the site given to each employee. Contractors are expected to participate in company drills.
- ✓ **Feedback.** The TSMC Activity Supervisor must provide regular feedback on health and safety performance to the contractor. Deficiencies must be resolved quickly.
- ✓ **Fitness for work.** Contractors must ensure that there is a fitness for work Drug and Alcohol testing policy and program that matches or exceeds the site policy and procedure.
- ✓ **Health and Safety Plan.** The Site Specific Health and Safety Management Plan submitted shall contain the following elements as a minimum:
  - Understanding of and commitment to meeting or exceeding TSMC standards
  - A risk assessment of the work to be undertaken in the contract planning and subsequent phases
  - Specific Health and Safety goals or Key Performance Indicators
  - Health and Safety performance reporting procedure

- A plan for communicating all requirements to all sub-contractors
- Employee training plan

✓ **Pre-bid information.** The Commercial Representative must ensure that contractors have appropriate health and safety requirement information prior to bidding on the work so that the contractor clearly understands requirements and associated costs. These may include, among others:

- Personnel protective equipment (PPE) requirements;
- Substance abuse screening
- Vehicle safety requirements
- General health and safety rules
- Work permit system
- Health and safety performance reporting requirements
- All appropriate training is completed in compliance with Newfoundland and Labrador, (i.e. Fall Protection and Confined Space must be a Newfoundland and Labrador regulated course)

✓ **Pre-work safety induction.** All personnel working for contractors will be required to complete an appropriate safety induction prior to starting work. TSMC staff is responsible for providing a site specific induction and the contractor is responsible for providing all other training that may be required. For long-term or ongoing contracts, a refresher for all contracted employees will be provided by the contractor at least annually.

✓ **Property security.** Contractors and subcontractors are responsible for their own security while performing work on site. All site security procedures must be followed.

✓ **Reporting incidents.** Contractor must report all incidents, injuries and property damage with associated costs to the TSMC Activity Supervisor, the TSMC Safety Department and the appropriate regulatory agencies. TSMC reporting guidelines must be given to contractors prior to commencing work. Contractors shall investigate and report incidents using TSMC and regulatory guidelines. TSMC may elect to participate in any contractor investigation at TSMC's discretion.

✓ **Risk assessment.** Processes must be in place to regularly assess health and safety risks. The processes must include a field level or personal risk assessment tool and a formal risk assessment process where appropriate.

✓ **Shift schedules.** Copies of shift schedules shall be provided by the contractor prior to the start of work. Fatigue management principles must be applied to minimize risks due to inattention and fatigue. A contractor will not be allowed to work schedules that TSMC has deemed fatigue inducing.

- ✓ **Standard work procedures.** Copies of all appropriate site work procedures and standards will be given to contractors prior to the start of work. The contractor must provide to the company at minimum, copies of Lock-out-tag-out, confined space and scaffolding procedures and standards where appropriate. Contractors must provide documented safe work procedures for all work unusual to the site (e.g. roofing, shop door installation, hazardous material transportation, etc.) Failure to adhere to standards and safe work procedures can result in termination of the contract. The following topics must be considered at a minimum:
  - Permits such as hot work, confined spaces
  - Isolation (lockout / tagout) including all energy sources
  - Chemical handling
  - Manual handling
  - Housekeeping
  - Personal protective equipment
  - Hand tools
  - Cranes and rigging
  - Scaffolding and elevated work platforms
  - Working at heights
  - Equipment guarding
  - Excavation and trenching
  - Ventilation and gases
  - Barricading
  - Waste and spill cleanup and disposal
  - Emergency procedures
- ✓ **Supervision**. The TSMC Activity Supervisor must arrange for monitoring of contractor work processes and procedures to ensure compliance with standards. Special emphasis must be given to equipment and tool maintenance, housekeeping and adherence to work procedures. Larger contracts may require full-time health and safety oversight by TSMC personnel in addition to contractor safety management staff.
- ✓ Every contractor must designate a person on site to provide the health and safety direction for the contractor. On projects with more than 10 employees, or for a complex project, the contractor must designate a full-time health and safety representative.
- ✓ All training and documentation must be presented to the workforce in their regional language. Any person directly supervising work must provide fluent translation in the regional language of all verbal and written health and safety instructions.

13.9 Long Term Contractors

Long term contractors provide services on an on-going basis, regardless of the risk level. They may include janitorial services, security, mining operations, tire handling, etc. In addition to general requirements and work procedures listed above, long-term contractors must have the following:

- ✓ **Health and Safety committee.** Contractors shall be represented on site health and safety committees and shall also be expected to have an appropriate safety committee structure developed and in place for themselves and their subcontractors. Details of the safety committee structure shall be included in the contract.
- ✓ **Health surveillance.** Contractors shall provide, or participate in TSMC's as appropriate, routine health surveillance for potential hazards such as dust, noise and chemicals exposure.
- ✓ **New plant and equipment.** Contractor involvement must be sought when TSMC modifications to plant and equipment are being planned which impact the contractor's work.

13.10 Contract Requirements

In no event shall a Contractor commence work without a written Contract or Notice to Proceed which includes a health and safety plan and procedures to perform work in compliance with TSMC and regulatory agency requirements.

The agreement must make clear that the contractor, not the site representative, retains the authority to hire, fire, discipline, supervise, control, and direct the work of contractor employees, as well as the modify the terms and conditions of their employment.

TSMC retains the right to revoke site access for contractor employees who violate any health and safety standard and/or procedure.

13.11 Audits

Audits for health and safety performance shall be conducted on a scheduled basis to ensure TSMC standards are being met. Audits shall be conducted by the contractor with TSMC participation. Audit documentation shall include performance improvement action plans.

13.12 Waivers

The Vice-President of Health, Safety and Security and the Vice-President of Procurement, or their respective designates must approve in advance all waivers to this Policy.

13.13 Distribution

The Procurement Department and the Health, Safety and Security Department will both be responsible for communicating this policy.

13.14 Attachments

The forms and checklists listed below are provided in the following pages as attachments to this procedure:

Attachment A:	REVIEW OF HAZARDS (Both existing hazards and those that may be introduced by the contractor)
Attachment B:	CONTRACTOR SAFETY ASSESSMENT CHECKLIST
Attachment C:	SAMPLE SIMPLIFIED PRE-QUALIFICATION SUMMARY
Attachment D:	LIST OF DOCUMENTS TO BE PROVIDED BY THE CONTRACTOR

Contractors Management Program
Attachment A Part 1– Review of Hazards at Contractor Site

TSMC Activity Supervisor must complete:

Part 1 - Review of Hazards at Contractor Site

Part 2 – Review of Hazards Introduced by the Contractor

Mechanical	Yes	No
Vehicles/Plant	☐	☐
Noise	☐	☐
Vibration	☐	☐
Pressure Oil	☐	☐
Pressure Water	☐	☐
Rotating Equipment	☐	☐
Pressure Air/Gas	☐	☐
Stream, Dust, High Temperature	☐	☐
Aircraft	☐	☐
Radiation		
Radio frequency	☐	☐
Electrical fields	☐	☐
Magnetic fields	☐	☐
Infra-red/Ultraviolet	☐	☐
Solar	☐	☐
Fire & Explosion		
Flammable Substances	☐	☐
Explosives	☐	☐
Bush fire	☐	☐
Suppression Systems	☐	☐
Hazardous Environment		
Confined space	☐	☐
Working at height	☐	☐
On water (boats)	☐	☐
Diving	☐	☐
Remote sites	☐	☐
Weather extremes	☐	☐
Terrain	☐	☐
Tunnel/Shafts	☐	☐
Working alone	☐	☐
Transportation		
Heavy	☐	☐
Oversize	☐	☐
Hazardous Material	☐	☐

Electrical	Yes	No
High voltage	☐	☐
Introduction	☐	☐
Earth faults	☐	☐
Low voltage	☐	☐
Lightning	☐	☐
High voltage	☐	☐
Introduction	☐	☐
Operation		
Water level changes	☐	☐
Water flow changes	☐	☐
Chemicals		
Toxic/poisons	☐	☐
Solvents	☐	☐
Corrosives	☐	☐
Generation of dust	☐	☐
Fumes, vapors, etc.		
Personal	☐	☐
Materials handling	☐	☐
Slips/trips/falls	☐	☐
Repetitive movements	☐	☐
Heat/cold	☐	☐
Biological	☐	☐
Environment	☐	☐
Environmentally sensitive areas	☐	☐
Operational Area	☐	☐
High traffic	☐	☐
Large equipment/small equipment	☐	☐
Blind spots	☐	☐
Communications interference	☐	☐
Other (specify)	☐	☐
	☐	☐
	☐	☐
	☐	☐

TATA

Contractors Management Program

Attachment A Part 2– Review of Hazards Introduced by Contractor

	Yes	No
Site Management		
Subcontractors	☐	☐
Amenities	☐	☐
Access control	☐	☐
Authorization	☐	☐
Licensed operators (crane, equipment, etc.)	☐	☐
Work Practices		
Housekeeping	☐	☐
Waste disposal	☐	☐
Storage	☐	☐
Barricades	☐	☐
Signage	☐	☐
Shifts / Work Hours	☐	☐
Mechanical		
Vehicles	☐	☐
Plant (cranes, etc.)	☐	☐
Aircraft	☐	☐
Noise	☐	☐
Vibration	☐	☐
Machine guarding	☐	☐
Scaffolding	☐	☐
Radiation		
Welding	☐	☐
Other sources	☐	☐
X-Ray or similar non-destructive testing	☐	☐
Fire & Explosion		
Flammable substances	☐	☐
Explosives	☐	☐
Bush fire	☐	☐
Welding	☐	☐
Personal protective clothing requirements	☐	☐

	Yes	No
Hazardous Environment		
Confined space	☐	☐
Working at heights	☐	☐
On water (i.e. boats)	☐	☐
Diving	☐	☐
Pinch points	☐	☐
Electrical		
High voltage	☐	☐
Low voltage		
Inspected equipment		
Leads	☐	☐
Residual current devices (capacitors, etc.)	☐	☐
Chemicals		
Toxic/poison	☐	☐
Solvents	☐	☐
Corrosives	☐	☐
Generation of dust, fumes, vapors, etc.	☐	☐
Material safety data sheets	☐	☐
Chemical storage/gases	☐	☐
Fuel storage, load out	☐	☐
Biological	☐	☐
Environmental	☐	☐
Earthworks	☐	☐
Pollutants	☐	☐
Waste disposal	☐	☐
Construction	☐	☐
Cranes and Rigging	☐	☐
Concrete operations	☐	☐
Overhead operations	☐	☐
Changing conditions	☐	☐
Commissioning activities	☐	☐
Demolition	☐	☐

Emergency Arrangements:

Evacuation ____________________

Medical treatment ____________________

Fire ____________________

Rescue ____________________

Other ____________________

If the project involves one or more of these risks or issues the contractor must complete a formal risk assessment and develop safe work procedures prior to starting work.

ATTACHMENT B

CONTRACTOR SAFETY ASSESSMENT CHECKLIST

TSMC Activity Supervisor and Contracts Administrator are to review prior to issuing a contract. This may also be given to the contractor for a self assessment guide and as a document request.

Company Name: ____________________ Contact Person: ____________________
Address: ____
Phone: ______________ Fax: ______________ E-mail ______________

Safety Performance: data showing a positive trend has been provided and the contractor has an effective means of analyzing trends and keeping management informed.	**Yes**	**No**
Has the contractor or subcontractor provided documented history of their previous three (3) years work injury record that demonstrates continuous improvement?		
Has the contractor provided examples of how they analyze incidents and resulting incident cost trends and keep management informed of their safety performance?		
Has contractor's management "championed" the process and remained fully engaged?		
Safety Plan: Produced specifically for the job, outlining how the safety aspects of the particular job will be managed.	**Yes**	**No**
Has the contractor or subcontractor provided a copy of their environment, health, and safety management plan?		
Has the contractor submitted work procedures for issues identified in Attachment A?		
Has the plan been reviewed and accepted by (TSMC) site safety staff?		
Safety Policy: Clear statement indicating responsibilities signed and dated by the Chief Executive.	**Yes**	**No**
Has the contractor or subcontractor provided a copy of safety policies and responsibilities that has been signed by their senior executive?		
Has the policy been reviewed by (TSMC) site safety staff?		
Safety Manual/Procedures: Clear procedures and systems, updated at least annually.	**Yes**	**No**
Has the contractor or subcontractor provided copies of their work permits and standards? Do they match with the hazards identified in Attachment A?		
Has the contractor provided procedures for storing and handling hazardous substances?		
Has the contractor provided documentation that the information has been given to all employees?		
Safety Professionals: An outline of how the safety advisors are involved.	**Yes**	**No**
Does the contractor or subcontractor have a designated safety contact for the contract?		
If the contract involves more than 10 employees or high risk does the contractor have a designated full-time safety person?		
Has the contractor provided a written document outlining the safety contact's duties and responsibilities sufficient for the scope of work? It must be the Supervisor's responsibility to ensure the safety of his crew.		

ATTACHMENT B

	Yes	No
Training: Supervisor and employee training plans and documentation.	Yes	No
Have contractor or subcontractor employees received induction and standard work procedures training? Documentation must be provided to show who has attended.		
Has the contractor or subcontractor provided safety leadership training to supervisors?		
Is there documentation showing all employees have been trained in first aid?		
Have their employees been trained in Newfoundland and Labrador-certified Fall Protection and Confined Space courses?		
Have all employees been trained in Field Level Risk Assessment? Writing or using JSA or JHA's?		
Has the contractor provided documentation showing all other specific training employees have received appropriate to the work being performed?		
Audit System: Formal method of checking up on adherence to standards, housekeeping, etc.	Yes	No
Does the contractor or subcontractor conduct formal safety inspections?		
Do the contractor's management / supervisors lead the inspections and make themselves accountable for correcting deficiencies arising from the audit?		
Has the contractor supplied a copy of a standard workplace inspection checklist?		
Does the contractor have a method for evaluating daily worksite conditions (such as 5-point, Field Level Risk assessment, safety contact sheet, stop cards, etc.) Are examples provided?		
Does the contractor or subcontractor conduct formal audits of the safety program with team members from other facilities and departments no less than annually?		
Has an example of the audit protocol been provided?		
Health Surveillance: Pre-placement health evaluations take place and routine health surveillance were indicated, (e.g. Medicals for drivers, medical pre-screening for altitude, dust and noise surveys, etc.).	Yes	No
Has the contractor or subcontractor provided a copy of a written health surveillance program?		
Does the contractor maintain health records for employees after their termination?		
Does the contractor have access to an industrial hygienist?		
Incident Management and Investigation: All incidents are reported according to a company procedure and there is line responsibility for investigation and follow-up.	Yes	No
Has the contractor or subcontractor provided a documented procedure for reporting, investigating, and following up on all incidents including medical, property damage, loss to process, environmental incidents, near miss incidents?		
Does the contractor converting these incidents and/or near misses into its ongoing safety awareness and training meetings?		
Has the contractor provided a copy of an incident report form?		

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ATTACHMENT B

Risk Management: Appropriate techniques are used to assess risk and implement any changes needed (i.e. Job Safety analysis, HAZOP, Field Level Risk Assessment, Formal Risk Assessment).	**Yes**	**No**
Has the contractor or subcontractor provided a documented formal risk assessment process and procedure that includes all levels of risk assessment?		
Does the contractor have a Field Level Risk Assessment process that is used by all employees?		
Is there a process or procedure for employees to report safety issues, including follow-up and closure?		
Has the contractor provided documented risk assessments addressing at a minimum the hazards identified in Attachment A for the specific contract?		
Rosters: Works schedules in place that minimize fatigue.	**Yes**	**No**
Do work schedules provide sufficient rest periods between night and day rotations? (Min 48 hours)		
Do work schedules provide no more than, for example, 14 12- hour days in a row without break? (Individual work schedules will need to be established by region, mine and construction project)		
Fitness for Work: policies and procedures in place to ensure employees are not impaired by drugs, alcohol, poor health or fatigue.	**Yes**	**No**
Has the contractor provided a copy of a drug and alcohol policy that matches or exceeds the site policy?		
Are there defined steps for supervisors to take if an employee is suspected of not being fit for duty, with consequences?		
Has the contractor provided written procedures for adherence?		
Is screening for drugs a part of the initial medical screen for work?		
Does the contractor have a fitness for work policy that includes fatigue and health issues?		

ATTACHMENT C

SAMPLE SIMPLIFIED PRE-QUALIFICATION SUMMARY

Safety and Health Performance	Acceptable	Needs Improvement
Safety Performance	☐	☐
Comments:		
Environmental, Health and Safety Program	**Acceptable**	**Needs Improvement**
Safety Plan	☐	☐
Safety Policy	☐	☐
Safety Manual/Procedures	☐	☐
Safety Advice	☐	☐
Training	☐	☐
Audit System	☐	☐
Health Surveillance	☐	☐
Incident Management and Investigation	☐	☐
Risk Management	☐	☐
Rosters	☐	☐
Fitness for Work	☐	☐
Emergency Procedures	☐	☐
	Yes	**No**
Feedback provided to contractor:	☐	☐
Date: ____________ Comments:		
Reviewed by: ____________	Date: ____________	
Reviewed by: ____________	Date: ____________	
Reviewed by:	Date:	
Reviewed by:	Date:	

ATTACHMENT D

LIST OF DOCUMENTS TO BE PROVIDED BY THE CONTRACTOR

1. 3 year history of safety performance (where available)
2. Example of incident and cost trend analysis
3. Health and Safety Policy
4. Health and Safety Management Plan
5. Risk assessments for risks identified in Attachment A
6. Safe work procedures for risks identified in Attachment A
7. Work permits and standards
8. Procedure for handling, transportation and storage of hazardous substances
9. Training outline for all levels of employees and sample records
10. Outline of safety contact duties and responsibilities
11. Workplace inspection form
12. Example or outline of daily worksite conditions evaluation method
13. Formal audit protocol
14. Health surveillance program
15. Incident reporting procedure and form
16. Risk assessment process
17. Proposed work schedules
18. Fit for duty policy and program
19. Emergency procedure outline

14.0 MANAGEMENT OF CHANGE

14.1 Policy

Uncontrolled changes within organizations and facilities can have catastrophic consequences. Tata Steel Minerals Canada will ensure that there is a process of planning, organizing, controlling, executing and monitoring changes so that they do not cause injury to people or damage to physical assets. The operation shall define areas where changes have the potential to create high risks and ensure evaluation and approval of proposed changes before they are made.

Our Management of Change process will ensure that:

- All applicable changes are subject to an appropriate degree of review by the right people;
- An adequate level of documentation is provided for every change – including updates for existing documentation such as drawings, training materials, parts lists and operating and maintenance procedures;
- Changes are effectively communicated to people impacted;
- Changes meet all regulatory and internal policy requirements;

14.2 Scope

This procedure is used to control all facility and process operational changes of both a temporary and permanent nature before, during and after implementation. This Management of Change procedure applies to:

- Plant & equipment changes other than replacement with same;
- Operating and administrative process changes;
- Design and construction changes;
- Electrical power distribution changes and alterations to feed sources;
- Standing maintenance procedures -standard jobs, written repair procedures;
- Organizational accountabilities;
- Consumable material changes;
- Programmable logic controller (PLC) software changes – logic ladders, permissives, interlocks, jumpers;
- Traffic flow patterns and /or signage;
- Pit design and mining plan changes;

- Major contractor activity on site – starting, ending or changing.

This procedure **does not** apply to:

- Corrections in and routine updating of operating and maintenance procedures that do not result in changes in how the work is done;
- Addition of rules, protective equipment or other action intended to improve safety and health, either temporary or permanent;
- Corrections and enhancements to isolation checklists that follow the validation and approval process outlined in the Isolation Program procedures.

14.3 Change Process

14.3.1 Identification and Recognition of Change

Awareness training must be provided to all employees and management so that they are able to recognize when the changes being considered fall under a category requiring formal approval using this Change Management Procedure. (Exhibit 14.3.1)

14.3.2 Change Risk Assessments

All changes being considered must be evaluated for potential risks to the health and safety of employees, contractors and the general public as well as property and process losses and damage to company image and community relations.

Change risk assessments require participation from stakeholders impacted by the change, technical experts, health and safety advisors and a person skilled in the risk assessment process.

The results of the risk assessment shall be documented to show: risks, a risk ranking, mitigating actions or controls along with the responsibility for implementation and a sign-off provision to ensure that implementation is completed.

14.3.3 Change Proposals

A Change Proposal form (Exhibit 14.3.3) must be completed before any changes are implemented. Written proposals must include:

- ✓ A description of the change – whether it is temporary or permanent;
- ✓ Justification for the change – why it is necessary or desired;
- ✓ The expected or desired outcomes from the change;
- ✓ The criteria under which the change will be evaluated and the acceptance checks that will be necessary before hand-over for normal operation;
- ✓ Departments, work groups and others who may be impacted by the changes;

- ✓ A summary of the main risks identified in the risk review, along with the mitigating actions, responsibility and time frame for implementation;
- ✓ Identification of document updates that will be required as a result of the changes and the names of people responsible;
- ✓ The strategy or steps required to announce and communicate the change, including any training required;
- ✓ Approvals;
- ✓ Close-out and sign-off.

14.3.4 Change Approval

Change proposals must be submitted for approval by senior site managers for each of the impacted areas. Approval by the site senior manager, health, safety and security is required as a final signature to ensure that the process has been followed and diligence has been done in reviewing and mitigating risks and identifying the stakeholders affected.

14.3.5 Document Management

All change proposals are to be electronically filed in a directory managed by the Heath, Safety and Security Department for at least two (2) years from date of implementation. Electronic files shall include scanned signature and sign-off pages.

14.4 Emergency Change Procedure

The senior site manager must give written approval for any emergency changes that would otherwise require the full procedure to be followed. As a minimum, the change description and justification needed to be written for the senior manager's signature.

A copy of the approved change document shall be forwarded to the senior manager, health, safety and security for follow-up and filing.

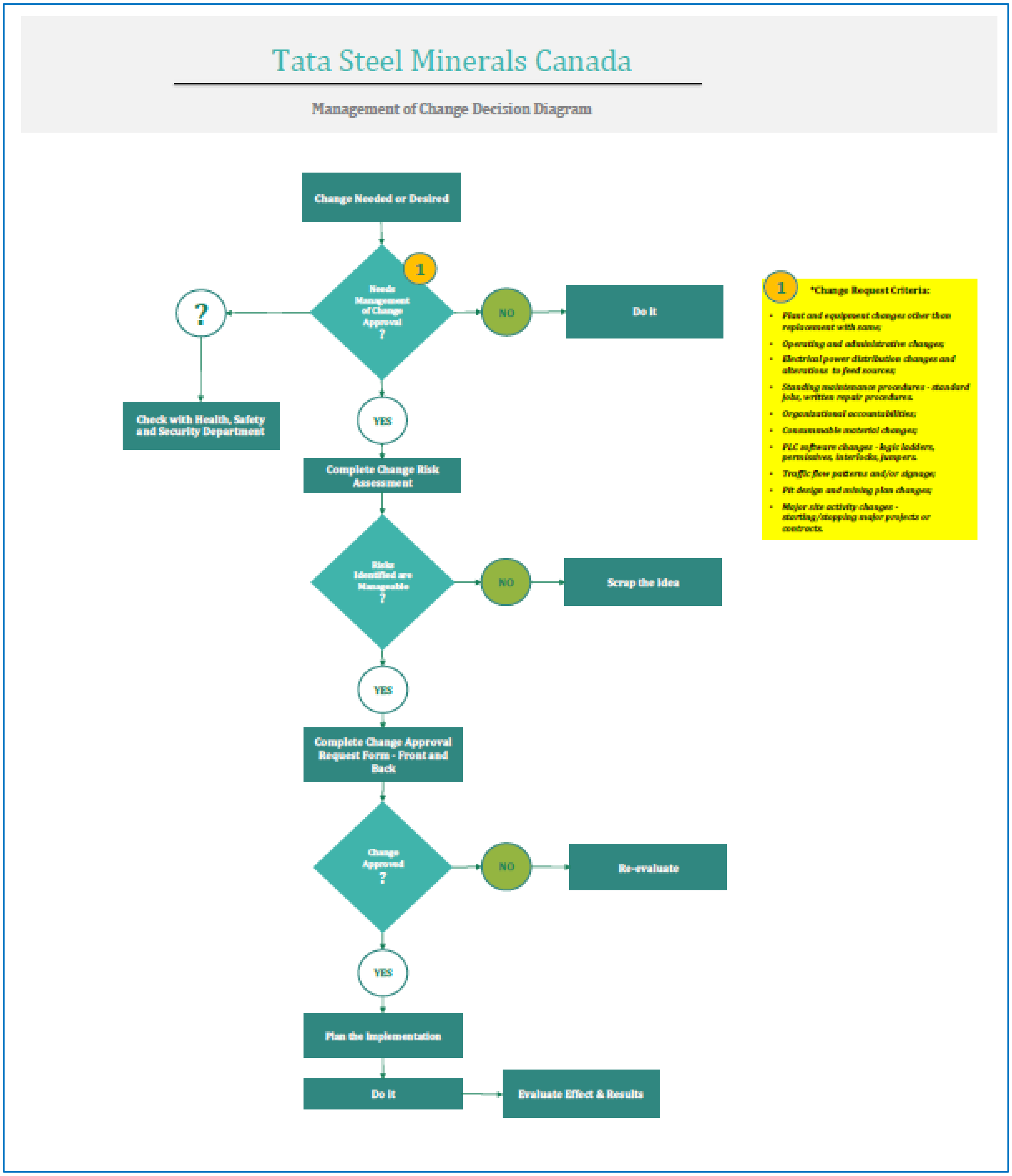

Exhibit 14.3.1: Change Management Process Decision Diagram

TATA STEEL MINERALS CANADA LIMITED

TATA

Change Approval Request

Project Name:	**WBS Code:**	
Area / Department:		
Required Date:	☐ **Temporary**	☐ **Permanent**
Prepared By:	**Title:**	**Date:**

Type of Change - (circle one)

Design or Construction	Plant & Equipment	DCS/PLC/Permissives/Jumpers	Organizational Accountabilities
Power Distribution	Operating / Administrative	Procedural - Maintenance	Materials (consumable)
Traffic Rules/Patterns	Pit Design / Mine Plan	Procedural - Operations	Major Activity Start/Stop
Site Rules	Other (Specify)		

Description of Proposed Change:

Justification for Change:

Change Authorizations

Name (legible)	*Title*	*Signature*	*Date*

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Exhibit 14.3.3: Change Approval Request Form (Page 1)

15.0 HEALTH STANDARDS

15.1 Policy

TSMC is committed to the health and welfare of its employees and is concerned with all issues relating to health and fitness for work. To this end, the company aims to:

- Carry out necessary medical screening-both pre-employment and ongoing as necessary to monitor worker health;
- Carry out surveys and risk assessments and to provide advice on issues relating to workplace ergonomics, occupational hygiene and safety;
- Provide first aid training and first aid services and supplies;
- Give general medical and health advice and information to employees;
- Provide support and coordination in the event of injury or illness on the fitness to return to work and/or rehabilitation needs of individuals. Assist those individuals when they return to work to enable them to settle into their work pattern with minimum stress and disruption.

15.2 Scope

This set of standards applies to all employees and all worksites and is intended to be dynamic - based on the requirements under applicable regulations and codes of practice along with the assessed and evolving needs of the operations.

15.3 Occupational Health Hazard Assessment

There shall be a site health hazard assessment conducted or reviewed annually, to assess the health risks and provide the basis for development of targeted monitoring and prevention programs.

The assessment shall consider the following factors:

- Exposure to plant, equipment and occupational noise, air pollution and hazardous substances;
- Ergonomics;
- Lifestyle factors relating to camp living, extended work hours, catered food services, exercise and fitness limitations;
- Stress and hypertension causes and associated risks;
- The potential for harassment and violence;
- Functional requirements for occupational groups.

Risks associated with each identified hazard shall be assigned a ranking so that priorities may be established for program development.

15.4 Noise Surveys and Hearing Conservation

Exposure to high levels of noise can cause permanent hearing loss. Short term exposure to loud noise can cause a temporary change which may go away within a few minutes or hours after leaving the noisy area. However, repeated short-term exposures to loud noise can also lead to permanent hearing loss. The effects of hearing loss can be profound for workers and costly for employers.

At TSMC operations, noise surveys will be conducted in order to identify areas, occupations or activities that exceed threshold limit values (TLV) established by the ACGIH[1] and referenced in Section 68 of the NL Occupational Health and Safety Regulations:

> *68. (1) When a worker is required to work in an area in which noise levels exceed the criteria for permissible noise exposure established by the ACGIH Noise Threshold Limit Values (TLVs)*
>
> *(a) the employer shall first take appropriate action to implement control measures to reduce noise to acceptable levels; and*
>
> *(b) where it is not practicable to reduce the noise to acceptable levels or to isolate workers from the noise, the workers shall wear personal protective equipment in accordance with CSA Z94.2 "Hearing Protection Devices - Performances, Selection, Care and Use".*

Based on the noise surveys, an appropriate program will be established and maintained. Elements of the program include:

- Ongoing workplace noise sampling including personal noise monitoring which identifies which employees are at risk from hazardous levels of noise;
- Establishing and enforcing areas where use of hearing protection is mandatory;
- Informing workers at risk from hazardous levels of noise exposure of the results of the monitoring;
- Providing the site OHS Committee with the data on any noise measurements conducted;
- Maintaining a worker audiometric testing program (hearing tests) as part of the medical surveillance program required for mining operations;
- Implementing comprehensive hearing protection follow-up procedures for workers who show a loss of hearing after completing baseline and ongoing audiometric testing;

[1] American Congress of Industrial Governmental Hygienists

- Proper selection of hearing protection based upon individual fit and manufacturer's quality testing indicating the likely protection that they will provide to a properly trained wearer;
- Training and information that ensures that workers are aware of the hazard from excessive noise exposures and how to properly use the protective equipment that has been provided;
- Data management of records regarding monitoring and noise sampling.

15.5 Respiratory Protection

Due to the natural occurrence of silica in the ore body, exposure to airborne dust must be monitored and controlled. The long-term health effects of silica exposure are well understood and stringent regulations have been enacted to ensure that workers are protected as much as possible by minimizing dust levels and providing the most appropriate respiratory equipment.

The following terms require definition:

Silica: a naturally occurring mineral found in granite, sandstone, slate and shale. It can also be found on construction sites where rock dust is present. Silica dust can be inhaled and accumulated in the lungs.

Silicosis: a progressive disease that belongs to a group of lung disorders called pneumoconiosis. Silicosis is marked by the formation of lumps (nodules) and fibrous scar tissue in the lungs.

Silica Code of Practice: a legislated framework for managing silica dust in the workplace through the implementation of an ongoing program consisting of silica hazard identification, evaluation, control, and worker surveillance.

The Silica Code of Practice in the Province of Newfoundland and Labrador requires: *"Each employer to whom this code applies shall develop and implement a silica management program in consultation with the Joint Occupational Health and Safety Committee. The silica management program shall consist of the following elements, as a minimum.*

a. Dust exposure characterization / assessment

b. Evaluation of exposure levels

c. Dust control

d. Dust Hazard Awareness Training

e. Personal Protective Equipment/Respiratory protection

f. Medical surveillance

g. Record keeping"

15.5.1 Silica Management Plan

In compliance with the Silica Code of Practice requirements, TSMC has developed a Silica Management Plan containing the elements listed above. This plan and its implementation and maintenance are the responsibility of the Environment Department.

The training program required under the Code of Practice, includes:

a) Health hazards and potential risks of silica exposure;

b) Nature of silica exposure (tasks, procedures, equipment, processes and areas which could result in / contribute to silica exposure);

c) Method of assessing and evaluating silica exposure;

d) Control of silica hazards, including engineering, administrative and PPE;

e) Safe work procedures for the handling, use, or release of silica;

f) Personal hygiene procedures;

g) Overview of Silica Management Program and its subcomponents;

h) Administrative process related to medicals, handling of confidential information, communication, and follow-up;

i) Respirators, fit testing;

j) Mandatory use of respirators.

15.6 Temperature Extremes

Cold temperatures and increased wind speed (wind chill) cause heat to leave the body more quickly, putting workers at risk of cold stress. Anyone working in the cold may be at risk.

15.6.1 Common Types of Cold Stress

Hypothermia

- Normal body temperature (98.6°F) drops to 95°F or less.
- Mild Symptoms: alert but shivering.
- Moderate to Severe Symptoms: shivering stops; confusion; slurred speech; heart rate/breathing slow; loss of consciousness; death.

Frostbite

- Body tissues freeze, e.g., hands and feet. Can occur at temperatures above freezing, due to wind chill. May result in amputation.

- **Symptoms:** numbness, reddened skin develops gray/ white patches, feels firm/hard, and may blister.

Trench Foot (also known as Immersion Foot)

- Non-freezing injury to the foot, caused by lengthy exposure to wet and cold environment. Can occur at air temperature as high as 60°F, if feet are constantly wet.
- Symptoms: redness, swelling, numbness, and blisters.

15.6.2 Risk Factors and Prevention,

Dressing improperly, wet clothing/skin, and exhaustion The Supervisor Should:

- Train you on cold stress hazards and prevention.
- Provide engineering controls, e.g., radiant heaters.
- Gradually introduce workers to the cold; monitor workers; schedule breaks in warm areas.

Individuals should:

- Know the symptoms; monitor yourself and co-workers.
- Drink warm, sweetened fluids (no alcohol).
- Dress properly:
    - Layers of loose-fitting, insulating clothes
    - Insulated jacket, gloves, and a hat (waterproof, if necessary)
    - Insulated and waterproof boots

What to Do When a Worker Suffers from Cold Stress

For Hypothermia:

Call for medical responders and take steps to prevent further heat loss:

- Move the worker to a warm place.
- Change to dry clothes.
- Cover the body (including the head and neck) with blankets, and with something to block the cold (e.g., tarp, garbage bag). Do **not** cover the face.
- If medical help is more than 30 minutes away, give warm, sweetened drinks if alert and apply heat packs to the armpits, sides of chest, neck, and groin.

For Frostbite:

Follow the recommendations for hypothermia and:

- Do not rub the frostbitten area.
- Avoid walking on frostbitten feet.
- Do not apply snow/water. Do not break blisters.
- Loosely cover and protect the area from contact.
- Do not try to rewarm the area unless directed by medical personnel.

For Trench (Immersion) Foot:

- Remove wet shoes/socks; air dry (in warm area); keep affected feet elevated and avoid walking. Get medical attention.

15.6.3 Tips To Protect Workers in Cold Environments

- Recognize the environmental and workplace conditions that may be dangerous.
- Learn the signs and symptoms of cold-induced illnesses and injuries and what to do to help workers.
- Train workers about cold-induced illnesses and injuries.
- Encourage workers to wear proper clothing for cold, wet and windy conditions, including layers that can be adjusted to changing conditions.
- Be sure workers in extreme conditions take a frequent short break in warm dry shelters to allow their bodies to warm up.
- Try to schedule work for the warmest part of the day.
- Avoid exhaustion or fatigue because energy is needed to keep muscles warm.
- Use the buddy system - work in pairs so that one worker can recognize danger signs.
- Drink warm, sweet beverages (sugar water, sports-type drinks) and avoid drinks with caffeine (coffee, tea, sodas or hot chocolate) or alcohol.
- Eat warm, high-calorie foods such as hot pasta dishes.
- Remember, workers face increased risks when they take certain medications, are in poor physical condition or suffer from illnesses such as diabetes, hypertension or cardiovascular disease.

15.7 Personal Health and Wellness Promotion

The site shall offer weekly a Wellness Clinic Day to provide employees and contractors with an opportunity to visit and consult with the site occupational nurse on personal health matters.

During visits, the nurse may provide monitoring and offer advice on dietary and lifestyle changes or recommend further assessment to be done by a medical doctor while off-site.

The site nurse presents health and wellness information at group safety meetings at the request of supervisors or whenever issues arise that warrant a direct exchange between a medical professional and the workers.

Site Wide Alerts and postings are used to communicate with the general workforce on timely topics relating to health and wellness.

16.0 HOUSEKEEPING & ORDER

16.1 Policy

Tata Steel Minerals Canada has established a set of minimum expectations that defines acceptable housekeeping and order. These are characterized by the following:

- Materials and supplies are stored in an orderly manner so as to prevent objects falling or spreading and to eliminate tripping and stumbling hazards; *"A place for everything and everything in its place"* is the order of the day.
- Work locations, vehicles, and both inside and outside of buildings are kept clean and orderly at all times.
- Combustible materials, such as oil soaked rags; waste and shavings are kept in approved metal containers with metal lids. Containers are emptied as soon as practicable.
- Flammable liquids are not be used for cleaning purposes.
- All solvents are kept in approved, properly labeled containers and dispensed only with approved, properly labeled containers.
- Floors and platforms are kept free of dangerous projections or obstructions and maintained reasonably free of oil, grease or water.
- Emergency exits, walkways, and material storage areas are kept free from obstruction, depressions and debris.
- Waste bins are emptied regularly before they overflow.

16.2 Scope

The Housekeeping and Order program provides a set of standards under which operating areas are to develop acceptable practices characteristic of safe and health workplaces.

16.3 Purpose

Effective housekeeping can eliminate some workplace hazards and help get a job done safely and properly. Poor housekeeping can frequently contribute to incidents by hiding hazards that cause injuries. If the sight of paper, debris, clutter and spills is accepted as normal, then other more serious health and safety hazards may be taken for granted.

Housekeeping is not just cleanliness. It includes keeping work areas neat and orderly; maintaining walkways and floors free of slip and trip hazards; and removing of waste materials (e.g., used parts, waste oils) and other fire hazards from work areas. It also requires paying attention to important details such as the layout of the whole workplace, aisle marking, the adequacy of storage facilities, and maintenance. Good housekeeping is also a basic part of incident and fire prevention.

Effective housekeeping is an ongoing operation: it is not a hit-and-miss cleanup done occasionally. Periodic "panic" cleanups are costly and ineffective in reducing incidents.

Poor housekeeping can be a cause of incidents, such as:

- Tripping over loose objects on floors, stairs and platforms;
- Being hit by falling objects;
- Slipping on greasy, wet or dirty surfaces;
- Striking against projecting, poorly stacked items or misplaced material;
- Cutting, puncturing, or tearing the skin of hands or other parts of the body on projecting nails, wire or steel strapping.

To avoid these hazards, the workplace must "maintain" order throughout a workday. Effective housekeeping results in:

- Reduced handling to ease the flow of materials;
- Fewer tripping and slipping incidents in clutter-free and spill-free work areas;
- Decreased fire hazards;
- Lower worker exposures to hazardous substances (e.g. dusts, vapours);
- Better control of tools and materials, including inventory and supplies;
- More efficient equipment cleanup and maintenance;
- Better hygienic conditions leading to improved health;
- More effective use of space;
- Reduced property damage by improving preventive maintenance;
- Less janitorial work;
- Improved morale;
- Improved productivity (tools and materials will be easy to find);

16.4 Storage of Materials

Good organization is essential for overcoming material storage problems whether on a temporary or permanent basis. Stored materials should not obstruct aisles, stairs, exits, fire equipment, emergency eyewash fountains, emergency showers, or first aid stations. All storage areas should be clearly marked.

Flammable, combustible, toxic and other hazardous materials should be stored in approved containers in designated areas that are appropriate for the different hazards that they pose. Storage of materials should meet all requirements specified in the fire codes and regulations.

16.5 Waste Disposal

The regular collection, grading and sorting of scrap contribute to good housekeeping practices. It also makes it possible to separate materials that can be recycled from those going to waste disposal facilities.

Allowing material to build up on the floor wastes time and energy since additional time is required for cleaning it up. Placing scrap containers near where the waste is produced encourages orderly waste disposal and makes collection easier. All waste receptacles should be clearly labelled (e.g., wood, steel, general garbage, etc.).

16.6 Housekeeping Audits

A program of housekeeping audits focuses increased attention on problem areas that show evidence of a chronic, perhaps underlying problem. Additional inspections of areas deemed to be not complying with the expectations put forth by company leadership are required in order to define and correct the cause.

Once the need for improved housekeeping has been identified in an area, a frequency and responsibility for additional surveillance is established by the senior site manager who may request or require an improvement action plan.

CNS

Emergency Number :613-996-6666 (Canutec 24h)

MATERIAL SAFETY DATASHEET

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY

Product name: **IRONSORB 1805-3**

Company: CNS INC.
159 Pere Divet Street
Sept-Iles, Quebec, G4R 3P5 Canada

Telephone: (418)-962-6523
Fax: (819)-948-9149

Product Use: Humidity Absorbent for Iron Ore transportation (DSO)

2. HAZARDS IDENTIFICATION

Appearance and Odor:

Form: Granular solid

Color: Off-white to light brown

WHMIS Classification: Not controlled.

Other information:
The product swells in water.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Identification: Superabsorbent polyacrylamide.

Regulated Components: None.

4. FIRST AID MEASURES

Inhalation: No hazards which require special first aid measures.

Skin contact: No hazards which require special first aid measures.

Eye contact: Rinse thoroughly with plenty of water, also under the eyelids. In case of persistent eye irritation, consult a physician.

Ingestion: Rinse mouth. Do not induce vomiting. No hazards which require special first aid measures.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Water. Water spray. Foam. Carbon dioxide (CO2). Dry powder.

Precautions: The product swells in water.

Special protective equipment for firefighters: Wear self-contained breathing apparatus and protective suit.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: No special precautions required.

Environmental precautions: As with all chemical products, do not flush into surface water.

Methods for cleaning up: Clean up promptly by sweeping or vacuum. Keep in suitable and closed containers for disposal. After cleaning, flush away traces with water.

7. HANDLING AND STORAGE

Handling: Avoid contact with skin and eyes. Avoid dust formation. Do not breathe dust. Wash hands before breaks and at the end of workday.

Storage: Keep in a dry place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures: Use local exhaust if dusting occurs. Natural ventilation is adequate in absence of dusts.

Personal protective equipment:

Respiratory protection: Dust safety masks are recommended where concentration of total dust is more than 10 mg/m^3.

Hand protection: Gloves are recommended.

Eye protection: Safety glasses with side-shields. Do not wear contact lenses where this product is used.

Skin and body protection: No special protective equipment required.

Hygiene measures: Wash hands before breaks and at the end of workday. Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form: Granular solid

Color: Off-white to light brown

Melting point/range (°C): Not applicable

Flash point (°C): Not applicable

Autoignition temperature (°C): Not applicable

Approx. bulk density: 0.65 - 0.75

Water solubility: Insoluble

LogPow: Insoluble

10. STABILITY AND REACTIVITY

Stability: Stable. Hazardous polymerisation does not occur.

Materials to avoid: The product swells in water.

Hazardous decomposition products: Thermal decomposition may produce: nitrogen oxides (NOx), carbon oxides (COx), hydrogen cyanide (hydrocyanic acid).

11. TOXICOLOGICAL INFORMATION

Acute toxicity:

Oral: LD50/oral/rat > 5000 mg/kg.

Dermal: LD50/dermal/rabbit > 5000 mg/kg.

Irritation:

Skin: Not irritating.

Eyes: Moderate eye irritation due to effects all powders have on conjunctivae.

Sensitization: Not sensitizing.

12. ECOLOGICAL INFORMATION

Aquatic toxicity:

Toxicity to fish: Aquatic toxicity is unlikely due to low solubility

Toxicity to daphnia: Aquatic toxicity is unlikely due to low solubility

Toxicity to algae: Aquatic toxicity is unlikely due to low solubility

Environmental fate:

Persistence and degradability: Not readily biodegradable.

Hydrolysis: Does not hydrolyse.

Bioaccumulation: Does not bioaccumulate.

LogPow: Insoluble.

13. DISPOSAL CONSIDERATIONS

Waste from residues/ unused products: In accordance with local, state and federal regulations.

Contaminated packaging: Can be landfilled or incinerated, when in compliance with local, state and federal regulations.

14. TRANSPORT INFORMATION

Not classified as dangerous in the meaning of transport regulations.

15. REGULATORY INFORMATION

WHMIS Classification: Not controlled.

Ingredient Disclosure List (IDL): No components listed on the WHMIS ingredients disclosure list.

Domestic Substances List (DSL): All components of this product are either listed on the inventory or are exempt from listing.

16. OTHER INFORMATION

This MSDS was prepared in accordance with the following:
ISO 11014-1: Material Safety Data Sheet for Chemical Products

The data in this Material Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process. This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained

Ms. Yvonne Jones
Elected Member of Parliament
118 Humphrey Road
Labrador City, A2V 2J8
Newfoundland and Labrador

October 15th, 2014

RE: Information and Consultation - Environmental Assessment: Howse Property Project

Dear Ms. Jones,

As you may be aware, Howse Minerals Limited (HML) (a wholly-owned subsidiary of Tata Steel Minerals Canada Ltd (TSMC), signatory to an unincorporated joint venture with TSMC and Labrador Iron Mines (LIM)) proposes to develop the Howse Property Project (the Project) in the Millennium Iron Range. The deposit is located 25 km northwest of Schefferville, Québec (see attached map). The Canadian Environmental Assessment Agency (CEAA) has required an environmental assessment (EA) of the Project, and final guidelines were issued in July 2014[1].

TSMC is currently building and operating the Direct Shipping Ore Project, adjacent to the Project, and will be the operator of the Project to carry-out all technical, management and administrative operations. The construction and exploitation of the Howse Deposit will rely on existing infrastructure and facilities that were built (or that will soon be built) for the purposes of the DSO Project. Infrastructure already in place includes:

- workers' camp;
- crusher;
- railway;
- mining equipment;
- explosives storage area.

Undertaking the Project will bring about changes to the environment, including one open pit and its related overburden stockpile and waste rock dump and will require the construction of a new road between Timmins 4 pit and the planned Howse deposit, and the installation of crushing facilities.

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[1] Information relative to the Howse Property Project's environmental evaluation process may be found on the CEAA website: http://www.ceaa-acee.gc.ca/050/documents-eng.cfm?evaluation=80067

TATA STEEL MINERALS CANADA LIMITED
1000 Sherbrooke West, Suite 1120, Montreal, Quebec, H3A 3G4, Canada
Tel: 001 514 764 6700, Fax: 001 514 764 6725
Registered Office: Suite 1700, Park Place, 666 Burrard Street, Vancouver, BC V6C 2X8, Canada

The Project will also secure continuity of mining projects undertaken by TSMC and LIM respectively, thus allowing the continuation of economic development in the greater Schefferville region, including employment, business opportunities, and other economic spin-offs such as revenue-sharing with Aboriginal groups.

Groupe Hémisphères has been given the mandate by HML to conduct the required environmental assessment (EA).

This letter is to inform you that the formal consultation process for the EA has recently begun and we would like to see whether you would have comments or concerns regarding the Howse Property Project. Of particular interest are comments regarding potential project effects (negative or positive), ideas for mitigation measures, or views on cumulative effects.

We respectfully request that you provide your comments and questions by **November 17th, 2014**, to:

Geneviève Dionne
Project Manager, Social issues and community engagement
Genevieve.dionne@snclavalin.com

550 Sherbrooke St. West
Montréal | Québec | Canada | H3A 1B9

514-393-8000 ext. 53600

Best regards,

Rajesh Sharma
CEO and Managing Director

Encl.: Information Pamphlet - Howse Property Project

NEW MILLENNIUM
CAPITAL CORP.

DIRECT-SHIPPING ORE PROJECT

Women's Employment Plan for the Elross Lake Area Iron Ore Mine

November 2010

Women's Employment Plan for the Elross Lake Area Iron Ore Mine

New Millennium Capital Corp. (NML)

November 28, 2010

TABLE OF CONTENTS

1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

New Millennium Capital Corp. (NML) recognizes the importance of the Elross Lake Area Iron Ore Mine (ELAIOM, the Project) to the Province of Newfoundland and Labrador, and is committed to ensuring that the people of the province benefit directly from the associated employment and business opportunities. In ensuring that these benefits and opportunities are equally available to all Newfoundlanders and Labradorians, NML believes that the implementation of an effective Women's Employment Plan (WEP, the Plan) is essential.

Women continue to be under-represented in trades, technology, science and engineering-related occupations. In attempting to raise female participation in these fields, industry consistently faces recruitment and retention challenges. These challenges often stem from a lack of direct and active focus on creating and supporting innovative gender-equity initiatives.
NML commits to developing, implementing, and supporting initiatives aimed at increasing the number of women employed in non-traditional occupations in the ELAIOM.

This Plan will describe the gender-equity goals and initiatives that NML plans to implement throughout the life of the ELAIOM to ensure that women, including Aboriginal women, have fair and equal access to beneficial opportunities generated by the Project. In pursuing these goals, NML will work collaboratively with government, educational institutions, organized labour, community organizations, industry associations, contracting and sub-contracting companies, as well as other interest groups.

1.2 Background

1.2.1 Elross Lake Area Iron Ore Mine

NML is developing the ELAIOM, which is located in the Province of Newfoundland and Labrador some 20 km north-west of Schefferville, Quebec.

The ELAIOM is a small brownfield project of four deposits located entirely in Labrador that can be brought into production with only modest environmental impacts and relatively quickly given the infrastructure that already exists in the Schefferville area. Of the total area to be disturbed (~ 96 ha), approximately half has already been disturbed by prior mining.

The Project will involve mining run-of-mine ore ("ROM"). After crushing, washing, screening and (in winter) drying, the ROM will produce direct-shipping ore products ("DSO"). The products will be shipped by rail to the Port of Sept-Îles, Quebec.

The ELAIOM has two phases. Phase One consists of mining two of four sectors, sector 2 and sector 3, which represent about 20% of the resources. It is estimated the Project will employ a total of 150 people in the construction phase, which will be approximately 15 months in duration. Construction will, in very large part, be contracted out. During the operations of Phase One, it is estimated that the Project will employ approximately 240 people. The duration of employment will be at least 11 years.

Phase Two of the Project, which is referred to as the Future Phase, will involve mining of sectors 1 and 4. Approximately 75% of NML's DSO resources are located in sector 4. Production in sector 4 is expected to span 10-13 years, and the life of the mineral processing facilities built in Phase One will be extended accordingly. The total duration of the DSO Project, including Phase Two, will be approximately 15 years.

NML submitted its Environmental Impact Statement (EIS) to the Government of Newfoundland and Labrador (GNL) in December 2009. The EIS includes a commitment to prepare and implement a WEP.

1.2.2 Women's Employment Plan

The Women's Policy Office has recommended that the proponent of the ELAIOM, NML, be required to submit a WEP designed to prevent, reduce or eliminate employment inequities that could potentially be, or actually are, experienced by women. This applies in particular to trades, technology, science and engineering-related occupations. The Department of Natural Resources requires that NML develop, submit, and implement this WEP. Under this requirement, this Plan has been developed for submission to the Minister Responsible for the Status of Women prior to the commencement of any construction-related activities for the Project. It was recommended the WEP include the following:

(i) Positive policies, practices and reasonable accommodations to be instituted in the short-term for the hiring, training, promotion and retention of women;

(ii) Short-term measures to be taken by the proponent to eliminate employment barriers;

(iii) A timetable for the implementation of the positive policies, practices and measures to eliminate employment barriers;

(iv) Short-term numerical goals for the hiring and promotion of women in each occupational category where under-representation exists;

(v) Longer-term numerical goals for increasing women's representation, including a strategy for achieving set goals; and

(vi) Plans for monitoring and public reporting on progress.[1]

The Plan includes provisions relating to: a communications strategy; targets for women's employment and access to business opportunities; an implementation plan; leadership and accountability mechanisms; a monitoring, reporting and implementation schedule; and periodic evaluations and amendments. It also contains important goals for education and training, as well as for the recruitment and retention of Aboriginal women.

[1] Boland, B (January, 2009). Report on Gender Equity Requirements for NML Submission to Government of Newfoundland and Labrador EIS Submission

2.0 COLLABORATIVE APPROACH

A collaborative approach was applied to the development of the WEP, and NML will continually make efforts to collaborate with all stakeholders, understanding that collaboration is essential for effectively implementing the WEP and in supporting gender-equity initiatives.

NML recognizes that active and focused collaboration with our contractors, community groups, educational institutions, governments and labour unions, as well as other interest groups will be essential in the successful achievement of the goals of the Women's Employment Plan. Goals for collaborative efforts are outlined throughout this Plan.

2.1 Working with Our Contractors

NML will work closely with its main contractors to ensure awareness of and compliance with the WEP. The company will also include gender-equity provisions in its calls for bids and criteria for evaluating them.

In recognizing that the success of the WEP is the overall responsibility of NML, the company will work diligently to support its contractors and subcontractors in meeting their women's employment goals and requirements, while also collaborating on initiatives to further women's employment on the Project.

Detailed Leadership and Accountability mechanisms in relation to working with our contractors are outlined in Section 6.0 of this Plan.

2.2 Working with Community Groups

NML recognizes the valuable expertise community organizations, including women's and Aboriginal groups, have to offer in relation to women's employment and business access. It will build collaborative relationships with these groups to share information and knowledge, which will aid in the effective implementation of the WEP. NML will actively seek input from these groups in order to anticipate potential challenges and to develop creative solutions, as well as to gather feedback for continuous improvement.

NML commits to identifying opportunities for collaboration on initiatives with community groups, and to supporting women's employment and business-access-related programs and initiatives offered by community groups.

2.3 Working with Other Stakeholders

2.3.1 Educational Institutions

NML understands the importance of providing accurate information for raising women's awareness about opportunities in non-traditional fields, as well as for preparing them to take advantage of these opportunities. The Company commits to providing educational institutions with detailed information regarding specific occupations and skill sets that will be required for the ELAIOM, and to making this information available to the public.

NML commits to working in collaboration with educational institutions to inform women about available and upcoming training and employment opportunities. This will involve collaborating with target women to encourage them to pursue careers in non-traditional occupations, particularly within the mining industry.

2.3.2 Government

NML recognizes the progressive efforts taken by government to encourage women and Aboriginal women to pursue careers in non-traditional fields and to ensure all women are provided with fair and equal access to education and career opportunities in these fields.

NML commits to working in collaboration with government at all levels to support and move forward women's employment and business-access goals and initiatives. The WEP for the ELAIOM will be implemented in an accountable manner, which complies with government requirements. In implementing this Plan, NML will work to build upon the gender-equity and diversity culture government has been working to achieve in the industry, and in the province as a whole.

2.3.3 Labour

NML understands the key role labour unions play in achieving the goals and targets of this Plan. Working in collaboration with unions will be essential in effectively implementing the WEP.

NML commits to working with labour unions to ensure women have fair and equal access to employment opportunities on site. This will involve exploring and implementing progressive initiatives to remove barriers to women's access to employment opportunities, including exploration of potential female name hires as a measure to address the barriers that union seniority lists can create for women. It will also involve maintaining regular contact with labour unions to exchange information and ideas, as well as inviting them to attend and participate in annual stakeholder meetings for review and feedback on the progress of the WEP.

3.0 COMMUNICATIONS STRATEGY

Effective internal and external WEP-related communications will be essential in the successful implementation of the Plan. This involves communicating the goals and targets of the WEP both internally and externally to ensure awareness and compliance at all levels.

NML recognizes the importance of implementing strategies to communicate opportunities for women and to encourage their participation in those opportunities. An integral component of this communications strategy is identifying and collecting feedback from partnerships with women and from women's groups, as well as from other key stakeholders to ensure continuous improvement.

3.1 Internal

In implementing the WEP for the ELAIOM, it will be essential to establish an overall environment and corporate culture that promotes gender equity in all aspects of the Project. NML recognizes that effective implementation will require demonstrated senior management support for women's employment, as well as a corporate objective and commitment to employment equity. This involves ensuring that managers and employees at all levels within NML and its contracting companies are aware of, and on board with, WEP-related policies and practices.

This will require that all Project participants understand why NML is implementing a WEP, including requirements to do so and goals of the Company in doing so. The Project participants (including managers and employees) play a key role in successful implementation of the WEP, and strategic communication of the business case for equity is an important factor in integrating the WEP.

In communicating the WEP internally, NML will:

- Assign a vice-president – who should be female – to be responsible for gender equity and the overall implementation of the WEP for the ELAIOM, including all WEP-related communications
- Have the vice-president responsible for the WEP commit to ensuring the policies, goals, and initiatives of the Plan are communicated effectively to managers and employees at all levels
- Hire an employment-equity coordinator to ensure effective and focused implementation of the WEP, and to facilitate communications at all levels

- Establish a WEP Committee consisting of senior personnel, led by the responsible vice-president and employment-equity coordinator, to ensure ongoing communication

- Develop and implement a presentation and workshop regarding WEP-related policies, goals and requirements for compliance, to be delivered to all new managers and employees during orientation, and to existing managers and employees as professional development

- Include information in the WEP presentation and workshop regarding the business case for equity and benefits of increasing the participation for women in non-traditional occupations, as well as a detailed explanation why the WEP is being implemented for the ELAIOM

- Provide written material containing detailed information about the WEP to managers and employees at all levels, as well as posting related messages in frequented areas on-site

- Conduct ongoing gender-based analysis to ensure gender-inclusive language is used in all written and verbal internal communications

In effectively implementing the WEP, it will be important to ensure managers and employees receive ongoing information about the program's implementation. It will also be necessary to gather ongoing feedback from managers and employees – particularly women – about the implementation of the Plan. This will help to identify areas of success and areas that require improvement. Measures relating to continuous improvement will be detailed further in Section 8.0 of this Plan.

In order to establish ongoing communication, NML will:

- Provide ongoing information to managers and employees regarding gender initiatives that are being taken and supported by NML and its contracting companies

- Include WEP-related information and updates in internal bulletins and notices

- Include WEP-related updates in regular meetings and training sessions

- Hold quarterly, internal-update and feedback sessions to identify areas of success and potential for improvement

- Survey managers and employees – particularly female employees – quarterly to gather feedback and identify areas of success and potential for improvement

- Conduct exit interviews with managers and employees to gather WEP-related feedback and to identify potential ideas for continuous improvement

- Establish communication mechanisms whereby managers and employees can ask WEP-related questions and provide feedback to the employment-equity coordinator on an ongoing basis, for example through a WEP designated e-mail account and site visits

- Provide ongoing information to managers and employees regarding gender initiatives supported by NML and its contracting companies

Communicating with women about internal opportunities for training and advancement in an inclusive and effective manner will be central to implementing the WEP. In recognition of this, NML will:

- Highlight success stories of women in occupations in which they are typically under-represented, and provide information regarding opportunities for training and advancement in internal bulletins, notices, posters and on the Company's website

- Post information regarding opportunities for training and advancement in areas frequented by women, including female washrooms and change rooms

- Use gender-inclusive language and illustrations in postings regarding internal opportunities

- Hold regular internal-information and networking sessions for women on-site to provide opportunities for information sharing

3.2 External

Effectively communicating WEP-related initiatives will involve ensuring that key stakeholders and the public are aware of the Project's culture of gender equity. Demonstrating that NML and its contracting companies are inclusive employers will require a variety of strategies, including:

NML recognizes that in order to communicate opportunities directly to women, it will be necessary to implement a variety of outreach activities. These will include:

- The use of gender-inclusive text and illustrations in all external communications, including promotional/informational material and advertisements
- Providing information and updates regarding the WEP in external bulletins, news releases, media communications and on the Company's website
- Highlighting success stories of women in occupations where they are typically under-represented – providing information regarding public opportunities for training and employment in external bulletins, news releases, media communications and on the Company's website
- The use of gender-inclusive text and illustrations in job advertisements
- Holding public information and networking sessions targeted at women in partnership with women's groups and Aboriginal groups
- Providing training and employment-opportunity-related information to women's groups and Aboriginal groups, communicating opportunities to Aboriginal women in their own communities with a special focus on Inuit and Innu women
- Supporting and participating in community initiatives that promote opportunities for women, particularly in occupations in which women are under-represented
- Posting information regarding opportunities for training and employment in public areas and locations frequented by women, including appropriate areas in educational institutions
- Providing gender-inclusive information regarding training and employment opportunities to guidance counsellors in schools, as well as to employment assistance services providers
- Participating in career fairs, as well as visiting grade schools and post-secondary institutions to promote employment opportunities in the mining industry. Female role models employed by NML and its contracting companies will be included in these activities.

In effectively implementing the WEP, it will also be necessary to gather ongoing feedback from women's organizations and other key stakeholders. This will help identify areas of success, and areas that require improvement. It will also aid in building partnerships aimed at promoting the participation of women in non-traditional occupations in the Project and the mining industry more generally. In order to establish regular communications and opportunities for feedback with stakeholder groups, NML will:

- Provide ongoing information to women's organizations and other key stakeholders regarding gender initiatives that are being taken and supported by NML and its contracting companies
- Forward WEP-related information and updates in bulletins and notices directly to women's organizations and other stakeholder groups
- Welcome feedback and include WEP-related updates in regular stakeholder meetings
- Hold annual group-update and feedback sessions with all stakeholders to identify areas of success and potential for improvement
- Establish communication mechanisms whereby stakeholder groups can ask WEP-related questions and provide ongoing feedback directly to the employment-equity coordinator

4.0 WOMEN'S EMPLOYMENT, TRAINING, AND BUSINESS ACCESS

Quantitative and qualitative goals and targets have been established in relation to women's employment, training and business access. They are also in place for recruitment, selection, retention and promotion of women. Goals and targets are necessary if gender-equity initiatives are to be effective and measurable.

4.1 Women's Employment

Targets for women's employment have been established for the construction phase and operations phase of the ELAIOM. They are projected based on the availability of qualified women within the labour market in relevant occupations, and reflect the nature of employment in the ELAIOM as a fly-in/fly-out mining operation. This reflection is based on observations and experiences of other fly-in/fly-out mining operations in Newfoundland and Labrador and elsewhere.

Establishing targets involved considering the labour that will be required during various phases of the Project in relation to the labour available in the short-term and long-term future, as based on Statistics Canada employment equity-data and post-secondary graduation rates by sex.

In recognizing the importance of increasing women's participation in construction trades, the targets put forth for the construction phase in the tables to follow will apply to the participation of women in apprentice positions as well. The Office to Advance Women Apprentices' registry database was referenced in setting these targets.

4.1.1 Targets for Construction/Preparation Phase

Table 1: Labour Supply by Sex for Construction/Preparation Phase
(Excluding Traditional Clerical, Sales, and Services Occupations)

National Occupational Categories (NOC) for Construction Phase	Total Labour Needed	Available in NL in 2006[2]			
		Men		Women	
		#	%	#	%
Middle and Other Managers	10	845	93.4%	60	6.6%
0711 Superintendent	1	560	94.1	35	5.9
721x Supervisor	3	80	84.2	15	15.8
721x Forepersons	6	205	97.6	10	4.8
Professional Occupations in Natural and Applied Sciences	6	730	76.4%	225	23.6%
2131 Engineer	5	580	84.7	100	14.6
2211 Chemist	1	150	53.6	125	44.6
Technical Occupations Related to Natural and Applied Sciences	21	320	71.2%	130	28.8%
225x Technician	20	50	83.3	10	16.7
2263 Health and Safety Officer	1	270	68.4	120	30.4
Trades, Transport and Equipment Operators and Related Occupations	80	12,545	98.4%	200	1.6%
7242 Electrician	6	660	98.5	10	1.5
7251 Plumber	5	500	99.0	5	1.0
7265 Welder	4	1805	99.4	10	0.6
7271 Carpenter	20	4800	98.9	60	1.2
7264/7611 Steel Erector	15	740	99.3	10	1.3
7311 Millwright	4	1115	97.0	40	3.5
733x Plant Mechanic	20	180	97.3	10	5.4
7372 Blasting*	*	65	100	-	-
7421 Machinery Operator	6	2680	98.2	55	2.0
Trade Helpers, Construction Labourers, Related Occupations	28	4140	88.6%	535	11.4%
7611 Plant Worker	10	3925	88.3	520	11.7
7612 Plant Labour	18	215	93.5	15	6.5
Technical and Skilled Occupations in Health	*	305	60.4%	200	39.6%
3234 Ambulance/First-aid*	*	305	60.4	200	39.6
Total	145	18,885	93.3%	1,350	6.7%

*will be subcontracted

[2] Statistics Canada (2006). Employment Equity Data Report. (Statistics adapted to represent relevant NOC's)

Table 2: 2006-2010 Graduation Rates by Sex for Construction/Preparation Phase
(Technical and Trades, Transport, and Equipment Operators and Related Occupations)

National Occupational Categories (NOC) for Construction Phase	% Female Grads 2006-10	Graduates 2006[3]				Graduates 2007-2010[4]			
		Men		Women		Men		Women	
		#	%	#	%	#	%	#	%
Technical Occupations Related to Natural…									
225x Technician	71%	13	26.5%	36	73.5%	42	29%	103	71%
Trades, Transport and Equipment Operators…	7.1%	612	94.7%	34	5.3%	1199	92%	104	8%
7242 Electrician	8.3	193	94.2	12	5.8	581	91.0	53	9.0
7251 Plumber	2.7	68	95.8	3	4.2	40	100	0	0.0
7265 Welder	8.2	118	95.2	6	4.8	282	90.4	30	9.6
7271 Carpenter	7.0	164	93.7	11	6.3	115	92.0	10	8.0
7264/7611 Steel Erector	-	-	-	-	-	-	-	-	-
7311 Millwright	4.9	69	97.2	2	2.8	181	94.3	11	5.7
733x Plant Mechanic	-	-	-	-	-	-	-	-	-
7372 Blasting**	-	-	-	-	-	-	-	-	-
7421 Machinery Operator	-	-	-	-	-	-	-	-	-

*will be subcontracted

* A Driller Blaster program can be offered as contract training through CNA upon request

[3] Department of Education, Government of Newfoundland and Labrador (2008). Career Search 2008: Employment Experience and Earnings of 2006 Graduates – College of the North Atlantic and Private Training Institutions

[4] College of the North Atlantic 2007-2010 Graduate Data from all provincial campuses

Table 3: Targets for Women's Employment for Construction/Preparation Phase

National Occupational Categories (NOC) for Construction Phase	Total Labour Needed	Available Women 2006[3]		Female Graduates 2006-10[4]		Short-Term Targets		Long-Term Targets	
		#	%	#	%	#	%	#	%
Middle and Other Managers	10	60	6.6%	-	-	1	10%	2	20%
0711 Superintendent	1	35	5.9	-	-				
721x Supervisor	3	15	15.8	-	-				
721x Forepersons	6	10	4.8	-	-				
Professional Occupations in Natural and Applied Sciences	6	225	23.6%	-	-	1	16.6%	2	33%
2131 Engineer	5	100	14.6	-	-				
2211 Chemist	1	125	44.6	-	-				
Technical Occupations Related to Natural and Applied Sciences	21	130	28.8%	139	71%	7	33%	8	40%
225x Technician	20	10	16.7	139	71.0				
2263 Health and Safety Officer	1	120	30.4	-	-				
Trades, Transport and Equipment Operators	80	200	1.6%	153	7.1%	4	5%	6	7%
7242 Electrician	6	10	1.5	65	8.3				
7251 Plumber	5	5	1.0	3	2.7				
7265 Welder	4	10	0.6	36	8.2				
7271 Carpenter	20	60	1.2	21	7.0				
7264/7611 Steel Erector	15	10	1.3	-	-				
7311 Millwright	4	40	3.5	13	4.9				
733x Plant Mechanic	20	10	5.4	-	-				
7372 Blasting*	*	-	-	-	-				
7421 Machinery Operator	6	55	2.0	-	-				
Trade Helpers, Construction Labourers, Related Occupations	28	535	11.4%	-	-	3	11%	5	18%
7611 Plant Worker	10	520	11.7	-	-				
7612 Plant Labour	18	15	6.5	-	-				
Technical and Skilled Occupations in Health	*	200	39.6%	-	-	*	40%	*	40%
3234 Ambulance/First-aid*	*	200	39.6	-	-				
Total	145	1350	6.7%	-	-	16	11%	23	15%

3 & 4 See footnotes page 13 for sources.

4.1.2 Targets for Operations Phase

Table 4: Labour Supply by Sex for Operations Phase
(Excluding Traditional Clerical, Sales, and Services Occupations)

National Occupational Categories for Operations Phase	Total Labour Needed	Available in NL in 2006			
		Men		Women	
		#	%	#	%
Middle and Other Managers	**8**	**575**	**90.6%**	**60**	**9.4%**
0211 Engineering Manager	1	200	95.2	10	4.8
0212 Chief Chemist	1	70	77.8	20	22.2
0811 Primary Production Managers	3	225	93.8	15	6.3
0721 Facility Operation and Maintenance Manager	3	80	84.2	15	15.8
Skilled Administrative and Business Occupations	**4**	**420**	**75.7%**	**135**	**24.3%**
1472 Warehouse Clerk	4	420	75.7	135	24.3
Professional Occupations in Natural and Applied Sciences	**10**	**665**	**86.9%**	**100**	**13.1%**
2131 Environmental Engineer	1	580	84.7	100	14.6
2142 Metallurgist Engineer	1	30	100	-	-
2143 Mining Engineers	8	55	100	-	-
Technical Occupations Related to Natural and Applied Sciences	**19**	**1075**	**73.1**	**395**	**26.9%**
2211 Assay Technician	6	150	53.6	125	44.6
2212 Geological and Mineral Technologists and Technicians	8	320	78.0	95	23.2
2232 Maintenance Planner	1	100	100	-	-
2253 Model Designer	2	235	79.7	55	18.6
2263 Health and Safety Personnel	2	270	68.4	120	30.4
Intermediate Sales and Service Occupations	**5**	**4355**	**71%**	**1780**	**29%**
6651 Security Officer	1	1080	72.2	415	27.8
6663 Janitor and Maintenance	4	3275	70.5	1365	29.4
Trades, Transport and Equipment Operators and Related Occupations	**76**	**12,515**	**98.3%**	**220**	**1.7%**
7211 Supervisors, Machinists and Related	5	20	100	-	-
7241 Electricians (Except Industrial and Power System)	4	1340	98.9	20	1.5
7242 Industrial Electrician	8	660	98.5	10	1.5
7265 Welder	4	1805	99.4	10	0.6
7311 Millwright	4	1115	97.0	40	3.5
733x Mechanic (6+6; 2+2)	16	270	98.2	5	1.8
7361 Train Coordinator	2	10	100	-	-
7372 Drillers and Blasters*	4+*	65	100	-	-
7411 Truck Operator	12	4335	97.3	115	2.6
7421 Heavy Equipment Operators	13	2680	98.2	55	2.0
7612 Labour (Service Truck, etc.)	4	215	93.5	15	6.5
Supervisors Mining, Oil, and Gas	**3**	**205**	**97.6%**	**10**	**4.8%**
8221 Supervisors Mining and Quarrying	3	205	97.6	10	4.8
Intermediate Occupations in Primary Industry	**6**	**170**	**75.6%**	**50**	**22.2%**
8614 Sample Preparation Technician	6	170	75.6	50	22.2
Occupations Unique to Processing, Manufacturing, and Utilities	**21**	**155**	**83.8%**	**30**	**16.2%**
9211 Supervisors Mineral and Metal Processing	5	15	100	-	-
9411 Machine Operators, Mineral and Metal Processing	12	90	90.0	10	10.0
9611 Operator Helper/Labour	4	50	71.4	20	28.6
Technical and Skilled Occupations in Health	*****	**305**	**60.4%**	**200**	**39.6%**
3234 Ambulance/First-aid*	*	305	60.4	200	39.6
Total	**152**	**20,440**	**87.3%**	**2,980**	**12.7%**

*will be subcontracted

Table 5: 2006-2010 Graduation Rates by Sex for Operations Phase
(Trades, Transport, and Equipment Operators and Related Occupations)

National Occupational Categories (NOC) for Operations Phase	% Female Grads 2006-10	Graduates 2006[5]				Graduates 2007-2010[6]			
		Men		Women		Men		Women	
		#	%	#	%	#	%	#	%
Technical Occupations Related to Natural…									
225x Technician	71%	13	26.5%	36	73.5%	42	29%	103	71%
Trades, Transport and Equipment Operators…	7.8%	673	94.3%	41	5.7%	1271	91.2	124	8.8%
7211 Supervisors, Machinists and …	-	-	-	-	-	-	-	-	-
7241 Electrician	13.3	13	86.7	2	13.3	-	-	-	-
7242 Industrial Electrician	8.3	193	94.2	12	5.8	581	91.0	53	9.0
7265 Welder	8.2	118	95.2	6	4.8	282	90.4	30	9.6
7311 Millwright	4.9	69	97.2	2	2.8	181	94.3	11	5.7
733x Mechanic	-	-	-	-	-	-	-	-	-
7361 Train Coordinator	-	-	-	-	-	-	-	-	-
7372 Drillers Blasters**	-	-	-	-	-	-	-	-	-
7411 Truck Operators	-	-	-	-	-	-	-	-	-
7421 Heavy Equipment Operators	8.8	280	93.6	19	6.4	227	89.5	30	11.6
7612 Labour	-	-	-	-	-	-	-	-	-

*will be subcontracted

* A Driller Blaster program can be offered as contract training through CNA upon request

[5] Department of Education, Government of Newfoundland and Labrador (2008). Career Search 2008: Employment Experience and Earnings of 2006 Graduates – College of the North Atlantic and Private Training Institutions

[6] College of the North Atlantic 2007-2010 Graduate Data from all provincial campuses

Table 6: Targets for Women's Employment for Operations Phase

National Occupational Categories (NOC) for Operations Phase	Total Labour Needed	Available Women 2006[3]		Female Graduates 2006-2010[4]		Short - Term Targets		Long - Term Targets	
		#	%	#	%	#	%	#	%
Middle and Other Managers	**8**	**60**	**9.4%**	**-**	**-**	**1**	**13%**	**2**	**25%**
0211 Engineering Manager	1	10	4.8	-	-				
0212 Chief Chemist	1	20	22.2	-	-				
0811 Primary Production Managers	3	15	6.3	-	-				
0721 Facility Operation and Maintenance Manager	3	15	15.8	-	-				
Skilled Administrative and Business Occupations	**4**	**135**	**24.3%**	**-**	**-**	**1**	**25%**	**2**	**50%**
1472 Warehouse Clerk	4	135	24.3	-	-				
Professional Occupations in Natural and Applied Sciences	**10**	**100**	**13.1%**	**-**	**-**	**1**	**10%**	**2**	**20%**
2131 Environmental Engineer	1	100	14.6	-	-				
2142 Metallurgist Engineer	1	-	-	-	-				
2143 Mining Engineers	8	-	-	-	-				
Technical Occupations Related to Natural and Applied Sciences	**19**	**395**	**26.9%**	**139**	**71%**	**6**	**32%**	**7**	**40%**
2211 Assay Technician	6	125	44.6	-	-				
2212 Geological and Mineral Technologists and Technicians	8	95	23.2	139	71.0				
2232 Maintenance Planner	1	-	-	-	-				
2253 Model Designer	2	55	18.6	-	-				
2263 Health and Safety Personnel	2	120	30.4	-	-				
Intermediate Sales and Service Occupations	**5**	**1780**	**29%**	**-**	**-**	**1**	**20%**	**2**	**40%**
6651 Security Officer	1	415	27.8	-	-				
6663 Janitor and Maintenance	4	1365	29.4	-	-				
Trades, Transport and Equipment Operators	**76**	**220**	**1.7%**	**180**	**7.8%**	**6**	**8%**	**8**	**10%**
7211 Supervisors, Machinists and Related	5	-	-	-	-				
7241 Electricians (Except Industrial and Power System)	4	20	1.5	2	13.3				
7242 Industrial Electrician	8	10	1.5	65	8.3				
7265 Welder	4	10	0.6	36	8.2				
7311 Millwright	4	40	3.5	13	4.9				
733x Mechanic (6+6; 2+2)	16	5	1.8	-	-				
7361 Train Coordinator	2	-	-	-	-				
7372 Drillers and Blasters*	4+*	-	-	-	-				
7411 Truck Operator	12	115	2.6	-	-				
7421 Heavy Equipment Operators	13	55	2.0	49	8.8				
7612 Labour (Service Truck, etc.)	4	15	6.5	-	-				
Supervisors Mining, Oil, and Gas	**3**	**10**	**4.8%**	**-**	**-**	**1**	**33%**	**1**	**33%**
8221 Supervisors Mining and Quarrying	3	10	4.8	-	-				
Intermediate Occupations in Primary Industry	**6**	**50**	**22.2%**	**-**	**-**	**1**	**17%**	**2**	**33%**
8614 Sample Preparation Tech…	6	50	22.2	-	-				
Occupations Processing, Manufacturing, and Utilities	**21**	**30**	**16.2%**	**-**	**-**	**4**	**19%**	**5**	**24%**
9211 Supervisors Mineral and Metal Processing	5	-	-	-	-				
9411 Machine Operators, Mineral and Metal Processing	12	10	10.0	-	-				
9611 Operator Helper/Labour	4	20	28.6	-	-				
Technical and Skilled Occupations in Health	*****	**200**	**39.6%**	**-**	**-**	*****	**40%**	*****	**40%**
3234 Ambulance/First-aid*	*	200	39.6	-	-				
Total	**152**	**2,980**	**12.7%**	**-**	**-**	**22**	**15%**	**31**	**20%**

3 & 4 See footnotes page 13 for sources.

4.1.3 Recruitment and Selection

In recruiting and directly targeting women, in relation to employment opportunities, NML will apply the initiatives described in the Communications Strategy in Section 3.0 of this Plan. In addition to communicating opportunities to women, however, NML recognizes the importance of ensuring the recruitment and selection process is free of systemic barriers for women. To this end, NML will:

- Ensure those in hiring positions in NML and its contracting companies have received gender-awareness and cultural-awareness training prior to screening resumes and selecting candidates
- Establish a corporate culture that is free of gender-related biases and discrimination in relation to the hiring of women, including ensuring that maternity and parental leave is not a consideration in the hiring process
- Ensure gender balance on hiring committees when possible
- Develop a list of criteria for résumé screening and candidate selection, which takes into account that women generally have less experience than men in occupations where they are under-represented
- Take gender-identifying information into account in the hiring process to achieve targets for women's employment and in gathering data for monitoring purposes
- When faced with résumés of an equally-qualified male and female candidate, give priority to the female candidate as a special measure until targets have been met
- Explore opportunities to apply special measures to hire qualified women when hiring from union lists until targets have been met, such as allocating a certain number of name hires for women candidates

4.1.4 Retention and Promotion

NML recognizes that systemic barriers often lead to low retention rates of women in occupations in which they are typically under-represented. In order to retain female employees, NML will implement the initiatives outlined throughout this Plan, particularly those described in the Implementation Plan in Section 5.0.

In directly targeting women, in relation to internal promotion and advancement opportunities, NML will apply the initiatives related to Education and Training described in Section 4.2 of this Plan, as well as those outlined in the Communications Strategy in Section 3.0 of this Plan. In addition to communicating internal opportunities to women, NML recognizes the importance of ensuring the promotion process is free of systemic barriers for women. To this end, NML will:

- Establish a corporate culture that is free of gender-related biases and discrimination in relation to the promotion of women, including ensuring that maternity and parental leave is not a consideration in the hiring process
- Identify alternative qualifying characteristics, aside from years of experience, to use as selection criteria in the promotion process to ensure women have an equal chance to men of being promoted
- Take gender-identifying information into account in the promotion process to achieve targets for women’s employment and in gathering data for monitoring purposes
- When faced with equally-qualified male and female candidates for promotion, give priority to the female candidate as a special measure to achieve a gender balance in senior-level, leadership, and supervisory positions

4.1.5 Cultural Considerations: Recruitment and Retention of Aboriginal Women

NML recognizes that Aboriginal peoples generally hold strong cultural values of community and spirituality. The Company will take cultural values into account in the recruitment and retention of Aboriginal women. NML will apply these values to the WEP – particularly the Communications objectives described in Section 3.0 of this Plan – as well as the Implementation objectives outlined in Section 5.0. This will be achieved non-exclusively through:

- The use of gender- and culturally-inclusive text and illustrations in all external communications, including promotional/informational material and advertisements
- The use of gender- and culturally-inclusive text and illustrations in job advertisements
- Support of education and training programs offered by women's and Aboriginal groups to encourage Aboriginal women to pursue employment in non-traditional occupations
- Inclusion of Aboriginal women employees in the recruitment of other Aboriginal women and in informing the Aboriginal community of employment opportunities in order to provide leadership and offer support
- Highlighting success stories of Aboriginal women in occupations in which they are typically under-represented, and providing information regarding public opportunities for training and employment in internal and external bulletins, as well as other means of communication as appropriate
- Establishing a mentorship model with a focus on effective skills development and inclusiveness, pairing Aboriginal women with Aboriginal women mentors when possible
- Ensuring a sense of community and belonging by designating areas on-site for Aboriginal women to utilize for cultural, recreational and social activities – and gather feedback from women in relation to desired activities offered
- Including cultural-awareness training in orientation and as professional development for all new and existing managers and employees
- Recognizing Aboriginal women are the primary caregivers of young and elder members of their communities, by partnering with government, women's and Aboriginal groups to explore initiatives to provide support to families and communities
- Holding regular update and feedback sessions with Aboriginal women employees and Aboriginal groups to identify areas of success and potential for improvement
- Building relationships with respected members of Aboriginal communities, including elders and spiritual leaders, to gather feedback and guidance in relation to culturally-sensitive and inclusive policies, procedures and accommodations

4.2 Education and Training

NML recognizes the importance of education and training to develop a pool of qualified women from which to recruit, and in preparing women to take advantage of employment opportunities on the ELAIOM. To promote education and training opportunities to women, NML will:

- Support education and training programs offered by women's organizations and community groups that encourage women to pursue employment in non-traditional occupations
- Promote education and training for women by profiling female role models in non-traditional occupations on information materials and at presentations to schools
- Partner with local educational institutions, such as College of the North Atlantic, to provide scholarships for women entering non-traditional training in the mining sector at the post-secondary level
- Provide educational institutions with detailed information regarding specific occupations and skill sets required for the ELAIOM, and make this information available to the public to allow individuals to become qualified for related opportunities

NML recognizes the need to provide individualized and specialized training to employees to enhance their skills and knowledge for employment on the ELAIOM. To provide women with the specific skills required in particular occupations on the Project, NML will:

- Provide individualized on-the-job training to employees as required, ensuring that training opportunities are equally available to men and women, and tailored to the needs of women
- Establish a mentorship model with a focus on effective skills development, pairing women with female mentors when possible
- Develop qualified employees as trainers and mentors, focusing in particular on female mentors when possible
- Develop an individualized training and skills-development program for apprentices, and match women apprentices with effective mentors, female when possible
- Provide safety training to female employees, while recognizing women generally have less experience in non-traditional occupations and may require additional training
- Allow employees to train for more senior positions than they currently hold to encourage advancement and provide opportunities for promotion

4.3 Business Access

NML recognizes the importance of encouraging women to take advantage of business opportunities related to the ELAIOM, as well as the need to ensure women have fair and equal access to such opportunities. To this end, NML will:

- Develop a communication, promotion and awareness strategy to promote opportunities pertaining to the ELAIOM, with a focus on women entrepreneurs
- Highlight a section on NML's website welcoming women entrepreneurs to participate in the bidding process for procurement services
- Offer an interactive Q&A session on the website to facilitate queries regarding the procurement process
- Facilitate information and networking sessions for women regarding the procurement process, explaining the bidding process with an emphasis on clear procedures and guidance
- Partner with relevant community organizations to facilitate information sessions targeted specifically at women
- Profile successful women entrepreneurs in print materials and encourage their participation in information and networking sessions as role models to share their experiences
- Ensure that procurement-related information is presented using clear language and in a non-intimidating manner in both written materials and verbal presentations
- Place advertisements and run stories in local media outlets expressing that women are welcome and invited to participate in the procurement process
- Place advertisements in local media outlets expressing the intent to facilitate procurement sessions for women, and invite women to attend
- Liaise with community organizations and business associations to avail of their networks and contact lists in promoting the message that women are welcome to participate in the procurement process
- Research an inventory of women-owned and -managed businesses in the province and place them on a regular contact list in relation to ELAIOM opportunities
- Adopt a supplier diversity culture, and track progress towards supplier diversity (women-owned businesses), with an emphasis on continuous growth

Through consultation with Newfoundland and Labrador Organization of Women Entrepreneurs (NLOWE), NML understands that information and statistics relating to the availability of women-owned and -managed businesses in non-traditional sectors is not currently available. Based on this lack of data, it is not possible to set targets for business access at this time. To this end, NML will:

- Work collaboratively with NLOWE to gather information and statistics relating to the availability of women-owned and -managed businesses in non-traditional supplier sectors
- Support NLOWE, government, and other organizations in efforts to gather information and statistics relating to business access targets for women
- Set targets for business access for women as soon as necessary information and statistics become available

5.0 IMPLEMENTATION PLAN

Often, there is a gap between gender-equity policies and the actual implementation of these policies. Effective implementation of the WEP will require a thorough implementation plan. In order to ensure active and focused implementation, NML will:

- Have the WEP Committee meet on a quarterly basis
- Explore the possibility of including union representatives on the WEP Committee to ensure collaborative implementation efforts
- Have external interest groups, such as WRDC, directly advise the WEP Committee for application of outside expertise to implementation, when necessary
- Gather ongoing feedback from managers, employees, women's groups, and other stakeholders to establish policies, procedures and initiatives that will ensure effective implementation of the WEP

An important aspect of implementing the WEP is the reduction of barriers to employment for the advancement of women. The goal of the implementation plan will be to minimize systemic barriers in all aspects of ELAIOM.
This plan will address such matters as: revising recruitment and retention policies, if required; on-site training and orientation; accommodation; and, support services at all work sites. NML will:

- Conduct gender-based analysis on recruitment and retention policies to ensure they are free of systemic barriers and to promote equal access to opportunities for women. If barriers are identified, policies will be revised accordingly for elimination
- Include a gender-awareness training session in the WEP presentation and workshop to be delivered to all new managers and employees during orientation, and to existing managers and employees as professional development
- Include information regarding respectful-workplace, anti-discrimination, anti-harassment and anti-violence policies and procedures in orientation and professional-development training for all managers and employees

- Post respectful-workplace, anti-discrimination, anti-harassment and anti-violence policies and procedures in frequented areas on site, emphasizing zero-tolerance

- Appoint a neutral person – with no influence over the women's position of employment – as on-site officer(s) with whom employees can consult on gender-equity and respectful-workplace-related issues in a confidential and procedural manner

- Assign overall responsibility for gender equity and respectful-workplace-related issues to the vice-president responsible for the WEP and the employment equity coordinator

- Ensure there are female-only washroom/change room facilities in all areas of the site, providing personal privacy and appropriate accommodations

- Ensure living and sleeping quarters provide personal privacy and appropriate accommodations for all employees

- Designate areas on-site for women to utilize for recreational and social activities, and gather feedback from women in relation to desired activities offered

- Gather ongoing feedback from female employees to ensure accommodations are sufficient and appropriate – making reasonable improvements as needed

- Provide employees with gear that fits properly, as a key priority and requirement during training/orientation, recognizing that safety gear is most often designed for the male anatomy, in generic sizes, that do not take individual differences into account

- Establish family-friendly policies and procedures, such as family-related leave. Assess employee's needs through focus groups or surveys – understanding any family issues will allow appropriate practices to evolve; build as much flexibility as possible into policies to accommodate the needs of under-represented groups such as women; encourage support networks

- Explore options for providing flexible rotation schedules to accommodate family responsibilities, including shorter rotational schedules through job-sharing arrangements

- Explore options for partnering with day-care facilities, government and community organizations to assist employees with finding affordable childcare in their community

6.0 LEADERSHIP AND ACCOUNTABILITY MECHANISMS

This component of the WEP outlines leadership within NML and includes accountability mechanisms to ensure compliance by contractors.

The implementation of the WEP is the overall responsibility of NML. In terms of leadership and accountability, NML will:

- Assign the responsibility of employment-equity results to a vice-president, who should be female. This vice-president will oversee the implementation of the WEP, and ensure compliance by NML employees and contractors. This accountability will apply to the construction and operations phases of the project

- Support its contractors and subcontractors in meeting their women's employment goals and requirements, while also collaborating with them on initiatives to further female employment on the Project

- Highlight champions and leaders within NML and its contracting companies; profile contracting companies who demonstrate leadership in terms of the goals and initiatives of the WEP at the annual stakeholder meeting

NML will work closely with its main contractors to ensure awareness of, and compliance with, the WEP. The Company will require a commitment to employment equity from its contractors, and will take this into account when awarding contracts. NML will include gender-equity provisions in its criteria for bids, and require that contracts related to the execution of the ELAIOM include acknowledgement from successful bidders that they are aware of the existence and importance of the WEP. Related bid criteria for contracting companies will include:

- Employment and training opportunities available within the company for women in relation to the ELAIOM contract
- The number of women currently employed in specific occupations
- The target number of women they plan to employ in specific occupations for the ELAIOM
- Plans to ensure a supportive, inclusive and respectful environment for women
- Plans to support business access for women
- Women's employment- and business-access-related initiatives that they are currently involved in and/or support, as well as those that they plan to become involved in and/or support

NML will also require that each main contractor to the ELAIOM provide a commitment and plan for compliance with the WEP. The main contractors will be required to ensure their subcontractors are aware of, and in compliance with, the WEP. This compliance will be overseen by NML, who holds overall responsibility for the implementation of the WEP, including the goals and targets outlined within it.

7.0 MONITORING, REPORTING, AND IMPLEMENTATION SCHEDULE

NML will monitor and report on WEP targets and goals on a monthly, quarterly and annual basis. This will be accomplished in the following manner:

- NML and each of the project contractors will be responsible for internal monitoring to measure success in meeting female employment targets
- NML will gather internal employment data, including breakdown by sex and race in relation to hiring, occupation, training and promotion on a monthly, quarterly and annual basis
- Project contractors will be required to gather and submit employment data to NML on a monthly, quarterly and annual basis
- The results of the employment data will be compiled, submitted to the Government of Newfoundland and Labrador and released publicly in monthly, quarterly and annual ELAIOM Women's Employment Plan reports
- The monthly reports will indicate the progress achieved on the WEP employment targets
- The quarterly reports will also provide updates on key WEP activities and initiatives
- The annual reports will provide to-date status and progress updates on all of the WEP commitments, including special initiatives, programs, and business access initiatives

NML will use the following schedule as a timeline for implementing the goals and targets outlined in this Plan. Timelines associated with women's employment targets reflect that short-term targets will be implemented upon commencement of each phase; and, this implementation will be ongoing as hiring takes place. Timelines for long-term women's employment targets reflect the need to allow time to build a pool of qualified female candidates from which to recruit. This is anticipated to be accomplished through NML's education and training initiatives, as well as through a general increase in the promotion of non-traditional careers to women.

Table 5: Timetable for Implementation of Goals and Targets

Goal/Target Type	Construction/Preparation Phase			Operations Phase		
	Upon Commencement	By Year 2	Throughout Duration	Upon Commencement	By Year 5	Throughout Duration
Internal Communications	x		x	x		x
External Communications	x		x	x		x
Short-Term Target Hires	x		x	x		x
Long-Term Target Hires		x			x	x
Education and Training	x		x	x		x
Business Access	x		x	x		x
Implementation Plan	x		x	x		x
Leadership and Accountability	x		x	x		x
Monitoring and Reporting			x			x
Continuous Improvement			x			x

Please see Appendix B for checklist and implementation schedule for WEP goals and actions.

8.0 CONTINUOUS IMPROVEMENT

Periodic evaluations and amendments are required to promote continuous improvement to the WEP and to achieve a representative workforce within a reasonable period. In aiming for continuous improvement, NML will:

- Monitor Project employment data on an annual basis and assess it relative to the targets identified in the WEP. If necessary, the Company will review and revise its approach, initiatives, targets, and goals
- Conduct an annual review process that takes into account input from managers and employees, as well as other ELAIOM proponents and key stakeholders, in part through mechanisms described in the Communications Strategy in Section 3.0 of this Plan
- Hold an annual meeting with all relevant stakeholders to review progress on the WEP, and to gather stakeholder feedback and best practices
- Meet with government annually, to evaluate progress and identify areas for continued improvement
- Review targets for women's employment on an annual basis, in relation to the availability of qualified women in the labour force, based on Statistics Canada employment-equity data and post-secondary graduation rates by sex. Revisions to targets will be made accordingly as availability of qualified women increases
- Review and revise business access targets and initiatives as progress occurs with the identified business access activities

Appendix A

List of Consultation Participants

List of Consultation Participants

Women/ Community Organizations (Individual Consultations)

- Newfoundland and Labrador Organization of Women Entrepreneurs (NLOWE)

  NLOWE
  2nd Floor Regatta, Plaza 11
  84-86 Elizabeth Avenue
  St. John's, NL

- Women in Science and Engineering (WISE)

  Faculty of Engineering
  Memorial University
  St. John's, NL

- Women Interested in Successful Employment (WISE)
  WISE
  Viking Building; Suite 306
  136 Crosbie Rd.
  St. John's, NL
  A1B 3K3

Government (Focus Group)

- Department of Natural Resources, (Minister Responsible for the Status of Women)

  Department of Natural Resources
  50 Elizabeth Avenue
  P.O. Box 8700
  St. John's, NL
  A1B 4J6

- Provincial Advisory Council on the Status of Women (PACSW)

  Provincial Advisory Council on the Status of Women
  15 Hallett Cres. Suite 103
  St. John's, NL
  A1B 4C4

- Women's Policy Office

  Women's Policy Office
  Government of Newfoundland and Labrador
  P.O. Box 8700
  St. John's, NL
  A1B 4J6

Aboriginal Peoples (Individual Consultations)

- Métis Nation: Labrador
  NunatuKavut (Métis Nation)
  Goose Bay, NL

- Inuit Employment Coordinator: Labrador Mine
  Board Member WRDC
  Station C
  Happy Valley-Goose Bay, NL
  A0P 1C0

Training Institutions (Individual Consultations)

- College of the North Atlantic (CNA)

  Prince Philip Drive Campus
  1 Prince Philip Dr
  P.O. Box 1693
  St. John's, NL
  A1C 5R7

  Happy Valley- Goose Bay Campus
  219 Hamilton Rd.
  P.O. Box 1720 Stn. B
  Happy Valley-Goose Bay, NL
  A0B 1E0

- Memorial University of Newfoundland

  Faculty of Engineering and Applied Science
  Memorial University
  St. John's, NL
  A1B 3X5

Faculty of Business Administration
Memorial University
St. John’s, NL
A1B 3X5

Unions (Individual Consultations)

- International Brotherhood of Electrical Workers

  IBEW Local 2330
  1082 Thorburn Rd. 21463
  Portugal Cove-St. Philips, NL

- NL Regional Council of Carpenters, Millwrights & Allied Workers, Local 579: Office to Advance Women

  Office to Advance Women’s Apprentices
  89 McNamara Dr.
  Paradise, NL
  A1L 3W2

Industry Associations (Individual Consultations)

- Mining Industry Human Resources Council

  Mining Industry Human Resources Council (MIHR)
  260 Hearst Way Suite 401
  Kanata, ON

- Newfoundland and Labrador Chamber of Mineral Resources

  Chamber of Mineral Resources Inc.
  P.O. Box 21463
  St. John’s, NL
  A1A 5G6

Female Tradespeople (Individual Consultations)

- 4th Year Apprentice Electrician
- Journeyperson Electrician

  Note: Both these women are working in fly-in, fly-out mines at present.

Appendix B

Goals and Actions
Checklist and Implementation Schedule

WOMEN'S EMPLOYMENT PLAN
Goals and Actions
Checklist and Implementation Schedule*

INSTRUCTIONS

- Indicate for each Action the Year(s)/Quarter(s) in which they will be implemented. For guidance, please refer to Section 5.0 -
- Implementation Plan of the WEP, Table 5 – Timetable for Implementation of Goals and Targets.

GOALS/ACTIONS	CONSTRUCTION PHASE		OPERATIONS PHASE					
	Yr 1	Yr 2	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Through out
RESPONSIBLE STAFF								
Assign responsibility of the overall implementation of the WEP to a vice-president, who should be female								
Hire an employment equity coordinator to ensure effective and focused implementation of the WEP								
Establish a WEP Committee consisting of senior personnel, led by the responsible vice-president and employment equity coordinator								
COMMUNICATIONS								
INTERNAL COMMUNICATIONS								
Communicate WEP Internally								
Develop internal WEP-related communications strategy based on guidelines put forth in WEP								

GOALS/ACTIONS	CONSTRUCTION PHASE		OPERATIONS PHASE					
	Yr 1	**Yr 2**	**Yr 1**	**Yr 2**	**Yr 3**	**Yr 4**	**Yr 5**	**Through out**
Develop criteria for conducting gender-based analysis on an ongoing basis to ensure that gender-inclusive language in all communications								
Develop and implement a presentation and workshop regarding WEP to be delivered during orientation and as professional development								
Provide written material containing detailed information about the WEP to all managers and employees, and post related messages								
Establish Ongoing Communication								
Establish communication mechanisms whereby managers and employees can ask WEP-related questions and provide feedback								
Develop mechanisms to survey managers and employees gather feedback to identify areas of success and potential for improvement								
Communicate Internal Opportunities to Women								
Develop and use gender-inclusive language and illustrations in postings regarding internal opportunities								

GOALS/ACTIONS	CONSTRUCTION PHASE		OPERATIONS PHASE					
	Yr 1	Yr 2	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Through out
Hold regular internal information and networking sessions for women on site to share information								
EXTERNAL COMMUNICATIONS								
Demonstrate Culture of Gender Equity								
Develop external WEP-related communication strategy based on guidelines put forth in WEP								
Develop gender-inclusive text and illustrations in all external communications, including promotional/informational material								
Develop mechanisms to provide information/updates regarding WEP in external bulletins, media communications, and on NML website								
Communicate External Opportunities to Women								
Hold public information and networking sessions targeted at women in partnership with women's groups and Aboriginal groups								
Provide training and employment opportunity-related information to women's groups, Aboriginal groups, and counselors								

GOALS/ACTIONS	CONSTRUCTION PHASE		OPERATIONS PHASE					
	Yr 1	Yr 2	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Through out
Establish Regular Communication with Stakeholder Groups								
Forward WEP-related information and updates in bulletins and notices directly to women's organizations and other stakeholder groups								
Establish communication mechanisms whereby stakeholder groups can ask WEP-related questions and provide ongoing feedback								
WOMEN'S EMPLOYMENT								
SHORT-TERM TARGET HIRES								
Implement short-term target hires for each phase								
LONG-TERM TARGET HIRES								
Implement long-term target hires for each phase								
RECRUITMENT AND SELECTION								
Directly Target Women in Relation to Employment Opportunities								
Refer to and implement initiatives described in Communications section of WEP								
Ensure Recruitment and Selection Process is Free of Systemic Barriers for Women								
Establish a corporate culture that is free of gender-related biases and discrimination in relation to the hiring of women								

GOALS/ACTIONS	CONSTRUCTION PHASE		OPERATIONS PHASE					
	Yr 1	Yr 2	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Through out
Ensure that those in hiring positions receive gender awareness training and cultural awareness training prior to resume review/interviews								
Develop a list of criteria for résumé screening and candidate selection that takes into account that women generally have less experience								
Explore opportunities to apply special measures to hire qualified women when hiring from union lists until targets have been met								
RETENTION AND PROMOTION								
Retain Female Employees								
Refer to and implement initiatives described in the Implementation section of WEP								
Directly Target Women in Relation to Promotion Opportunities								
Refer to and implement initiatives described in Education and Training section and Communications Strategy section of WEP								

GOALS/ACTIONS	CONSTRUCTION PHASE		OPERATIONS PHASE					
	Yr 1	Yr 2	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Through out
Ensure that Retention and Promotion Process is Free of Systemic Barriers for Women								
Establish a corporate culture that is free of gender-related biases and discrimination in relation to the promotion of women								
Identify alternative qualifying characteristics aside from years of experience to use as selection criteria in the promotion process								
Take gender-identifying information into account in the promotion process in pursuit of achieving targets and gathering monitoring data								
CULTURAL CONSIDERATIONS: ABORIGINAL WOMEN								
Take Cultural Considerations into Account in the Recruitment and Retention of Aboriginal Women								
Develop and use gender-and culturally-inclusive text and illustrations in all external communications								
Include cultural awareness training in orientation and as professional development for all new and existing managers and employees								

GOALS/ACTIONS	CONSTRUCTION PHASE		OPERATIONS PHASE					
	Yr 1	Yr 2	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Through out
Ensure a sense of community and belonging by designating areas on site for Aboriginal women to utilize for cultural and social activities								
Hold regular update and feedback sessions with Aboriginal women employees and Aboriginal groups								
Support education and training programs to encourage Aboriginal women to pursue employment in non-traditional occupations								
EDUCATION AND TRAINING								
Promote Education and Training Opportunities to Women								
Support education and training programs offered to encourage women to pursue employment in non-traditional occupations								
Promote education and training for women through profiling female role models in non-traditional occupations in information materials								

GOALS/ACTIONS	CONSTRUCTION PHASE		OPERATIONS PHASE					
	Yr 1	Yr 2	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Through out
Provide educational institutions with detailed information regarding specific occupations and skill sets that will be required for the ELAIOM								
Provide Women With the Specific Skills Required for ELAIOM								
Provide individualized on-the-job training to employees as required, ensuring that training is tailored to the needs of women								
Establish a mentorship model with a focus on effective skills development, pairing women with female mentors when possible								
Allow employees to train for more senior positions than they currently hold in order to encourage advancement and promotion								
BUSINESS ACCESS								
Encourage Women to Take Advantage of ELAIOM Business Opportunities								
Ensure that Women Have Fair and Equal Access to Opportunities								
Develop a communication, promotion and awareness strategy to promote opportunities directly to women entrepreneurs								

GOALS/ACTIONS	CONSTRUCTION PHASE		OPERATIONS PHASE					
	Yr 1	Yr 2	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Through out
Place advertisements and run stories in local media outlets expressing that women are welcome and invited to participate in procurement								
Highlight a section on NML's website welcoming women entrepreneurs to participate in the bidding process for procurement								
Partner with relevant community-organizations to facilitate information sessions targeted specifically at women								
Ensure that procurement-related information is presented using clear language and in a non-intimidating manner in all materials								
Adopt a supplier diversity culture, and track progress towards supplier diversity, with an emphasis on continuous improvement								
Gather Information and Statistics Relating to Women-Owned and-Managed Businesses								
Work collaboratively with NLOWE to gather information and statistics relating to non-traditional supplier sectors								
Support NLOWE, government, and other organizations in efforts to gather information and statistics relating to business access for women								

GOALS/ACTIONS	CONSTRUCTION PHASE		OPERATIONS PHASE					
	Yr 1	Yr 2	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Through out
Set targets for business access for women as soon as necessary information and statistics become available								
IMPLEMENTATION PLAN								
Ensure Active, Focused, and Effective Implementation								
Have the WEP Committee meet on a quarterly basis, and explore the possibility of including union representatives on the WEP Committee								
Gather ongoing feedback from managers, employees, women's groups, and other stakeholders to ensure effective implementation								
Minimize Systemic Barriers in all Aspects of ELAIOM								
Conduct gender-based analysis on recruitment and retention policies to ensure that they are free of systemic barriers								
Include information regarding respectful workplace, anti-discrimination, and anti-harassment in orientation and print materials								

GOALS/ACTIONS	CONSTRUCTION PHASE		OPERATIONS PHASE					
	Yr 1	**Yr 2**	**Yr 1**	**Yr 2**	**Yr 3**	**Yr 4**	**Yr 5**	**Through out**
Ensure that there are female-only washroom/change room facilities in all areas of the site, provide privacy and appropriate accommodations								
Include providing employees with gear that fits properly as a key priority and requirement during training/orientation								
Establish family-friendly policies and procedures, and explore options for flexible rotation schedules to accommodate family responsibilities								
LEADERSHIP AND ACCOUNTABILITY								
Demonstrate Leadership and Accountability Within NML								
Assign the responsibility of employment equity results and compliance by NML employees to a vice-president, who should be female								

GOALS/ACTIONS	CONSTRUCTION PHASE		OPERATIONS PHASE					
	Yr 1	**Yr 2**	**Yr 1**	**Yr 2**	**Yr 3**	**Yr 4**	**Yr 5**	**Through out**
Support contractors and subcontractors in meeting women's employment goals and requirements, and collaborate with them								
Ensure Compliance by Contractors								
The Company will require a commitment to employment equity from its contractors, and take this into account when awarding contracts								
NML will include gender equity provisions in its criteria for bids, and require acknowledgement of compliance with/importance of WEP								
MONITORING AND REPORTING								
Monitor and Report on WEP Targets								
Develop mechanisms for gathering/ monitoring internal employment and promotion data on a quarterly and yearly basis								
Develop mechanisms for project contractors to gather and submit employment data to NML on a quarterly and annual basis								

GOALS/ACTIONS	CONSTRUCTION PHASE		OPERATIONS PHASE					
	Yr 1	Yr 2	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Through out
CONTINUOUS IMPROVEMENT								
Aim for Continuous Improvement through Periodic Evaluations and Amendments								
Develop mechanisms to monitor Project employment data on an annual basis and assess it relative to the targets identified in the WEP								
Review targets for women's employment on an annual basis in relation to data indicating availability of qualified women in the labour force								
Develop/conduct an annual review process that takes into account input from managers and employees, as well as other key stakeholders								

NEW MILLENNIUM
CAPITAL CORP.

PROJET DE MINERAI DE FER À ENFOURNEMENT DIRECT



Plan de recrutement féminin pour la mine de fer de la région du lac Elross

Novembre 2010

Plan de recrutement féminin pour la mine de fer de la région du lac Elross

New Millenium Capital Corp. (NML)

28 novembre 2010

Table des matières

1.0 INTRODUCTION ET CONTEXTE

1.1 Introduction

New Millennium Capital Corp. (NML) est consciente de l'importance du projet de mine de fer de la région du lac Elross (Elross Lake Area Iron Ore Mine, ELAIOM, ci-après appelé « l'ELAIOM » ou « le Projet ») pour la province de Terre-Neuve-et-Labrador, et s'engage à faire profiter directement les citoyen(ne)s de la province des emplois et débouchés potentiels qui s'y rattachent. Afin d'offrir à tou(te)s une chance égale de se prévaloir de ces avantages et possibilités, NML croit que la mise en place d'un plan de recrutement féminin (PRF, le Plan) s'impose.

Les femmes continuant d'être sous-représentées dans les métiers et dans les emplois liés à la technologie, à la science et au génie, l'industrie rencontre constamment des obstacles au recrutement et à la rétention lorsqu'elle tente d'accroître la participation féminine dans ces disciplines. Ces problèmes sont souvent imputables à un manque d'effort direct et actif de création et d'appui de mesures innovatrices d'équité entre les sexes. NML s'engage à élaborer, à mettre en place et à soutenir des mesures visant à hausser le nombre de femmes occupant des emplois non traditionnels dans l'ELAIOM.

Le présent plan décrit les objectifs et mesures d'équité entre les sexes que NML prévoit mettre en œuvre pour toute la durée de l'ELAIOM de sorte que les femmes, notamment les femmes autochtones, jouissent d'un accès juste et égal aux occasions avantageuses engendrées par le Projet. Dans la poursuite de ces objectifs, NML travaillera en collaboration avec le gouvernement, les établissements d'enseignement, les syndicats, les groupes communautaires, les associations industrielles, les sociétés contractuelles et sous-traitantes et d'autres groupes d'intérêt.

1.2 Contexte

1.2.1. Mine de fer de la région du lac Elross

NML projette d'exploiter la mine de fer de la région du lac Elross. Le site se trouve dans la province de Terre-Neuve-et-Labrador, à environ 20 km au nord-ouest de Schefferville, au Québec.

L'ELAIOM est un site en friche industrielle constitué de quatre gisements, situés entièrement au Labrador qui peuvent être mis en production rapidement et avec des incidences environnementales négligeables en raison de l'infrastructure déjà en place dans la région de Schefferville. Sur la superficie totale à perturber (~ 96 ha), à peu près la moitié a déjà été perturbée par l'exploitation minière antérieure.

Le Projet consiste à exploiter du minerai tout-venant. Après concassage, lavage, criblage et (en hiver) séchage du minerai tout-venant, celui-ci est transformé en des produits de minerai de fer à enfournement direct (MED), qui sont ensuite expédiés par rail au port de Sept-Îles (Québec).

L'ELAIOM comporte deux phases. La phase 1 prévoit l'exploitation de deux des quatre secteurs, soit les secteurs 2 et 3, qui représentent environ 20 % des ressources. On estime que le Projet emploiera au total 150 personnes dans la phase de construction, qui durera à peu près 15 mois. La construction sera, en très grande part, donnée à contrat. Au cours des opérations de la phase 1, il est estimé que le Projet donnera du travail à environ 240 personnes pendant au moins 11 ans.

La phase 2 du Projet, appelée *phase future*, prévoit l'exploitation des secteurs 1 et 4. Environ 75 % des ressources de MED de NML se situent dans le secteur 4. La production dans le secteur 4 s'étirera sur 10 à 13 ans et la durée de vie des installations de traitement du minerai construites dans la phase 1 sera prolongée en conséquence. La durée totale du projet DSOP (Direct-Shipping Ore Project ou Projet de minerai de fer à enfournement direct), phase 2 comprise, sera d'à peu près 15 ans.

NML a présenté son énoncé des incidences sur l'environnement (ÉIE) au gouvernement de Terre-Neuve-et-Labrador en décembre 2009. L'ÉIE comporte un engagement à établir et à exécuter un PRF.

1.2.2 Plan de recrutement féminin

Le Women's Policy Office a recommandé que le promoteur de l'ELAIOM, NML, ait l'obligation de présenter un PRF conçu pour prévenir, réduire ou éliminer les iniquités éventuelles ou réelles subies par les femmes en matière d'emploi, ce qui s'applique en particulier aux métiers et aux emplois liés à la technologie, à la science et au génie. Le Department of Natural Resources de Terre-Neuve-et-Labrador exige que NML élabore, soumette et mette en œuvre le présent PRF. Aux termes de cette exigence, la société a élaboré le présent plan en vue de sa présentation à la ministre responsable de la condition féminine avant toute activité de construction du Projet. Il a été recommandé que le PRF comporte les éléments suivants :

(i) Politiques, pratiques et accommodements raisonnables en faveur des femmes à mettre en place à court terme pour l'embauche, la formation, l'avancement et la rétention des femmes;

(ii) Mesures à court terme que doit prendre le promoteur pour éliminer les obstacles à l'emploi;

(iii) Calendrier de mise en application des politiques, pratiques et mesures positives d'élimination des obstacles à l'emploi;

(iv) Objectifs numériques à court terme d'embauche et d'avancement des femmes dans chaque catégorie professionnelle où elles sont sous-représentées;

(v) Objectifs numériques à plus long terme d'augmentation de la représentation féminine, y compris une stratégie d'atteinte des objectifs fixés;

(vi) Plans de suivi et de production de rapports publics sur les progrès[1].

Le Plan comporte des dispositions relatives à une stratégie de communication, des objectifs d'embauche et d'accès aux débouchés pour les femmes, un plan de mise en œuvre, des mécanismes de leadership et d'imputabilité, un calendrier visant le suivi, la présentation de rapports et la mise en œuvre ainsi que des procédures d'évaluations et de modification périodiques. Il contient aussi d'importants objectifs d'éducation et de formation ainsi que des objectifs de recrutement et de rétention de femmes autochtones.

[1] Boland, B. (January 2009). *Report on Gender Equity Requirements for NML Submission to Government of Newfoundland and Labrador EIS Submission.*

2.0 DÉMARCHE COLLABORATIVE

Une démarche collaborative a été appliquée à l'élaboration du PRF, et NML s'efforcera continuellement de collaborer avec toutes les parties prenantes, consciente que la collaboration est essentielle à l'exécution efficace du PRF et au soutien des mesures d'équité entre les sexes.

NML reconnaît qu'une collaboration active et ciblée avec les entrepreneurs, les groupes communautaires, les établissements d'enseignement, les gouvernements, les syndicats et les autres groupes d'intérêt sera essentielle à la réalisation des objectifs du PRF. Les buts des efforts collaboratifs sont exposés dans tout le plan.

2.1 Collaboration avec les entrepreneurs

NML travaillera en étroite collaboration avec ses principaux entrepreneurs pour veiller à ce qu'ils connaissent le PRF et s'y conforment. La société inclura des dispositions d'équité entre les sexes dans ses appels d'offre et élaborera des critères pour les évaluer.

Reconnaissant que le succès du PRF est la responsabilité globale de NML, la société travaillera diligemment à appuyer ses entrepreneurs et sous-traitants dans l'atteinte de leurs objectifs et la satisfaction de leurs exigences en matière d'emplois pour les femmes, tout en collaborant aux mesures visant à favoriser l'emploi des femmes dans le Projet.

Les mécanismes détaillés de leadership et de responsabilité relativement au travail avec les entrepreneurs figurent à la section 6.0 du Plan.

2.2 Collaboration avec les groupes communautaires

NML reconnaît les connaissances précieuses que les organisations communautaires, notamment les groupes de femmes et d'autochtones, ont à offrir en ce qui a trait au recrutement féminin et à l'accès des femmes aux occasions d'affaires. Elle établira des relations de collaboration avec ces groupes pour partager de l'information et des connaissances, ce qui facilitera la mise en œuvre efficace du PRF. NML cherchera activement à obtenir l'avis de ces groupes afin de prévoir les obstacles potentiels, d'élaborer des solutions créatives et d'obtenir une rétroaction dans une optique d'amélioration continue.

NML s'engage à déterminer des avenues de collaboration à des initiatives avec des groupes communautaires et à soutenir les programmes et mesures des groupes en question favorisant l'emploi de femmes et leur accès aux occasions d'affaires.

2.3 Collaboration avec les autres parties prenantes

2.3.1 Établissements d'enseignement

NML comprend qu'il est important d'offrir des renseignements exacts pour faire davantage connaître aux femmes les possibilités dans les domaines non traditionnels et les préparer à saisir ces occasions. La société s'engage à communiquer aux établissements d'enseignement l'information précise sur les emplois qui seront créés à l'ELAIOM et les compétences requises, de même qu'elle s'engage à mettre ces renseignements à la portée du public.

NML s'engage à travailler en collaboration avec les établissements d'enseignement pour informer les femmes des possibilités de formation ou d'emploi existantes et à venir, ce qui supposera la collaboration avec des femmes cibles en vue d'encourager celles-ci à poursuivre des carrières dans des domaines non traditionnels, en particulier dans l'industrie minière.

2.3.2 Gouvernements

NML reconnaît les efforts progressifs déployés par les gouvernements pour encourager les femmes, particulièrement les femmes autochtones, à faire carrière dans des domaines non traditionnels et pour veiller à ce que toutes bénéficient d'un accès juste et égal aux possibilités d'éducation et de carrière dans ces disciplines.

NML s'engage à travailler en collaboration avec les divers paliers de gouvernement afin de soutenir et de faire progresser les objectifs et mesures en matière d'emploi et d'accès aux occasions d'affaires pour les femmes. Le PRF de l'ELAIOM sera appliqué de manière imputable, conformément aux exigences gouvernementales, et NML s'efforcera à cette fin de poursuivre l'édification de la culture d'équité entre les sexes et de diversité que le gouvernement s'efforce de réaliser dans l'industrie et dans l'ensemble de la province.

2.3.3 Main-d'œuvre

NML comprend le rôle clef que les syndicats jouent dans l'atteinte des objectifs et cibles du Plan. Travailler avec ceux-ci sera essentiel à l'exécution efficace du PRF.

NML s'engage à travailler avec les syndicats pour faire en sorte que les femmes aient un accès juste et équitable aux offres d'emploi sur le site, ce qui suppose d'explorer et de prendre des mesures progressives visant à aplanir les obstacles à l'accès des femmes aux emplois offerts, notamment d'envisager l'embauche sélective de candidates pour abattre les obstacles que peuvent représenter les listes d'ancienneté syndicales à l'égard des femmes. Cela suppose aussi des contacts réguliers avec les syndicats pour échanger des renseignements et des idées, et les inviter à assister et à participer à des assemblées annuelles des parties prenantes pour examiner et commenter les progrès du PRF.

3.0 STRATÉGIE DE COMMUNICATION

Le succès de la mise en œuvre du Plan repose sur des communications internes et externes efficaces à son sujet. Cela suppose de diffuser les buts et objectifs du PRF, tant à l'interne qu'à l'externe, pour faire en sorte qu'ils soient bien connus et qu'on s'y conforme à tous les échelons.

NML reconnaît qu'il importe de mettre en place des stratégies de communication visant à faire connaître les occasions qui s'offrent aux femmes et à encourager ces dernières à les saisir. Ces stratégies doivent accorder une place importante à la rétroaction recueillie dans le cadre des partenariats établis avec les femmes, les groupes de femmes et les autres principales parties prenantes au Plan, en vue d'assurer son amélioration continue.

3.1 Communications internes

Aux fins de la mise en œuvre du PRF dans le cadre de l'ELAIOM, il sera essentiel d'établir un environnement global et une culture d'entreprise favorisant l'équité entre les sexes sous tous les aspects du Projet. NML reconnaît qu'une exécution efficace réclamera un appui manifeste de la haute direction à la création d’emplois pour les femmes ainsi qu'un objectif et un engagement d'entreprise à l'égard de l'équité en matière d’emploi. Il faudra pour ce faire s'assurer que cadres et employé(e)s à tous les échelons de NML et de ses entreprises contractantes connaissent les politiques et pratiques mises de l’avant dans le PRF et y adhèrent.

Pour atteindre cet objectif, il faudra amener tous les participant(e)s au Projet à comprendre pourquoi NML met en œuvre un PRF, y compris les exigences du gouvernement à cet égard et les buts que poursuit la société en ce sens. Les participant(e)s au Projet (cadres et employé(e)s compris) jouent un rôle clef dans la réussite de l'exécution du PRF, et la communication stratégique du bien-fondé commercial de l'équité est un important facteur de ralliement au PRF.

Dans ses communications internes sur le PRF, NML :

- confiera à une vice-présidente la responsabilité de l'équité entre les sexes et l'exécution globale du PRF pour l'ELAIOM, y compris toutes les communications ayant trait au PRF;
- exigera que la vice-présidente responsable du PRF s'engage à diffuser efficacement les politiques, buts et mesures du Plan auprès des cadres et de tout le personnel;
- embauchera un(e) coordonnateur(rice) de l'équité professionnelle chargé(e) d'assurer l'exécution efficace et suivie du PRF et de faciliter les communications à tous les niveaux;
- mettra sur pied un comité chargé d'assurer la continuité des communications sur le PRF; ce comité sera composé de personnel supérieur et dirigé par la vice-présidente responsable et le(a) coordonnateur(rice) de l'équité professionnelle;

- préparera un exposé et donnera un atelier sur les buts du PRF, les politiques correspondantes et les exigences de conformité au PRF à l'intention de tous les nouveaux cadres et employé(e)s de même que des cadres et employé(e)s actuel(le)s à titre de perfectionnement professionnel;

- fournira dans l'exposé et l'atelier sur le PRF des renseignements sur les arguments commerciaux en faveur de l'équité et sur les avantages d'une participation accrue des femmes dans les emplois non traditionnels, ainsi qu'une explication détaillée des raisons pour lesquelles le PRF est appliqué à l'ELAIOM;

- fournira des documents contenant des renseignements détaillés sur le PRF aux cadres et employé(e)s de tous les échelons et affichera les messages connexes dans des lieux fréquentés sur le site;

- effectuera une analyse permanente en fonction des sexes pour s'assurer qu'on emploie des termes inclusifs dans toutes les communications internes écrites et verbales.

À des fins d'efficacité, il faudra veiller à ce que les cadres et les employé(e)s reçoivent régulièrement de l'information sur la mise en œuvre du PRF. Il sera aussi nécessaire de recueillir de façon régulière les commentaires des gestionnaires et des employés – particulièrement ceux de sexe féminin – sur la réalisation du Plan, de manière à dégager les éléments de réussite et les points à améliorer. Pour en savoir plus sur les mesures d'amélioration continue, voir la section 8.0 du Plan.

Afin d'établir une communication permanente, NML :

- renseignera de manière continue les cadres et les employé(e)s sur les mesures d'équité entre les sexes prises et appuyées par NML et ses sociétés contractantes;

- fournira de l'information et des mises à jour sur le PRF dans ses bulletins et avis internes;

- fournira des mises à jour sur le PRF dans ses réunions et séances de formation régulières;

- tiendra des séances internes trimestrielles pour faire le point et recueillir des avis en vue de déterminer les éléments de réussite et les possibilités d'amélioration;

- sondera trimestriellement les gestionnaires et employés – particulièrement les employées – pour recueillir leurs commentaires et dégager les éléments de réussite et les possibilités d'amélioration;

- effectuera des entrevues de fin d'emploi avec les gestionnaires et les employé(e)s pour recueillir leurs commentaires et des idées d'amélioration continue;

- établira des mécanismes de communication par lesquels gestionnaires et employé(e)s peuvent poser des questions sur le PRF et donner en tout temps leur avis au coordonnateur de l'équité professionnelle, par exemple grâce à un compte de courrier électronique désigné et à des visites sur place;

- renseignera constamment les gestionnaires et les employé(e)s sur les mesures d'égalité entre les sexes appuyées par NML et ses sociétés contractantes.

Un élément central de la mise en œuvre du PRF sera de faire connaître aux femmes de manière inclusive et efficace les occasions internes de formation et d'avancement. À la lumière de ce qui précède, NML :

- mettra en valeur les histoires de réussite de femmes dans des emplois où elles sont habituellement sous-représentées et fera connaître les possibilités de formation et d'avancement dans des bulletins et des avis ainsi que sur des affiches internes et le site Web de la société;

- affichera de l'information sur les occasions de formation et d'avancement dans les endroits fréquentés par les femmes, notamment les toilettes et les vestiaires des dames;

- utilisera un langage et des illustrations inclusifs à l'égard des deux sexes dans l'affichage concernant les possibilités internes;

- tiendra des séances internes d'information et de réseautage à l'intention des femmes embauchées sur le site pour leur donner des occasions de partager l'information.

3.2 Communications externes

Une communication efficace des initiatives liées au PRF suppose de s'assurer que les principales parties prenantes et le public connaissent la culture d'équité entre les sexes mise en place pour le Projet. La démonstration que NML et ses sociétés contractantes sont des employeurs inclusifs exigera diverses stratégies.

NML reconnaît l'importance de mener diverses activités de rayonnement pour parvenir à communiquer les occasions directement aux femmes; parmi ces activités, mentionnons les suivantes :

- faire usage de textes et d'illustrations inclusifs dans toutes les communications externes, y compris les documents promotionnels, informatifs et publicitaires;

- fournir de l'information à jour sur le PRF dans les bulletins externes, les communiqués de presse, les communications avec les médias et sur le site Web de la société;

- mettre en valeur les récits de réussite de femmes dans des emplois où elles sont habituellement sous-représentées, diffuser les possibilités de formation et d'emploi offertes à tou(te)s dans les bulletins externes, les communiqués de presse, les communications avec les médias et sur le site Web de la société;

- employer des textes et des illustrations inclusifs à l'égard des deux sexes dans les offres d'emploi;

- tenir des séances publiques d'information et de réseautage ciblant les femmes, en partenariat avec les groupes de femmes et d'autochtones;

- renseigner les groupes de femmes et d'autochtones sur les occasions de formation et d'emploi, et informer les femmes autochtones dans leur propre communauté au sujet des occasions offertes, en ciblant notamment les femmes inuites et innues;

- appuyer activement et participer aux initiatives communautaires promouvant les occasions pour les femmes, particulièrement en ce qui a trait aux emplois où les femmes sont sous-représentées;

- afficher l'information concernant les occasions de formation et d'emploi dans les lieux publics fréquentés par les femmes, y compris dans les lieux appropriés dans les établissements d'enseignement;

- donner de l'information inclusive à l'égard des deux sexes concernant les occasions de formation et d'emploi aux conseillers/ères en orientation des écoles et aux prestataires de services d'aide à l'emploi;

- participer aux salons de l'emploi et visiter des établissements de divers ordres d’enseignement pour faire connaître les possibilités d'emploi dans l'industrie minière. Des femmes employées par NML et ses sociétés contractantes méritant d'être citées en exemple prendront part à ces activités.

Pour exécuter efficacement le PRF, il sera aussi nécessaire de recueillir en continu l'avis des organisations de femmes et des autres principales parties prenantes, tout comme les commentaires des directeurs(trices) et employé(e)s, particulièrement de sexe féminin, au sujet de la mise en œuvre du Plan. Cela contribuera à dégager les éléments de réussite et les possibilités d'amélioration, ainsi qu’à établir des partenariats visant à encourager la participation des femmes à des emplois non traditionnels au sein du Projet et de l'industrie minière sur un plan plus général. Afin de communiquer régulièrement avec les représentants des parties prenantes et de recueillir leur avis, NML :

- renseignera constamment les groupes de femmes et autres parties prenantes sur les mesures prises et soutenues par NML et ses sociétés contractantes en matière d'équité entre les sexes;

- transmettra directement aux groupes de femmes et autres parties prenantes des renseignements et mises à jour touchant le PRF, dans des bulletins et avis;

- recueillera les commentaires et fera des mises à jour au sujet du PRF dans des réunions régulières de parties prenantes;

- tiendra des séances annuelles de mise à jour et de rétroaction avec toutes les parties prenantes en vue de dégager les éléments de réussite et les possibilités d'amélioration;

- établira des mécanismes de communication par lesquels les groupes de parties prenantes pourront poser des questions concernant le PRF et donner en continu leur avis directement au/à la coordonnateur(rice) de l'équité professionnelle.

4.0 EMPLOIS, FORMATION ET OCCASIONS D'AFFAIRES POUR LES FEMMES

Le Plan comporte des buts et des objectifs quantitatifs et qualitatifs relativement aux emplois, à la formation et aux occasions d'affaires offerts aux femmes. Ces buts et objectifs concernent également le recrutement, la sélection, la rétention et l'avancement des femmes. Ils permettent de déterminer et de mesurer l'efficacité des mesures d'équité entre les sexes mises en place.

4.1 Embauche de femmes

Le Plan comporte des objectifs d'embauche de femmes durant les phases de construction et d'exploitation de l'ELAIOM. Ces objectifs ont été établis en fonction de la main-d'œuvre féminine qualifiée disponible sur le marché du travail dans des emplois pertinents et de la nature des emplois offerts à l'ELAIOM, où les travailleurs seront transportés par des navettes aériennes de la compagnie. Ils tiennent compte également de la situation observée dans d'autres exploitations minières de Terre-Neuve-et-Labrador et d'ailleurs qui transportent les employé(e)s par des navette aériennes.

Les objectifs ont été établis selon la main-d'œuvre requise aux divers stades du Projet en tenant compte de la main-d'œuvre disponible à court et à long terme, de même que des données d'équité en matière d'emploi de Statistique Canada et des taux de diplomation postsecondaire par sexe.

En raison de l'importance d'accroître la participation des femmes dans les métiers de la construction, les objectifs mis de l'avant dans les tableaux pour la phase de construction s'appliqueront également à la présence de femmes apprenties. Ces derniers ont été établis à partir de la base de données du registre de l'Office to Advance Women Apprentices.

4.1.1 Objectifs pour la phase de construction et de préparation

Tableau 1 : Main-d'œuvre disponible par sexe pour la phase de construction et de préparation

(excluant les emplois de bureau, de vente et de service traditionnels)

Classification nationale des professions (CNP) phase de construction	Main-d'œuvre totale requise	Disponibles à T.-N.-L. en 2006[2]			
		Hommes		Femmes	
		Nbre	%	Nbre	%
Cadres intermédiaires et autres	10	845	93,4 %	60	6,6 %
0711 Directeur(trice) de la construction	1	560	94,1	35	5,9
721x Superviseur(e)	3	80	84,2	15	15,8
721x Contremaître(esse)	6	205	97,6	10	4,8
Emplois professionnels en sciences naturelles et appliquées	6	730	76,4 %	225	23,6 %
2131 Ingénieur civil	5	580	84,7	100	14,6
2211 Technologue et technicien(ne) en chimie	1	150	53,6	125	44,6
Emplois techniques en sciences naturelles et appliquées	21	320	71,2 %	130	28,8 %
225x Technologue et technicien(ne)	20	50	83,3	10	16,7
2263 Inspecteur(trice) de la santé publique, de l'environnement et de l'hygiène et de la sécurité au travail	1	270	68,4	120	30,4
Métiers, opérateurs(trices) d'équipement de transport et autre, emplois connexes	80	12 545	98,4 %	200	1,6 %
7242 Électricien(ne) industriel(le)	6	660	98,5	10	1,5
7251 Plombier(ière)	5	500	99	5	1
7265 Soudeur(euse) et opérateur(trice) de machines à souder et à braser	4	1 805	99,4	10	0,6
7271 Charpentier-menuisier	20	4 800	98,9	60	1,2
7264/7611 Monteur(euse)/Aide de soutien des métiers et manœuvres en construction	15	740	99,3	10	1,3
7311 Mécanicien(ne) de chantier et mécanicien(ne) industriel(le) (sauf l'industrie du textile)	4	1 115	97	40	3,5
733x Mécanicien(ne) d'usine	20	180	97,3	10	5,4
7372 Foreur(euse) et dynamiteur(euse) des mines à ciel ouvert, des carrières et des chantiers de construction	*	65	100	-	-
7421 Conducteur(trice) d'équipement lourd (sauf les grues)	6	2 680	98,2	55	2
Aides, travailleurs de la construction, emplois connexes	28	4 140	88,6 %	535	11,4 %

Classification nationale des professions (CNP) phase de construction	Main-d'œuvre totale requise	Disponibles à T.-N.-L. en 2006[2]			
		Hommes		Femmes	
		Nbre	%	Nbre	%
7611 Aide de soutien des métiers et manoeuvres en construction	10	3 925	88,3	520	11,7
7612 Autre manoeuvre et aide de soutien de métiers	18	215	93,5	15	6,5
Emplois techniques et spécialisés en santé	*	305	60,4 %	200	39,6 %
3234 Ambulancier(ière)/et autre personnel paramédical*	*	305	60,4	200	39,6
Total	145	18 885	93,3 %	1 350	6,7 %

* Employé(e)s comme sous-traitant(e)s

[2] Statistique Canada. *Rapport statistique sur l'équité en matière d'emploi*, 2006. (Les données ont été adaptées afin de représenter les CNP pertinentes.)

Tableau 2 : Taux de diplomation par sexe (2006-2010) pour la phase de construction et de préparation

(emplois liés au domaine technique, aux métiers, au transport, à l'opération d'équipement et autre)

Classification nationale des professions (CNP) pour la phase de construction	% Femmes diplômées	Diplômé(e)s 2006[3]				Diplômé(e)s 2007-2010[4]			
		Hommes		Femmes		Hommes		Femmes	
		Nbre	%	Nbre	%	Nbre	%	Nbre	%
Emplois techniques en sciences naturelles et…									
225x Technicien(ne)	71 %	13	26,5 %	36	73,5 %	42	29 %	103	71 %
Métiers, opérateurs(trices) d'équipement de transport…	7,1 %	612	94,7 %	34	5,3 %	1 199	92 %	104	8 %
7242 Électricien(ne) industriel(le)	8,3	193	94,2	12	5,8	581	91	53	9
7251 Plombier(ière)	2,7	68	95,8	3	4,2	40	100	0	0
7265 Soudeur(euse) et opérateur(trice) de machines à souder et à braser	8,2	118	95,2	6	4,8	282	90,4	30	9,6
7271 Charpentier-menuisier	7	164	93,7	11	6,3	115	92	10	8
7264/7611 Monteur(euse)/ Aide de soutien des métiers et manœuvres en construction	-	-	-	-	-	-	-	-	-
7311 Mécanicien(ne) de chantier et mécanicien(ne) industriel(le) (sauf l'industrie du textile)	4,9	69	97,2	2	2,8	181	94,3	11	5,7
733x Mécanicien(ne) d'usine	-	-	-	-	-	-	-	-	-
7372 Foreur(euse) et dynamiteur(euse) des mines à ciel ouvert, des carrières et des chantiers de construction**	-	-	-	-	-	-	-	-	-
7421 Conducteurs(trices) d'équipement lourd (sauf les grues)	-	-	-	-	-	-	-	-	-

* Employé(e)s comme sous-traitant(e)s

** Sur demande, un programme de foreur(euse) et boutefeu peut être offert sous forme de formation à contrat par l'entremise du College of the North Atlantic.

3 Ministère de l'Éducation, gouvernement de Terre-Neuve-et-Labrador. *Career Search 2008: Employment Experience and Earnings of 2006 Graduates – College of the North Atlantic and Private Training Institutions*, 2008.

4 College of the North Atlantic, données de diplomation de 2007-2010 pour tous les campus provinciaux.

Tableau 3 : Objectifs pour la phase de construction et de préparation

Classification nationale des professions (CNP) pour la phase de construction	Main-d'œuvre totale requise	Femmes disponibles 2006[3]		Femmes diplômées 2006-10[4]		Objectifs à court terme		Objectifs à long terme	
		Nbre	%	Nbre	%	Nbre	%	Nbre	%
Cadres intermédiaires et autres	10	60	6,6 %	-	-	1	10 %	2	20 %
0711 Directeur(trice) de la construction	1	35	5,9	-	-				
721x Superviseur(e)	3	15	15,8	-	-				
721x Contremaître(esse)	6	10	4,8	-	-				
Emplois professionnels en sciences naturelles et appliquées	6	225	23,6 %	-	-	1	16,6 %	2	33 %
2131 Ingénieur civil	5	100	14,6	-	-				
2211 Technologue et technicien(ne) en chimie	1	125	44,6	-	-				
Emplois techniques en sciences naturelles et appliquées	21	130	28,8 %	139	71 %	7	33 %	8	40 %
225x Technicien(ne)	20	10	16,7	139	71,0				
2263 Inspecteur(trice) de la santé publique, de l'environnement et de l'hygiène et de la sécurité au travail	1	120	30,4	-	-				
Métiers, opérateurs(trices) d'équipement de transport et autre	80	200	1,6 %	153	7,1 %	4	5 %	6	7 %
7242 Électricien(ne) industriel(le)	6	10	1,5	65	8,3				
7251 Plombier(ière)	5	5	1,0	3	2,7				
7265 Soudeur(euse) et opérateur(trice) de machines à souder et à braser	4	10	0,6	36	8,2				
7271 Charpentier-menuisier	20	60	1,2	21	7,0				
7264/7611 Monteur(euse) de charpentes métalliques/Aide de soutien des métiers et manoeuvres en construction	15	10	1,3	-	-				
7311 Mécanicien(ne) de chantier et mécanicien(ne) industriel(le) (sauf l'industrie du textile)	4	40	3,5	13	4,9				
733x Mécanicien(ne) d'usine	20	10	5,4	-	-				

Classification nationale des professions (CNP) pour la phase de construction	Main-d'œuvre totale requise	Femmes disponibles 2006[3]		Femmes diplômées 2006-10[4]		Objectifs à court terme		Objectifs à long terme	
		Nbre	%	Nbre	%	Nbre	%	Nbre	%
7372 Foreur(euse) et dynamiteur(euse) des mines à ciel ouvert, des carrières et des chantiers de construction*	*	-	-	-	-				
7421 Conducteur(trice) d'équipement lourd (sauf les grues)	6	55	2,0	-	-				
Aides, travailleurs de la construction, emplois connexes	28	535	11,4 %	-	-	3	11 %	5	18 %
7611 Aide de soutien des métiers et manoeuvres en construction	10	520	11,7	-	-				
7612 Autre manoeuvres et aide de soutien de métiers	18	15	6,5	-	-				
Emplois techniques et spécialisés en santé	*	200	39,6 %	-	-	*	40 %	*	40 %
3234 Ambulancier(ière) et autre personnel paramédical*	*	200	39,6	-	-				
Total	145	1 350	6,7 %	-	-	16	11 %	23	15 %

3 et 4, se référer aux notes de bas de page de la page 14 pour les références.

4.1.2 Objectifs pour la phase d'exploitation

Tableau 4 : Main d'œuvre disponible par sexe pour la phase d'exploitation
(excluant les emplois de bureau, de vente et de service traditionnels)

Classification nationale des professions (CNP) pour la phase d'exploitation	Main-d'œuvre totale requise	Disponible à T.-N.-L. en 2006			
		Hommes		Femmes	
		Nbre	%	Nbre	%
Cadres intermédiaires et autres	8	575	90,6 %	60	9,4 %
0211 Directeur(trice) des services de génie	1	200	95,2	10	4,8
0212 Directeur(trice) de services d'architecture et de sciences	1	70	77,8	20	22,2
0811 Directeur(trice) de la production primaire (sauf l'agriculture)	3	225	93,8	15	6,3
0721 Directeur(trice) de l'exploitation et de l'entretien d'immeubles	3	80	84,2	15	15,8
Emplois administratifs et commerciaux spécialisés	4	420	75,7 %	135	24,3 %
1472 Magasinier(ère) et commis aux pièces	4	420	75,7	135	24,3
Emplois professionnels en sciences naturelles et appliquées	10	665	86,9 %	100	13,1 %
2131 Ingénieur civil	1	580	84,7	100	14,6
2142 Ingénieur métallurgiste et des matériaux	1	30	100	-	-
2143 Ingénieur minier minière	8	55	100	-	-
Emplois techniques en sciences naturelles et appliquées	19	1 075	73,1	395	26,9 %
2211 Technologue et technicien(ne)	6	150	53,6	125	44,6
2212 Technologue et technicien(ne) en chimie	8	320	78	95	23,2
2232 Technologue et technicien(ne) en génie mécanique	1	100	100	-	-
2253 Technologue et technicien(ne) en dessin	2	235	79,7	55	18,6
2263 Inspecteur(trice) de la santé publique, de l'environnement et de l'hygiène et de la sécurité au travail	2	270	68,4	120	30,4
Emplois intermédiaires en vente et en service	5	4 355	71 %	1 780	29 %
6651 Gardien(ne) de sécurité et personnel assimilé	1	1 080	72,2	415	27,8
6663 Concierge d'immeubles	4	3 275	70,5	1 365	29,4
Métiers, opérateurs(trices) d'équipement de transport et autre, emplois connexes	76	12 515	98,3 %	220	1,7 %
7211 Contremaître(esse) des machinistes et du personnel assimilé	5	20	100	-	-
7241 Électricien(ne) (sauf électricien(ne) industriel(le) et de réseaux électriques)	4	1 340	98,9	20	1,5
7242 Électricien(ne) industriel(le)	8	660	98,5	10	1,5
7265 Soudeur(euse) et opérateur(trice) de machines à souder et à braser	4	1 805	99,4	10	0,6
7311 Mécanicien(ne) de chantier et mécanicien(ne) industriel(le)/mécanicien(ne) industriel(le) (sauf l'industrie du textile)	4	1 115	97	40	3,5
733x Mécanicien(ne) (6+6; 2+2)	16	270	98,2	5	1,8
7361 Mécanicien(ne) de locomotive et de cour de triage	2	10	100	-	-
7372 Foreur(euse) et dynamiteur(euse) des mines à ciel ouvert, des carrières et des chantiers de construction*	4+*	65	100	-	-
7411 Conducteur(trice) de camions	12	4 335	97,3	115	2,6
7421 Conducteur(trice) d'équipement lourd (sauf les grues)	13	2 680	98,2	55	2,0
7612 Autre manoeuvre et aide de soutien de métiers	4	215	93,5	15	6,5
Superviseur(e)s d'exploitation minière, pétrolière et gazière	3	205	97,6 %	10	4,8 %
8221 Surveillant(e) de l'exploitation des mines et des carrières	3	205	97,6	10	4,8
Emplois intermédiaires dans l'industrie des matières premières	6	170	75,6 %	50	22,2 %
8614 Manoeuvre des mines	6	170	75,6	50	22,2
Emplois uniques à la transformation, à la fabrication et aux services publics	21	155	83,8 %	30	16,2 %
9211 Surveillant(e) dans la transformation des métaux et des minerais	5	15	100	-	-
9411 Opérateur(trice) de machines dans le traitement des métaux et des minerais	12	90	90	10	10
9611 Manoeuvre dans le traitement des métaux et des minerais	4	50	71,4	20	28,6
Emplois techniques et spécialisés en santé	*	305	60,4 %	200	39,6 %
3234 Ambulancier(ière) et autre personnel paramédical*	*	305	60,4	200	39,6
Total	152	20 440	87,3 %	2 980	12,7 %

* Employé(e)s comme sous-traitant(e)s

Tableau 5 : Taux de diplomation par sexe (2006-2010) pour la phase d'exploitation
(emplois liés aux métiers, au transport, à l'opération d'équipement et autre)

Classification nationale des professions (CND) pour la phase d'exploitation	% Femmes diplômées	Diplômé(e)s 2006[5]				Diplômé(e)s 2007-2010[6]			
		Hommes		Femmes		Hommes		Femmes	
		N^bre	%	N^bre	%	N^bre	%	N^bre	%
Emplois techniques en sciences naturelles et…									
225x Technicien(ne)	71 %	13	26,5 %	36	73,5 %	42	29 %	103	71
Métiers, opérateurs(trices) d'équipement de transport…	7,8 %	673	94,3 %	41	5,7 %	1 271	91,2	124	8,8 %
7211 Superviseur(e), usineur et métiers apparentés…	-	-	-	-	-	-	-	-	-
7241 Électricien(ne)	13,3	13	86,7	2	13,3	-	-	-	-
7242 Électricien(ne) industriel(le)	8,3	193	94,2	12	5,8	581	91,0	53	9,0
7265 Soudeur(euse)	8,2	118	95,2	6	4,8	282	90,4	30	9,6
7311 Mécanicien(ne) d'usine	4,9	69	97,2	2	2,8	181	94,3	11	5,7
733x Mécanicien(ne)	-	-	-	-	-	-	-	-	-
7361 Coordonateur(trice) de trains	-	-	-	-	-	-	-	-	-
7372 Foreur(euse) et boutefeu**	-	-	-	-	-	-	-	-	-
7411 Chauffeur (euse) de camion	-	-	-	-	-	-	-	-	-
7421 Opérateur(trice) d'engin de terrassement	8,8	280	93,6	19	6,4	227	89,5	30	11,6
7612 Manœuvre	-	-	-	-	-	-	-	-	-

* Employé(e)s comme sous-traitant(e)s

** Sur demande, un programme de foreur(euse) et boutefeu peut être offert sous forme de formation à contrat par l'entremise du College of the North Atlantic.

[5] Ministère de l'Éducation, gouvernement de Terre-Neuve-et-Labrador. *Career Search 2008: Employment Experience and Earnings of 2006 Graduates – College of the North Atlantic and Private Training Institutions*, 2008.

[6] College of the North Atlantic, données de diplomation de 2007-2010 pour tous les campus provinciaux.

Tableau 6 : Objectifs d'emplois pour les femmes à la phase d'exploitation

Classification nationale des professions (CNP) pour la phase d'exploitation	Main-d'œuvre totale requise	Femmes disponibles 2006[3]		Femmes diplômées 2006-2010[4]		Objectifs à court terme		Objectifs à long terme	
		N^bre	%	N^bre	%	N^bre	%	N^bre	%
Cadres intermédiaires et autres	**8**	**60**	**9,4 %**	**-**	**-**	**1**	**13 %**	**2**	**25 %**
0211 Directeur(trice) de l'ingénierie	**1**	**10**	**4,8**	**-**	**-**				
0212 Chimiste en chef	**1**	**20**	**22,2**	**-**	**-**				
0811 Directeur(trice) de production primaire Managers	**3**	**15**	**6,3**	**-**	**-**				
0721 Directeur(trice) d'exploitation et de maintenance d'installations	**3**	**15**	**15,8**	**-**	**-**				
Emplois administratifs et commerciaux spécialisés	**4**	**135**	**24,3 %**	**-**	**-**	**1**	**25 %**	**2**	**50 %**
1472 Commis d'entrepôt	**4**	**135**	**24,3**	**-**	**-**				
Emplois professionnels en sciences naturelles et appliquées	**10**	**100**	**13,1 %**	**-**	**-**	**1**	**10 %**	**2**	**20 %**
2131 Ingénieur en environnement	**1**	**100**	**14,6**	**-**	**-**				
2142 Ingénieur métallurgiste	**1**	**-**	**-**	**-**	**-**				
2143 Ingénieur des mines	**8**	**-**	**-**	**-**	**-**				
Emplois techniques en sciences naturelles et appliquées	**19**	**395**	**26,9 %**	**139**	**71 %**	**6**	**32 %**	**7**	**40 %**
2211 Technicien(ne) en titrage	**6**	**125**	**44,6**	**-**	**-**				
2212 Technologues et technicien(ne)s en géologie et minerais	**8**	**95**	**23,2**	**139**	**71.0**				
2232 Planificateur de maintenance	**1**	**-**	**-**	**-**	**-**				
2253 Concepteur de maquettes	**2**	**55**	**18,6**	**-**	**-**				
2263 Personnel de santé et de sécurité	**2**	**120**	**30,4**	**-**	**-**				
Emplois intermédiaires en vente et en service	**5**	**1 780**	**29 %**	**-**	**-**	**1**	**20 %**	**2**	**40 %**
6651 Agent(e) de sécurité	**1**	**415**	**27,8**	**-**	**-**				
6663 Concierge et entretien	**4**	**1 365**	**29,4**	**-**	**-**				
Métiers, opérateurs(trices) d'équipement de transport et autre	**76**	**220**	**1,7 %**	**180**	**7,8 %**	**6**	**8 %**	**8**	**10 %**
7211 Superviseur(e), usineur et emplois connexes	**5**	**-**	**-**	**-**	**-**				
7241 Électricien(ne) (sauf industriel(le) et de réseaux d'électricité)	**4**	**20**	**1,5**	**2**	**13,3**				
7242 Électricien(ne) industriel(le)	**8**	**10**	**1,5**	**65**	**8,3**				
7265 Soudeur(euse)	**4**	**10**	**0,6**	**36**	**8,2**				
7311 Mécanicien(ne) d'usine	**4**	**40**	**3,5**	**13**	**4,9**				
733x Mécanicien(ne) (6+6; 2+2)	**16**	**5**	**1,8**	**-**	**-**				
7361 Coordonateur de trains	**2**	**-**	**-**	**-**	**-**				
7372 Foreur(euse) et boutefeu*	**4+***	**-**	**-**	**-**	**-**				
7411 Chauffeur de camion	**12**	**115**	**2,6**	**-**	**-**				
7421 Opérateur(trice) d'engin de terrassement	**13**	**55**	**2,0**	**49**	**8,8**				
7612 Manœuvre (camion-atelier, etc.)	**4**	**15**	**6,5**	**-**	**-**				
Superviseur(e)s mines, pétrole et gaz	**3**	**10**	**4,8 %**	**-**	**-**	**1**	**33 %**	**1**	**33 %**
8221 Superviseur(e) de mine et de carrière	**3**	**10**	**4,8**	**-**	**-**				
Emplois intermédiaires dans l'industrie primaire	**6**	**50**	**22,2 %**	**-**	**-**	**1**	**17 %**	**2**	**33 %**
8614 Technicien(ne) de préparation d'échantillons	**6**	**50**	**22,2**	**-**	**-**				
Emplois dans la transformation, la fabrication et les services publics	**21**	**30**	**16,2 %**	**-**	**-**	**4**	**19 %**	**5**	**24 %**
9211 Superviseur(e) de traitement de minerais et de métaux	**5**	**-**	**-**	**-**	**-**				
9411 Opérateur de machine, traitement des minerais et des métaux	**12**	**10**	**10,0**	**-**	**-**				
9611 Aide/manœuvre d'opérateur	**4**	**20**	**28,6**	**-**	**-**				
Emplois techniques et spécialisés en santé	*****	**200**	**39,6 %**	**-**	**-**	*****	**40 %**	*****	**40 %**
3234 Ambulancier(ière)/secouriste*	*****	**200**	**39,6**	**-**	**-**				
Total	**152**	**2 980**	**12,7 %**	**-**	**-**	**22**	**15 %**	**31**	**20 %**

3 et 4, se référer aux notes de bas de page de la page 14 pour les références.

4.1.3 Recrutement et sélection

Pour recruter et cibler directement les femmes relativement aux possibilités d'emploi, NML appliquera les mesures décrites dans la stratégie de communication à la section 3.0 du Plan. Cependant, outre la communication des occasions aux femmes, NML reconnaît l'importance de veiller à ce que le recrutement et la sélection soient dénués d'obstacles systémiques pour les femmes. À cette fin, NML :

- s'assurera que ses employé(e)s et les employé(e)s de ses entrepreneurs et sous-traitants occupant des postes à l'embauche reçoivent une formation de sensibilisation à l'équité entre les sexes et à la culture avant de trier les *curricula vitae* et de sélectionner les candidats;
- établira une culture d'entreprise exempte de partialité en ce qui concerne les sexes et de discrimination relativement à l'embauche de femmes, notamment en s'assurant que le congé de maternité et parental ne soit pas une considération dans le processus d'embauche;
- assurera une représentation égale des sexes dans les comités d'embauche lorsque c'est possible;
- dressera, pour le tri des *curricula vitae* et la sélection des candidats, une liste de critères prenant en compte que les femmes possèdent généralement moins d'expérience que les hommes dans les emplois où elles sont sous-représentées;
- tiendra compte des renseignements d'identification des sexes dans l'embauche pour atteindre les objectifs d'embauche de femmes et recueillera des données aux fins de suivi;
- en présence de candidats masculins et féminins également qualifiés, accordera la priorité à la candidate à titre de mesure spéciale jusqu'à ce que les objectifs soient atteints;
- explorera les occasions d'appliquer des mesures spéciales d'embauche de femmes qualifiées lorsqu'elle embauche à partir de listes syndicales jusqu'à ce que les objectifs en matière d'embauche de femmes soient atteints. À titre d'exemple, elle pourrait statuer d'avance qu'un nombre prédéterminé de femmes sera embauché.

4.1.4 Rétention et avancement

NML reconnaît que les obstacles systémiques conduisent souvent à de faibles taux de rétention des femmes dans les emplois où elles sont habituellement sous-représentées. Afin de retenir les employées, NML prendra les mesures exposées dans l'ensemble de ce plan, particulièrement celles qui sont décrites dans le plan de mise en œuvre à la section 5.0.

En ciblant directement les femmes relativement aux chances de promotion et d'avancement internes, NML appliquera les mesures liées à l'éducation et à la formation décrites à la section 4.2 et celles concernant la stratégie de communication décrite à la section 3.0 du Plan. En plus de communiquer les occasions internes aux femmes, NML reconnaît l'importance de faire en sorte que le processus de promotion soit exempt d'obstacles systémiques pour les femmes. À cette fin, NML :

- établira une culture d'entreprise exemple de partialités et de discrimination liées aux sexes en ce qui a trait à la promotion des femmes, y compris en s'assurant que le congé de maternité et parental ne soit pas une considération dans l'embauche;

- définira d'autres caractéristiques de qualification que les années d'expérience comme critères de sélection pour les promotions de manière à donner aux femmes une chance égale à celle des hommes;

- tiendra compte des renseignements d'identification du sexe dans le processus de promotion pour assurer l’atteinte des objectifs d’embauche des femmes et lors de la collecte de données aux fins de suivi;

- accordera, en présence de candidats masculins et féminins également qualifiés pour une promotion, la priorité à la candidate à titre de mesure spéciale visant à obtenir un équilibre entre les sexes dans les postes de haut niveau, de commande et de supervision.

4.1.5 Considérations culturelles dans le recrutement et la rétention des femmes autochtones

NML reconnaît que les peuples autochtones possèdent généralement de fortes valeurs culturelles de communauté et de spiritualité. La société prendra en compte les valeurs culturelles dans le recrutement et la rétention des femmes autochtones. NML appliquera ces valeurs au PRF, plus particulièrement aux objectifs de communication décrits à la section 3.0 du Plan et aux objectifs de mise en œuvre indiqués à la section 5.0. Elle y parviendra, de façon non exclusive, comme suit :

- fera usage de textes et d'illustrations inclusifs à l'égard des sexes et des cultures dans toutes les communications externes, y compris dans les documents informatifs, promotionnels et publicitaires;

- utilisera des textes et illustrations inclusifs à l'égard des sexes et des cultures dans les offres d'emploi;

- soutiendra les programmes d'éducation et de formation offerts par les groupes de femmes et les groupes autochtones en vue d'encourager les femmes autochtones à occuper des emplois non traditionnels;

- inclura des employées autochtones dans le recrutement d'autres femmes autochtones et pour informer la communauté autochtone des possibilités d'emploi et ce, afin d'assurer un leadership et d'offrir un soutien;

- mettra en relief des cas de réussite de femmes autochtones dans des emplois où elles sont habituellement sous-représentées et fournira des renseignements sur les occasions publiques de formation et d'emploi dans les bulletins internes et externes et, le cas échéant, les autres moyens de communications;

- établira un modèle de mentorat centré sur le perfectionnement efficace des compétences et l'inclusivité en jumelant lorsque cela est possible des femmes autochtones et des mentors féminins autochtones;

- suscitera un sens de communauté et un sentiment d'appartenance en désignant des endroits sur le chantier utilisables par les femmes autochtones pour des activités culturelles, récréatives et sociales, et recueillera l'avis des femmes relativement aux activités qu'elles souhaiteraient voir offrir;

- inclura une formation en sensibilisation à la culture au moment de l'initiation et à titre de perfectionnement professionnel pour tou(te)s les cadres et employé(e)s nouveaux/elles et actuel(le)s;

- reconnaîtra que les femmes autochtones sont les principales prestataires de soins primaires aux membres jeunes et âgé(e)s de leur collectivité en travaillant en partenariat avec les gouvernements, les groupes de femmes et les groupes autochtones en vue d'explorer des initiatives visant à soutenir les familles et les communautés;

- tiendra des séances régulières de mise à jour et de rétroaction avec les employées autochtones et les groupes autochtones pour dégager les éléments de réussite et les possibilités d'amélioration;

- établira des relations avec des membres respectés des communautés autochtones, notamment les aîné(e)s et les leaders spirituels, pour recueillir leurs avis et leurs conseils relativement aux politiques, aux marches à suivre et aux accommodements culturellement adaptés visant l'inclusivité.

4.2 Éducation et formation

NML reconnaît l'importance de l'instruction et de la formation pour développer un bassin de femmes qualifiées où puiser les recrues, de même qu'elle reconnaît l'importance de la préparation des femmes à saisir les occasions d'emploi au sein de l'ELAIOM. Pour favoriser les occasions d'éducation et de formation pour les femmes, NML :

- soutiendra les programmes d'éducation et de formation offerts par les organisations de femmes et les groupes communautaires qui encouragent les femmes à occuper des emplois dans des domaines non traditionnels;

- encouragera l'instruction et la formation à l'intention des femmes en mettant en relief les femmes occupant des fonctions non traditionnelles dans les documents d'information et les présentations aux écoles;

- travaillera en partenariat avec les établissements d'enseignement locaux, comme le College of the North Atlantic, à offrir des bourses aux femmes inscrites en formation non traditionnelle dans le secteur minier au niveau postsecondaire;

- renseignera les établissements d'enseignement sur les types d'emplois offerts au sein de l'ELAIOM et les compétences requises pour les exercer, et mettra cette information à la disposition du public pour permettre aux femmes de se qualifier pour ces types de postes.

NML reconnaît la nécessité d'offrir aux employé(e)s de la formation individualisée et spécialisée en vue d'améliorer leurs compétences et connaissances pour des emplois dans le cadre de l'ELAIOM. En vue de doter les femmes des compétences requises pour postuler les emplois créés dans le cadre du Projet, NML :

- offrira aux employé(e)s la formation individualisée en cours d'emploi dont ces employé(e) ont besoin, en veillant à ce que les chances de formation soient également accessibles aux hommes et aux femmes, et adaptées aux besoins des femmes;

- établira un modèle de mentorat axé sur le développement efficace des compétences, en jumelant lorsque possible des femmes à des mentors féminins;

- formera des employés qualifiés en tant que formateurs et mentors en insistant lorsque c'est possible sur les mentors féminins;

- élaborera un programme de formation et de perfectionnement individualisé pour apprentis, et jumellera les apprenties à des mentors efficaces et de sexe féminin autant que possible;

- donnera de la formation en sécurité aux employées tout en reconnaissant que les femmes possèdent généralement moins d'expérience dans les emplois non traditionnels et peuvent avoir besoin de formation additionnelle;

- permettra aux employé(e)s de suivre une formation pour obtenir des postes supérieurs en vue d'encourager l'avancement et offrira des chances de promotion.

4.3 Occasions d’affaires

NML reconnaît qu'il importe d'encourager les femmes à saisir les débouchés liés à l’ELAIOM, de même que la nécessité de veiller à ce que les femmes jouissent d'un accès juste et égal aux occasions d’affaires. À cette fin, NML :

- élaborera une stratégie de communication, de promotion et de publicité ciblant particulièrement les femmes entrepreneures pour faire connaître les occasions qu’offre l’ELAIOM;
- mettra en relief une section du site Web de NML invitant les femmes entrepreneures à participer au processus de soumission pour la fourniture de services;
- offrira une séance interactive de Q et R sur le site Web pour faciliter les demandes de renseignements concernant le processus d'approvisionnement;
- animera, pour les femmes, des séances d'information et de réseautage concernant le processus d'approvisionnement et expliquant le processus de soumission en mettant l'accent sur les marches à suivre et les conseils clairs;
- travaillera en partenariat avec les organismes communautaires pertinents pour la tenue de séances d'information spécialement conçues pour les femmes;
- tracera, dans des documents imprimés, le profil de femmes entrepreneures qui ont réussi et encouragera celles-ci à prendre part à des séances d'information et de réseautage en tant que modèle de comportement et pour partager leurs expériences;
- veillera à ce que l'information relative à l'approvisionnement soit présentée en langage clair et de manière non intimidante, tant dans les documents écrits que les exposés verbaux;
- placera des annonces et publiera des articles dans les médias locaux exprimant que les femmes sont les bienvenues et invitées à participer au processus d'approvisionnement;
- placera des annonces dans les médias locaux exprimant l'intention d'animer des séances relatives au processus d'approvisionnement pour les femmes et les invitant à y participer;
- assurera la liaison avec les organismes communautaires et les associations de gens d’affaires pour profiter de leurs réseaux et de leurs listes de contacts de manière à diffuser le message que les femmes sont invitées à participer au processus d'approvisionnement;

- répertoriera les entreprises appartenant à des femmes ou gérées par des femmes dans la province et les portera sur une liste de contacts réguliers rattachés aux occasions d'affaires qu'offre l'ELAIOM;

- adoptera une culture de diversité des fournisseurs (entreprises appartenant à des femmes) et en suivra les progrès en insistant sur la croissance continue.

Sur la base de consultations avec la Newfoundland and Labrador Organization of Women Entrepreneurs (NLOWE), NML comprend que les renseignements et les statistiques concernant les entreprises appartenant à des femmes ou gérées par des femmes dans les secteurs non traditionnels font actuellement défaut. En raison de ce manque de données, il n'est pas possible de fixer des objectifs en matière d'accès aux occasions d'affaires. À cette fin, NML :

- travaillera en collaboration avec la NLOWE pour recueillir des renseignements et des statistiques sur l'existence d'entreprises de fourniture appartenant à des femmes ou gérées par des femmes dans les secteurs non traditionnels;

- épaulera la NLOWE, les gouvernements et d'autres organisations dans le cadre de leurs initiatives visant à amasser des renseignements et des statistiques concernant les objectifs d'accès aux possibilités d'occasions d'affaires pour les femmes;

- fixera des objectifs d'accès des femmes aux occasions d'affaires dès qu'elle disposera des renseignements et des statistiques nécessaires.

5.0 PLAN DE MISE EN ŒUVRE

Il y a souvent un écart entre les politiques d'équité entre les sexes et leur application réelle. L'exécution efficace du PRF requerra un plan exhaustif de mise en œuvre. Afin d'assurer une mise en œuvre active et ciblée, NML :

- convoquera une réunion du Comité du PRF chaque trimestre;
- explorera la possibilité de faire siéger des représentants syndicaux au Comité du PRF pour obtenir leur collaboration à la mise en œuvre;
- demandera au besoin à des groupes d'intérêt externes, comme le WRDC, de conseiller directement le Comité du PRF afin qu'il bénéficie lorsque requis de compétences externes quant à la mise en œuvre;
- recueillera régulièrement les avis des cadres, des employés, des groupes de femmes et des autres parties prenantes pour établir les politiques, marches à suivre et mesures qui assureront l'exécution efficace du PRF.

Un aspect important de l'exécution du PRF est la réduction des obstacles à l'emploi en vue de l'avancement des femmes. Le but du plan de mise en œuvre consistera à réduire au minimum les embûches systémiques sous tous les aspects de l'ELAIOM.

Le présent Plan portera sur des questions comme la modification des politiques de recrutement et de rétention, au besoin; sur la formation et l'orientation sur place; sur l'hébergement; et sur les services de soutien à tous les lieux de travail. NML :

- analysera en fonction des sexes les politiques de recrutement et de rétention afin de s'assurer qu'elles sont exemptes d'obstacles systémiques et afin de favoriser l'accès égal des femmes aux occasions. Si des obstacles sont décelés, elle reverra ses politiques pour les éliminer;
- inclura une séance de formation sur l'équité entre les sexes dans la présentation du PRF et lors des ateliers sur le PRF, lesquels doivent être donnés à tous les nouveaux cadres et employés dans le cadre de leur orientation de même qu'aux cadres et aux employé(e)s existant(e)s à titre de perfectionnement professionnel;
- renseignera sur les politiques et procédures de respect au travail et de lutte contre la discrimination, le harcèlement et la violence dans le cadre de l'orientation offerte aux nouveaux/elles employé(e)s et du perfectionnement professionnel offert à tous les cadres et employé(e)s;
- affichera, en des lieux fréquentés du chantier, les politiques et procédures de respect au travail et de lutte contre la discrimination, le harcèlement et la violence, en soulignant la tolérance zéro;

- nommera une personne neutre – sans influence sur la situation d'emploi des femmes – comme agent sur les chantiers avec qui les employés peuvent discuter de questions d'équité entre les sexes et de milieu de travail respectueux de manière confidentielle et ordonnée;

- confiera la responsabilité globale des questions d'équité entre les sexes et de milieu de travail respectueux à la vice-présidente responsable du PRF et au coordonnateur de l'équité professionnelle;

- s'assurera qu'il y a des toilettes et des vestiaires réservés aux femmes dans toutes les zones du chantier, qu'ils procurent de l'intimité et que les installations d'hébergement sont appropriées;

- s'assurera que les locaux et les dortoirs procurent de l'intimité et que les installations sont appropriées pour tous les employés;

- désignera des zones du chantier que les femmes pourront utiliser pour des activités récréatives et sociales et recueillera les avis des femmes en ce qui concerne les activités souhaitées;

- recueillera continuellement l'avis des employées pour s'assurer que les installations d'hébergement sont suffisantes et appropriées et apportera les améliorations raisonnables requises;

- fournira aux employées un équipement bien ajusté, en tant que priorité et exigence au cours de la formation/initiation, consciente que l'équipement de sécurité est le plus souvent conçu pour l'anatomie masculine, en tailles génériques qui ne tiennent pas compte des différences individuelles;

- établira des politiques et procédures privilégiant la famille, telles que les congés d'ordre familial; évaluera les besoins des employées au moyen de groupes de consultation ou de sondages – en reconnaissant que la compréhension des questions familiales permettra l'évolution des pratiques appropriées; insufflera le maximum de souplesse possible aux politiques en vue de répondre aux besoins des groupes sous-représentés, tels que les femmes; et encouragera les réseaux de soutien;

- explorera les options permettant des horaires souples par rotation pour accommoder les responsabilités familiales, dont les quarts de travail plus courts grâce aux arrangements de partage d'emploi;

- explorera les options de partenariat avec les garderies, les gouvernements et les organisations communautaires pour aider les employés à trouver des services de garde abordables dans leur collectivité.

6.0 DIRECTION ET RESPONSABILITÉ

Cet élément du PRF donne un aperçu des tâches au sein de la direction, incluant l'application des mécanismes d'imputabilité visant à assurer le respect du PRF par les entrepreneurs.

NML a la responsabilité globale de la mise en œuvre du PRF. Quant aux tâches de direction et à la responsabilité, NML :

- confiera la responsabilité des résultats d'équité en matière d'emploi à une vice-présidente qui supervisera l'exécution du PRF et s'assurera de son respect par ses employé(e)s et ses entrepreneurs. Cette imputabilité vise les phases de construction et d'exploitation du Projet;

- épaulera ses entrepreneurs et sous-traitants dans l'atteinte de leurs objectifs et la satisfaction de leurs exigences à l'égard des femmes tout en collaborant avec eux sur les mesures visant à créer des emplois supplémentaires pour les femmes dans le cadre du Projet;

- mettra à l'honneur les champions et les leaders au sein de NML et de ses entreprises contractantes à l'assemblée annuelle des parties prenantes, et tout particulièrement les entreprises qui font preuve de leadership quant aux buts et aux initiatives du PRF.

NML travaillera étroitement avec ses principaux entrepreneurs pour s'assurer qu'ils connaissent le PRF et s'y conforment. La société exigera de ses entrepreneurs un engagement à l'égard de l'équité en matière d'emploi et en tiendra compte dans l'attribution des contrats. NML inclura des dispositions d'équité entre les sexes dans ses critères d'évaluation de soumissions et prescrira que les contrats liés à l'exécution de l'ELAIOM comportent une déclaration des soumissionnaires retenus attestant qu'ils connaissent l'existence et l'importance du PRF. Voici les critères de soumission connexes pour les entreprises contractantes :

- possibilités d'embauche et de formation pour les femmes au sein de l'entreprise en lien avec le contrat dans le cadre de l'ELAIOM;

- nombre de femmes y occupant actuellement certaines catégories d'emplois;

- nombre de femmes qu'ils prévoient embaucher pour pourvoir des postes précis dans le cadre de l'ELAIOM;

- plans visant à assurer un milieu favorable, inclusif et respectueux pour les femmes;

- plans visant à appuyer l'accès des femmes aux occasions d'affaires;

- mesures d'emploi et d'accès des femmes aux occasions d'affaires dans lesquelles ces entreprises sont actuellement engagées ou qu'elles soutiennent, ainsi que dans les occasions d'affaires auxquelles elles prévoient participer ou contribuer.

NML exigera que chaque entrepreneur principal œuvrant dans le cadre de l'ELAIOM remette un engagement et un plan de conformité au PRF. Les entrepreneurs principaux devront s'assurer que leurs sous-traitants connaissent le contenu, les buts et les objectifs du PRF et s'y conforment, conformité qui sera supervisée par NML, l'entité responsable de l'exécution du PRF.

7.0 SUIVI, PRODUCTION DE RAPPORTS ET CALENDRIER D'EXÉCUTION

NML contrôlera les objectifs et les buts du PRF et en rendra compte mensuellement, trimestriellement et annuellement et ce, de la façon suivante :

- NML et chacun des entrepreneurs du Projet seront chargés du suivi interne visant à mesurer le succès dans l'atteinte des objectifs de création d'emplois pour les femmes;
- NML réunira mensuellement, trimestriellement et annuellement les données d'emploi internes : ventilation par sexe et par race en ce qui a trait à l'embauche, au type d'emploi, à la formation et à l'avancement;
- les entrepreneurs du Projet seront tenus de réunir mensuellement, trimestriellement et annuellement les données d'emploi et de les remettre à NML;
- les données d'emploi seront rassemblées, présentées au gouvernement de Terre-Neuve-et-Labrador et rendues publiques dans des rapports mensuels, trimestriels et annuels sur le PRF de l'ELAIOM;
- les rapports mensuels indiqueront les progrès réalisés en rapport aux objectifs d'embauche du PRF;
- les rapports trimestriels présenteront également des mises à jour concernant les principales activités et initiatives du PRF;
- les rapports annuels présenteront des mises à jour quant au statut et aux progrès de tous les engagements du PRF, notamment des initiatives spéciales, des programmes et des initiatives d'accès aux occasions d'affaires.

NML suivra le calendrier ci-après pour la réalisation des buts et des objectifs indiqués dans le présent plan. Les délais liés aux objectifs de création d'emplois pour les femmes indiquent que les objectifs à court terme seront atteints au début de chaque phase et que ces buts et ces objectifs continueront d'être respectés au cours de l'embauche. Les délais liés aux objectifs à long terme traduisent la nécessité de prendre le temps nécessaire de constituer un bassin de candidates qualifiées dans lequel on pourra recruter. L'on s'attend à ce que ces buts et ces objectifs soient atteints grâce aux mesures d'éducation et de formation de NML et à une intensification généralisée de l'encouragement des carrières non traditionnelles pour les femmes.

Tableau 5 : Calendrier de réalisation des buts et des objectifs

Type de but/ objectif	**Phase de construction/préparation**			**Phase d'exploitation**		
	Au début	D'ici l'an 2	Pour toute la durée du projet	Au début	D'ici l'an 5	Pour toute la durée du projet
Communications internes	x		x	x		x
Communications externes	x		x	x		x
Objectifs d'embauche à court terme	x		x	x		x
Objectifs d'embauche à long terme		x			x	x
Éducation et formation	x		x	x		x
Accès aux occasions d'affaires	x		x	x		x
Plan de mise en œuvre	x		x	x		x
Leadership et imputabilité	x		x	x		x
Suivi et production de rapports			x			x
Amélioration continue			x			x

Voir l'annexe B la liste de contrôle et le calendrier de mise en œuvre des mesures proposées dans le PRF.

8.0 AMÉLIORATION CONTINUE

Des évaluations et des modifications périodiques s'imposent pour favoriser l'amélioration continue du PRF et obtenir une main-d'œuvre représentative dans un laps de temps raisonnable. Visant l'amélioration continue, NML :

- contrôlera chaque année les données d'emploi et les évaluera par rapport aux objectifs fixés dans le PRF. Le cas échéant, NML examinera et modifiera ses démarches, mesures, objectifs et buts;

- exécutera un examen annuel prenant en compte l'avis des cadres et des employé(e)s, ainsi que des autres promoteurs et des principales parties prenantes de l'ELAIOM, en partie à l'aide des mécanismes décrits dans la stratégie de communication élaborée à la section 3.0 du PRF;

- tiendra une assemblée annuelle avec toutes les parties prenantes pertinentes pour examiner les progrès effectués dans la mise en œuvre du PRF et pour recueillir les commentaires et les meilleures pratiques des parties prenantes;

- rencontrera le gouvernement chaque année pour évaluer les progrès et dégager les points où l'amélioration doit se poursuivre;

- examinera annuellement les objectifs d'embauche des femmes par rapport à la disponibilité de femmes qualifiées disponibles dans la population active en s'appuyant sur les données d'équité en matière d'emploi de Statistique Canada et les taux de diplomation postsecondaire par sexe. Des modifications seront apportées aux objectifs en fonction de la hausse du nombre de femmes qualifiées;

- examinera et modifiera les objectifs et les initiatives en matière d'accès aux occasions d'affaires au fur et à mesure de la progression d'activités déterminées dans ce domaine.

Annexe A

Liste des participants aux consultations

Liste des participants aux consultations

Groupes de femmes, groupes communautaires (consultations individuelles)

- Newfoundland and Labrador Organization of Women Entrepreneurs (NLOWE)

  2nd Floor, Regatta Plaza II
  84-86 Elizabeth Avenue
  St. John's, NL
  A1A 1W7

- Women in Science and Engineering (WISE)

  Faculty of Engineering and Applied Sciences
  Memorial University
  St. John's, NL
  A1B 3X5

- Women Interested in Successful Employment (WISE)

  Viking Building, Suite 306
  136 Crosbie Rd.
  St. John's, NL
  A1B 3K3

Gouvernement (groupe de consultation)

- Ministère des Ressources naturelles (ministère responsable de la Condition féminine)

  Department of Natural Resources
  50 Elizabeth Avenue
  P.O. Box 8700
  St. John's, NL
  A1B 4J6

- Provincial Advisory Council on the Status of Women (PACSW)

  Provincial Advisory Council on the Status of Women
  15 Hallett Cres. Suite 103
  St. John's, NL
  A1B 4C4

- Women’s Policy Office

  Women’s Policy Office
  Government of Newfoundland and Labrador
  P.O. Box 8700
  St. John’s, NL
  A1B 4J6

Peuples autochtones (consultations individuelles)

- Métis Nation : Labrador
  NunatuKavut (Métis Nation)
  370 Hamilton River Road
  Happy Valley-Goose Bay, NL
  A0P 1C0

- Coordonnateur de l’embauche d’Innus : mine du Labrador
  Board Member WRDC
  Station C
  Happy Valley-Goose Bay, NL
  A0P 1C0

Établissements d’enseignement (consultations individuelles)

- College of the North Atlantic (CNA)

  Prince Philip Drive Campus
  1 Prince Philip Dr
  P.O. Box 1693
  St. John’s, NL
  A1C 5R7

  Happy Valley- Goose Bay Campus
  219 Hamilton Rd.
  P.O. Box 1720 Stn. B
  Happy Valley-Goose Bay, NL
  A0B 1E0

- Memorial University of Newfoundland

  Faculty of Engineering and Applied Science
  Memorial University
  St. John’s, NL
  A1B 3X5

Faculty of Business Administration
Memorial University
St. John's, NL
A1B 3X5

Syndicats (consultations individuelles)

- Fraternité internationale des ouvriers en électricité (FIOE)

  IBEW Local 2330
  1082 Thorburn Rd. 21463
  Portugal Cove-St. Philips, NL

- NL Regional Council of Carpenters, Millwrights & Allied Workers, Local 579: Office to Advance Women

  Office to Advance Women Apprentices
  89 McNamara Dr.
  Paradise, NL
  A1L 3W2

Associations industrielles (consultations individuelles)

- Conseil des ressources humaines de l'industrie minière

  Mining Industry Human Resources Council (MIHR)
  260 Hearst Way, suite 401
  Kanata, ON
  K2L 3H1

- Newfoundland and Labrador Chamber of Mineral Resources

  Chamber of Mineral Resources Inc.
  P.O. Box 21463
  St. John's, NL
  A1A 5G6

Femmes de métier (consultations individuelles)

- Apprentie-électricienne de 4e année
- Compagne électricienne

  Nota : Ces deux femmes travaillent présentement dans des mines qui font la navette aérienne pour leurs employées.

Annexe B

Liste de contrôle des buts et des objectifs et calendrier de mise en œuvre

PLAN DE RECRUTEMENT FÉMININ

Liste de contrôle des buts et des objectifs
et calendrier de mise en œuvre*

INSTRUCTIONS

- Indiquer pour chaque mesure le trimestre ou l'année où elle sera mise en œuvre. Voir directives à la section 5.0 –
- Plan de mise en œuvre du PRF, tableau 5 : Calendrier de mise en œuvre des buts et des objectifs.

OBJECTIFS ET INITIATIVES	PHASE DE CONSTRUCTION		PHASE D'EXPLOITATION					
	An 1	An 2	An 1	An 2	An 3	An 4	An 5	Toute la durée
PERSONNEL RESPONSABLE								
Confier la responsabilité de la mise en œuvre globale du PRF à une vice-présidente								
Engager un coordonnateur de l'équité professionnelle pour assurer une exécution efficace et suivie du PRF								
Mettre sur pied un comité du PRF composé de personnel supérieur et dirigé par la vice-présidente responsable et le coordonnateur de l'équité professionnelle								
COMMUNICATIONS								
COMMUNICATIONS INTERNES								
Faire connaître le PRF à l'interne								
Élaborer une stratégie de communication interne du PRF fondée sur ses lignes directrices								

OBJECTIFS ET INITIATIVES	PHASE DE CONSTRUCTION		PHASE D'EXPLOITATION					
	An 1	**An 2**	**An 1**	**An 2**	**An 3**	**An 4**	**An 5**	**Toute la durée**
Élaborer des critères d'analyse de l'inclusion des deux sexes pour assurer de manière permanente un langage inclusif dans toutes les communications								
Préparer un exposé et donner un atelier sur le PRF aux nouveaux employés lors de la séance d'orientation, de même qu'aux cadres et au personnel en poste, à titre de perfectionnement								
Remettre à tous les cadres et au personnel des documents écrits renseignant de manière précise sur le PRF et afficher les messages qui s'y rattachent								
Assurer une communication permanente								
Établir des mécanismes de communication par lesquels les cadres et les employé(e)s peuvent poser des questions sur le PRF et donner leur avis								
Mettre au point des mécanismes de sondage des cadres et employé(e)s, et recueillir les avis pour dégager les éléments de réussite et les possibilités d'amélioration								

OBJECTIFS ET INITIATIVES	PHASE DE CONSTRUCTION		PHASE D’EXPLOITATION					
	An 1	An 2	An 1	An 2	An 3	An 4	An 5	Toute la durée
Faire connaître les occasions internes aux femmes								
Élaborer et employer un langage et des illustrations inclusifs à l'égard des sexes dans les annonces d’occasions internes								

OBJECTIFS ET INITIATIVES	PHASE DE CONSTRUCTION		PHASE D'EXPLOITATION					
	An 1	An 2	An 1	An 2	An 3	An 4	An 5	Toute la durée
Tenir régulièrement des séances internes d'information et de réseautage pour permettre aux femmes présentes sur le chantier de partager de l'information								
COMMUNICATIONS EXTERNES								
Faire preuve d'une culture d'équité entre les sexes								
Élaborer une stratégie de communication externe du PRF fondée sur ses lignes directrices								
Élaborer des textes et des illustrations inclusifs à l'égard des deux sexes et les utiliser dans toutes les communications externes, y compris dans les documents informatifs, promotionnels et publicitaires								
Élaborer des mécanismes visant à offrir de l'information et des mises à jour sur le PRF dans les bulletins externes, les communications avec les médias et le site Web de NML								
Faire connaître les occasions d'affaires externes aux femmes								
Tenir des séances d'information et de réseautage publiques destinées aux femmes en partenariat avec les groupes de femmes et les groupes autochtones								
Faire connaître les occasions de formation et d'emploi aux groupes de femmes, aux groupes autochtones et aux orienteurs								

OBJECTIFS ET INITIATIVES	PHASE DE CONSTRUCTION		PHASE D’EXPLOITATION					
	An 1	An 2	An 1	An 2	An 3	An 4	An 5	Toute la durée
Établir une communication régulière avec les parties prenantes								
Transmettre de l'information et les dernières nouvelles sur le PRF dans des bulletins et des avis directement aux groupes de femmes et aux autres parties prenantes								
Établir des mécanismes de communication permettant aux parties prenantes de poser des questions sur le PRF et de donner leur avis								
EMBAUCHE DE FEMMES								
OBJECTIF D’EMBAUCHE À COURT TERME								
Mettre en œuvre des objectifs d’embauche à court terme pour chaque phase								
OBJECTIF D’EMBAUCHE À LONG TERME								
Mettre en œuvre des objectifs d’embauche à long terme pour chaque phase								
RECRUTEMENT ET SÉLECTION								
Cibler directement les femmes dans les occasions d’emploi								
Consulter et exécuter les mesures décrites à la section Communications du PRF								
Veiller à ce que le processus de recrutement et de sélection soit exempt d’obstacles systémiques pour les femmes								
Mettre en place une culture d’entreprise dénuée de partialité et de discrimination relativement à l’embauche des femmes								

OBJECTIFS ET INITIATIVES	PHASE DE CONSTRUCTION		PHASE D'EXPLOITATION					
	An 1	**An 2**	**An 1**	**An 2**	**An 3**	**An 4**	**An 5**	**Toute la durée**
S'assurer que les personnes chargées du recrutement reçoivent une formation de sensibilisation à l'équité entre les sexes et à la culture avant d'examiner des CV et de faire passer des entrevues								
Dresser une liste de critères d'évaluation des CV et de sélection de candidats en prenant en compte que les femmes possèdent généralement moins d'expérience que les hommes								
Explorer les possibilités d'appliquer des mesures spéciales d'embauche de femmes qualifiées lorsqu'on embauche à partir des listes syndicales jusqu'à l'atteinte des objectifs								
RÉTENTION ET AVANCEMENT								
Retenir les employées								
Consulter et appliquer les mesures décrites à la section Mise en œuvre du PRF								
Cibler directement les femmes dans les occasions de promotion								
Consulter et appliquer les mesures décrites aux sections Éducation et formation et Stratégie de communication du PRF								

OBJECTIFS ET INITIATIVES	PHASE DE CONSTRUCTION		PHASE D’EXPLOITATION					
	An 1	An 2	An 1	An 2	An 3	An 4	An 5	Toute la durée
Veiller à ce que le processus de rétention et de promotion soit exempt d’obstacles systémiques pour les femmes								
Mettre en place une culture d’entreprise dénuée de biais relatif au sexe et de discrimination relativement aux promotions accordées aux femmes								
Identifier des qualifications autres que l’expérience des femmes utilisables comme critères de sélection dans le processus de promotion								
Tenir compte des renseignements d’identification du sexe dans le processus de promotion dans le but d’atteindre les objectifs et de réunir des données aux fins de suivi								
CONSIDÉRATIONS CULTURELLES À L’ENDROIT DES FEMMES AUTOCHTONES								
Tenir compte des considérations culturelles dans le recrutement et la rétention des femmes autochtones								
Élaborer des textes et des illustrations inclusifs à l'égard des deux sexes et des cultures et les utiliser dans toutes les communications externes								
Inclure un volet de sensibilisation culturelle lors de l’orientation des nouveaux/elles employé(e)s et lors du perfectionnement professionnel des cadres et des employé(e)s en poste ou nouvellement recruté(e)s								

OBJECTIFS ET INITIATIVES	PHASE DE CONSTRUCTION		PHASE D’EXPLOITATION					
	An 1	An 2	An 1	An 2	An 3	An 4	An 5	Toute la durée
Susciter un sens communautaire et un sentiment d’appartenance en désignant des endroits sur le chantier pour les femmes autochtones pour pratiquer des activités culturelles et sociales								
Tenir régulièrement des séances de mise à jour et des rencontres de rétroaction avec les employées autochtones et les groupes autochtones								
Soutenir des programmes d’études et de formation visant à encourager les femmes autochtones à exercer des emplois non traditionnels								
ÉDUCATION ET FORMATION								
Favoriser les occasions d’éducation et de formation pour les femmes								
Soutenir des programmes d’éducation et de formation visant à encourager les femmes à exercer des emplois non traditionnels								
Encourager l’éducation et la formation chez les femmes en donnant des exemples de femmes exerçant des emplois non traditionnels dans les documents d’information								

OBJECTIFS ET INITIATIVES	PHASE DE CONSTRUCTION		PHASE D’EXPLOITATION					
	An 1	**An 2**	**An 1**	**An 2**	**An 3**	**An 4**	**An 5**	**Toute la durée**
Renseigner les établissements d’enseignement sur les emplois offerts dans le cadre de l’ELAIOM et les compétences requises pour les exercer								
Donner aux femmes les compétences requises pour occuper un poste dans le cadre de l’ELAIOM								
Donner une formation en cours d’emploi individualisée aux employées en veillant à ce qu’elle soit adaptée aux besoins des femmes								
Établir un modèle de mentorat axé sur le développement de compétences efficaces en jumelant les femmes avec des mentors féminins lorsque c’est possible								
Permettre aux employées d’acquérir la formation leur permettant d’occuper des postes supérieurs afin d’encourager l’avancement et la promotion								
ACCÈS AUX OCCASIONS D’AFFAIRES								
Encourager les femmes à saisir les occasions d’affaires présentées dans le cadre de l’ELAIOM								
S’assurer que les femmes jouissent d’un accès juste et égal à ces occasions								
Élaborer une stratégie de communication, de publicité et de sensibilisation visant à faire connaître les occasions d’affaires directement aux femmes entrepreneures								

OBJECTIFS ET INITIATIVES	PHASE DE CONSTRUCTION		PHASE D'EXPLOITATION					
	An 1	An 2	An 1	An 2	An 3	An 4	An 5	Toute la durée
Placer des annonces et faire paraître dans les médias locaux des articles indiquant que les femmes sont les bienvenues et invitées à participer à l'approvisionnement								
Mettre au premier plan une partie du site Web de NML invitant les femmes entrepreneures à participer au processus de soumission pour l'approvisionnement								
S'associer avec les organisations communautaires pertinentes pour animer des séances d'information spécialement conçues pour les femmes								
S'assurer que l'information sur l'approvisionnement soit présentée dans un langage clair et de manière non intimidante dans tous les documents								
Adopter une culture de diversité des fournisseurs et en suivre les progrès en mettant l'accent sur l'amélioration continue								
Amasser de l'information et des statistiques sur les entreprises dont les femmes sont les propriétaires ou les dirigeantes								
Recueillir, en collaboration avec NLOWE, de l'information et des statistiques sur les secteurs comportant des fournisseurs non traditionnels								
Soutenir NLOWE, le gouvernement et d'autres organisations afin de réunir de l'information et des statistiques concernant l'accès aux occasions d'affaires pour les femmes								

OBJECTIFS ET INITIATIVES	PHASE DE CONSTRUCTION		PHASE D'EXPLOITATION					
	An 1	**An 2**	**An 1**	**An 2**	**An 3**	**An 4**	**An 5**	**Toute la durée**
Fixer des objectifs d'accès aux occasions d'affaires pour les femmes dès que l'information et les statistiques pertinentes seront disponibles								
PLAN DE MISE EN ŒUVRE								
Assurer une mise en œuvre active, focalisée et efficace								
Réunir le Comité du PRF chaque trimestre et explorer la possibilité d'y faire siéger des représentants syndicaux								
Recueillir les avis des gestionnaires, employé(e)s, groupes de femmes et autres parties prenantes en vue d'assurer une mise en œuvre efficace								
Réduire les obstacles systémiques au recrutement féminin sous tous les aspects de l'ELAIOM								
Effectuer une analyse des politiques de recrutement et de rétention pour s'assurer qu'elles sont exemptes d'obstacles systémiques au recrutement des femmes et à leur avancement								
Fournir de l'information sur le respect au travail et la lutte contre la discrimination et le harcèlement dans les documents d'orientation et les autres imprimés								

OBJECTIFS ET INITIATIVES	PHASE DE CONSTRUCTION		PHASE D’EXPLOITATION					
	An 1	An 2	An 1	An 2	An 3	An 4	An 5	Toute la durée
Veiller à ce qu’il y ait des toilettes et des vestiaires réservés aux femmes dans toutes les zones du chantier; assurer le respect de la vie privée des femmes et leur fournir de l’hébergement approprié à cet effet								
Fournir un équipement de protection individuelle parfaitement ajusté est une exigence durant la formation et l’orientation								
Établir des politiques et des procédures de conciliation travail-famille et explorer des options d’horaires souples par rotation pour permettre aux employées d’exercer leurs responsabilités familiales								
LEADERSHIP ET IMPUTABILITÉ								
Faire preuve de leadership et d’imputabilité au sein de NML								
Confier la responsabilité de l’équité en matière d’emploi et de la conformité des employés de NML aux politiques correspondantes à une vice-présidente								

OBJECTIFS ET INITIATIVES	PHASE DE CONSTRUCTION		PHASE D'EXPLOITATION					
	An 1	An 2	An 1	An 2	An 3	An 4	An 5	Toute la durée
Aider les entrepreneurs et sous-traitants à atteindre les objectifs et exigences d'embauche de femmes, et collaborer avec eux								
Assurer la conformité au PRF par les entrepreneurs								
La société exigera de ses entrepreneurs un engagement à l'égard de l'équité en matière d'emploi et en tiendra compte dans l'attribution des contrats								
NML inclura des dispositions d'équité entre les sexes dans ses critères d'évaluation des soumissions et exigera que les soumissionnaires s'y conforment dans le cadre du PRF								
ACTIVITÉS DE SUIVI ET DE PRODUCTION DE RAPPORTS								
Mesurer le degré d'atteinte des objectifs du PRF et en rendre compte								
Élaborer des mécanismes de collecte et de suivi mensuels, trimestriels et annuels des données d'emploi et d'avancement								
Élaborer des mécanismes par lesquels les entrepreneurs du Projet recueilleront et remettront mensuellement, trimestriellement et annuellement des données d'emploi à NML								

OBJECTIFS ET INITIATIVES	PHASE DE CONSTRUCTION		PHASE D'EXPLOITATION					
	An 1	**An 2**	**An 1**	**An 2**	**An 3**	**An 4**	**An 5**	**Toute la durée**
AMÉLIORATION CONTINUE								
Viser l'amélioration continue grâce à des évaluations et modifications périodiques								
Élaborer des mécanismes de suivi annuel des données d'emploi et évaluer ces dernières en regard des objectifs du PRF								
Réviser annuellement les objectifs d'embauche pour les femmes par rapport à la disponibilité des femmes qualifiées sur le marché du travail								
Procéder à un examen annuel du PRF en prenant en compte l'avis des cadres, des employé(e)s et des autres parties prenantes								