Specifications and Drawings
Environmental Site Remediation
Bullmoose Area Mine Sites, NT

Issued for Construction

Prepared for:
Public Works and Government Services Canada

Prepared by:
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PART 1 - GENERAL

1.1 PRECEDENCE

.1 Division 1 Sections take precedence over technical specification sections in other Divisions of this specification.

1.2 BACKGROUND INFORMATION

.1 Site Histories

.1 Ruth Mine: The Ruth Mine site consists of a main area and an old exploration camp. It is comprised of mine and camp structures, two tailings areas, an airstrip, and several outlying buildings and structures. INAC is currently the caretaker of the Ruth Mine site with subsurface rights having belonged to Hidden Lake Gold Mines, Lease #2447 (AMEC 2006). The lease expired in 2013. Five companies have historically been involved in Ruth Mine exploration and mining activities, beginning in 1940, but with no substantial work conducted after 1986. Mining itself was conducted sporadically from 1940 through 1974. In 1980, Roxwell Goldmines leased Ruth Mine and conducted an evaluation. Between 1980 and 1986, Hidden Lake Gold Mines acquired the property and resumed drilling. The mine site has been inactive since 1986.

.2 Bullmoose Mine: The current caretaker is INAC. Subsurface rights belong to Bullmoose Mining Ltd who has applied for a 2012 water licence with the Mackenzie Valley Land and Water Board, MV2012L2-0004 for reprocessing of the waste rock. A winter road was constructed to the site in order to support the mine operation and 1988 decommissioning works that were completed by Robinson Enterprises Limited. Minimal mining related infrastructure is present at the site; however, tailings areas are still present as well as seepage from an underground mine portal and sediment in Bullmoose Creek and Bullmoose Lake. The first claims were staked in 1939 by Consolidated Mining and Smelting Co. of Canada Ltd (Cominco). In 1940, a program of drilling and trenching was completed. In 1941, further exploration continued and a shaft was constructed and later sunk. As well, a small mill was constructed where a gravity and flotation system was used to recover gold. No cyanide or mercury was used in the process. Bullmoose Mine was inactive from 1942 to 1961. From 1961 to 1962, the claims were transferred to William Macdonald and a small amount of exploration work (e.g., trenching and stripping) occurred. In 1968, Duke Mining Ltd. (Duke) acquired the property and carried out exploration from 1968 to 1970, and in 1972. Duke and Terra Mines Ltd. (Terra) entered into an agreement in 1973 in which Terra obtained 50% interest in the claims after exploration. Terra explored the site further from 1975 to 1976 and actively operated it from 1981 to 1987. From 1986 to 1987, the mill was operated in a pilot test for primary processing of mined ore. The majority of the buildings and equipment were decommissioned or removed in 1988. It is understood that the site infrastructure was removed during the physical site decommissioning conducted by Robinson Enterprises Ltd. with some tanks being cut-up and buried on-site. There is no available information available on the location of the historic landfill at this site.

.3 Beaulieu Mine: The site consists of an abandoned mine with associated mining infrastructure, and a small tailings area, of about 40 years age. Beaulieu Mine was initially staked in 1939 by Mr. Sam Hansen, with mining activities first occurring in 1941 when Ms. Norma of Tungsten and Gold Mines Ltd., advanced a pit at the Norma vein, and installed a small mill operation at the site. Further mining activities occurred from 1945 to 1950, by Emil Schnee of Beaulieu Yellowknife Mines Ltd., though it only operated for a few months between 1947 and 1948. The mine was then abandoned in 1950. Strike Lake Resources operated a land use permit for mining quartz veins on the mill vein material at the site in
1979, while they also held a water licence for mining and milling operations at this time. Between the years 1994 to 1996, various clean-up activities were conducted at the site on behalf of INAC.

.4 Spectrum Mine: The site consists of an abandoned mine site with associated mining infrastructure, and a small tailings area, of about 30 to 60 years age. Spectrum Mine was initially staked in 1945 by Transcontinental Resources Ltd. who optioned the claims and performed considerable trenching and sampling along the A-zone (or #1 vein). From 1957 to 1959 Beneventum Mining Company Ltd. drilled along the A & C-zones. The company brought a load of mining machinery by cat train and snowmobile in early 1959. The shaft was collared in April 1959 on the A-zone. From 1968 to 1969, Gateway Ventures Ltd. sampled the trenches and completed additional drilling along the A-zone. In 1980, the Gary Claim was staked at the site. Ethan Mines Ltd. acquired the claim and applied for a water licence to NWT Water Board for mining and milling. Water Licence No. N1A3-1246 was authorized (beginning June 15, 1983 and expiring May 31, 1984). The company planned to conduct seasonal operations for several years. A further mine claim was staked by Frip-1 in 1993. No further records or information relating to the site are known of after this time.

.5 Chipp Mine: The site consists of an abandoned mine and associated mining infrastructure. Chipp Mine was staked in August 1940 by Emil Skam (claim name Eileen Claims). Stripping, rock excavation and ore extraction occurred from 1940 to 1947. In 1949, drilling was completed on the Eileen No. 2 claim. In 1972, Dave Nickerson obtained ownership of the site and re-staked the property as “Eileen” claims. In 1975, Dave Nickerson and Andex Mines Limited completed additional drilling.

.6 Storm Mine: The site consists of an abandoned mine site, and associated mining infrastructure, of approximately 60 years of age. Storm Mine was initially staked by Jimmy Irwin and Hank Lange in 1940, and then transferred to Storm Yellowknife Syndicate in 1941. The mineral interest shifted from gold to scheelite bearing tungsten. In 1942, Tungsten Developers Ltd. was founded, and optioned the claims. The mining operation was ceased due to the cold weather. Exploration activities were carried out by various companies from 1945 to 1985.

.7 Joon Mine: The main site consists of a mining and a camp area, located at the northeast shore of Strike Lake. Joon Mine was initially staked in 1939 by Consolidated Mining and Smelting Co. of Canada Ltd. (Cominco). Exploration work consisted of surface trenching and pit excavation with the discovery of 14 veins/zones that were developed at that time. In 1941, Cominco drilled a number of boreholes. In 1973, a new owner of the site, Dave Nickerson, completed additional drilling. From 1977 to 1978, Strike Lake Resources (SLR) took ownership of the site. Ore was mined by open pit methods at the north area of the site, and ore was crushed and then trucked to the nearby Beaulieu Mine site. Several buildings were constructed at the north end of Strike Lake to service the mining operation. Materials were processed at the Beaulieu Mine Site. In 1985, Taiga Consultants carried out exploration on behalf of Genesis Resources Corp. Ltd. Detailed prospecting was carried out including relocation, mapping and sampling of the Cominco trenches and geo-physical surveys. In 1988, Treasure Island Resources (TIR) Corp. completed additional drilling.

.2 Site Locations: The Bullmoose area mines are located within the Akaitcho Dene First Nation asserted territory and the Môwhi Gogha Dë Niîtêê boundary.

.1 Ruth Mine: The Ruth Mine is situated on the west side of Tam Lake, and is 90 km east of Yellowknife, NT. It is at approximately 62° 27' 45" N and 112° 34' 15" W.

.2 Bullmoose Mine: The Bullmoose Mine is approximately 83 km east of Yellowknife, NT, between Campbell Lake and Buckham Lake at approximately 62° 20' 47" N and 112° 44' 50" W. The Site is situated on Crown Land.

.3 Beaulieu Mine: Beaulieu Mine is located between Hansen Lake and John Lake; at approximately 62° 24' 55" N, 112° 54' 37" W. The Site is situated on Crown Land and the
current caretaker is INAC.

.4 Spectrum Mine: Spectrum Mine is located on the shoreline of Spectrum Lake, at approximately 62° 22' 28" N and 112° 48' 21" W.

.5 Chipp Mine: Chipp Mine is located next to Chipp Lake, at approximately 62° 27' 59" N and 112° 38' 47" W.

.6 Storm Mine: Storm Mine is located next to Consolation Lake, at approximately 62° 30' 16" N and 112° 56' 34" W.

.7 Joon Mine: Joon Mine is located at approximately 62° 25' 38" N and 112° 51' 57" W, near the Beaulieu River, and 9 km northeast of Campbell Lake. Another camp site, possibly a result of exploration activities earlier than the Joon Mine, is located approximately 1.8 km south of the main site.

.3 Site Hazards

.1 General Site hazards that the Contractor should be aware of include, but are not limited to the following:

.1 Physical hazards of dilapidated structures and debris remaining following forest fires in the summer 2014;
.2 Mine shafts and deep trenches;
.3 Fuels and lubrication fluids;
.4 Explosive materials (carbon nitrate);
.5 Wildlife;
.6 Extreme cold;
.7 Remote site conditions;
.8 Hydrocarbon-contaminated soil;
.9 Metals-impacted soil;
.10 Acidic materials and liquids (acid rock drainage);
.11 Hazardous materials including polychlorinated biphenyls (PCBs), lead paint, batteries, asbestos, and mercury;
.12 Steep slopes and rugged terrain;
.13 Scattered debris including nails, metal, and broken glass.
.14 Burned buildings and structures

.2 Ruth Mine:

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.3 Bullmoose Mine:

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<tr>
<td>SUMMARY OF WORK</td>
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<tr>
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<tr>
<td>Public Works and Government Services Canada</td>
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<tr>
<td>Project No. R.041645.006</td>
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<tr>
<td>Environmental Site Remediation</td>
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<td></td>
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<tr>
<td>Bullmoose Area Mine Sites, NT</td>
<td></td>
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<tr>
<td>SUMMARY OF WORK</td>
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<td>Environmental Site Remediation</td>
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<tr>
<td>Bullmoose Area Mine Sites, NT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUMMARY OF WORK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area 4</td>
<td>Beaulieu Mine:</td>
<td></td>
</tr>
<tr>
<td>Area</td>
<td>Site Location</td>
<td>Identified Hazard</td>
</tr>
<tr>
<td>Mill Area</td>
<td></td>
<td>Falling Hazard. Moderate / High Risk</td>
</tr>
<tr>
<td>Main Shaft: Concrete Slab adjacent to AEC 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AEC 3 and AEC 19 - Trenches</td>
<td></td>
<td>Falling Hazard. Physical Stability Low Risk</td>
</tr>
<tr>
<td>AEC 1, 2, 4 - Waste Rock</td>
<td></td>
<td>Tripping Hazard. Physical Stability-Low Risk</td>
</tr>
<tr>
<td>Area 5</td>
<td>Spectrum Mine:</td>
<td></td>
</tr>
<tr>
<td>Area</td>
<td>Site Location</td>
<td>Identified Hazard</td>
</tr>
<tr>
<td>Mill Area</td>
<td></td>
<td>Falling Hazard. Moderate Risk</td>
</tr>
<tr>
<td>AEC 4 - Trenches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AEC 3 - Mine Shaft</td>
<td></td>
<td>Falling Hazard. Moderate Risk</td>
</tr>
<tr>
<td>AEC 2 - Waste Rock</td>
<td></td>
<td>Tripping Hazard. Low Risk</td>
</tr>
<tr>
<td>AEC 7, 8, 9, 10, 11, 18, 23, 26, 28 – Dilapidated/Burned Buildings</td>
<td></td>
<td>Danger of Collapse. Confined Spaces. Moderate Risk</td>
</tr>
<tr>
<td>Area 6</td>
<td>Chipp Mine:</td>
<td></td>
</tr>
<tr>
<td>Area</td>
<td>Site Location</td>
<td>Identified Hazard</td>
</tr>
<tr>
<td>Mill Area</td>
<td></td>
<td>Falling Hazard. Moderate Risk</td>
</tr>
<tr>
<td>AEC 1 and 2 - Trenches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AEC 2 - Mine Shaft</td>
<td></td>
<td>Falling Hazard. Moderate Risk</td>
</tr>
<tr>
<td>AEC 1, 2 - Waste Rock</td>
<td></td>
<td>Tripping Hazard. Low Risk</td>
</tr>
<tr>
<td>AEC 2, 3, 4 - Dilapidated Building</td>
<td></td>
<td>Danger of Collapse. Confined Spaces. Moderate Risk</td>
</tr>
<tr>
<td>Area 7</td>
<td>Storm Mine:</td>
<td></td>
</tr>
<tr>
<td>Area</td>
<td>Site Location</td>
<td>Identified Hazard</td>
</tr>
<tr>
<td>Mill Area</td>
<td></td>
<td>Falling Hazard. Moderate Risk</td>
</tr>
<tr>
<td>AEC 2 - Trenches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area 1</td>
<td></td>
<td>Falling Hazard. Moderate Risk</td>
</tr>
</tbody>
</table>
### Joon Mine:

#### Mill Area
- **AEC 1 - Trenches**: Falling Hazard. Moderate Risk
- **AEC 2B - Waste Rock**: Tripping Hazard. Low Risk

#### Camp Area
- **Trenches**: Falling Hazard. Moderate Risk
- **Waste Rock**: Tripping Hazard. Low Risk

#### South Camp Area
- **Trenches**: Falling Hazard. Moderate Risk
- **Waste Rock**: Tripping Hazard. Low Risk
- **AEC 7A, 7E, 7K, 7L - Dilapidated Building**: Danger of Collapse. Confined Spaces. Moderate Risk

### Site Access: A former winter road network constructed in 1988, that is currently overgrown, connects the Bullmoose, Spectrum, Beaulieu, Joon, and Ruth Mines, via the Ingraham Trail (Highway 3) to Yellowknife, as shown on Figure PC1. Approximate travel distances to each of the Mine Sites are summarized in Table 1:

<table>
<thead>
<tr>
<th>Trip</th>
<th>Approximate Distance (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellowknife to Ingraham Trail junction with winter road</td>
<td>45.0</td>
</tr>
<tr>
<td>Ingraham Trail junction to Ruth Airstrip</td>
<td>63.5</td>
</tr>
<tr>
<td>Ingraham Trail junction to Bullmoose Mine</td>
<td>64.0</td>
</tr>
<tr>
<td>Ingraham Trail junction to Beaulieu Mine</td>
<td>47.1</td>
</tr>
<tr>
<td>Ingraham Trail junction to Spectrum Mine</td>
<td>46.8</td>
</tr>
<tr>
<td>Ingraham Trail junction to Chipp Mine</td>
<td>n/a</td>
</tr>
<tr>
<td>Ingraham Trail junction to Storm Mine</td>
<td>n/a</td>
</tr>
<tr>
<td>Ingraham Trail junction to Joon Mine</td>
<td>46.7</td>
</tr>
</tbody>
</table>

### Ruth Mine: The Ruth Mine airstrip is reported to be approximately 30 m wide by 450 m long. The airstrip is reportedly constructed of sand with some gravel with trace amounts of silt. The airstrip was observed to be covered with a small amount of surface vegetation and several small spruce trees in 2014. The mine site is accessed by an overgrown 3.4 km trail from the Ruth airstrip. The Ruth airstrip site is potentially accessible in the winter via the former winter road, now overgrown.

### Bullmoose Mine: The winter road between Ingraham Trail and the Bullmoose Site is currently overgrown. The Bullmoose airstrip is located approximately four kilometers...
north of the Bullmoose mine, and is approximately 45 meters wide by 900 meters long. The access trail between the airstrip and the mine site is currently overgrown.

.3 Beaulieu Mine: The site is currently accessible via float plane with a landing on John Lake during the summer months. Winter access from Ingraham Trail via Tibbitt Lake is possible along a former winter road, now overgrown. No helicopter access is currently possible due to the vegetation growth throughout the site.

.4 Spectrum Mine: Current access to the site is via float plane landing on the shoreline of Spectrum Lake during the summer months, and winter access by ski plane. Winter access from Ingraham Trail via Tibbitt Lake is possible along a former winter road, now overgrown.

.5 Chipp Mine: Current access to the site is via float plane landing on Chipp Lake during the summer months, and winter access by ski-plane. There are currently no winter roads to the Chipp Mine Site.

.6 Storm Mine: Access to the site is via float plane landing at the shoreline of Consolation Lake during the summer months, and winter access by ski plane. There are currently no winter roads to the Storm Mine Site.

.7 Joon Mine: Access to the site is likely possible via float plane landing on Unnamed Lake or Strike Lake, to be confirmed given the small size of the lakes. Winter access from Ingraham Trail via Davidson Lake is possible along the former winter road, now overgrown.

.5 Site Conditions

.1 Ruth Mine: Impacted by 2014 forest fires. All Mine areas were burned by the fire. Structure wood was almost completely consumed, extent of tree damage varies, and areas of piled wood have significant charred/charcoal remains. ACM material remains while lead-painted building materials have been reduced to ash/charred remains.

<table>
<thead>
<tr>
<th>Area of Environmental Concern ID</th>
<th>Site Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEC 1</td>
<td>Soil by the mill building with elevated F3 fraction petroleum hydrocarbons (PHCs), arsenic, copper, and mercury.</td>
</tr>
<tr>
<td>AEC 2</td>
<td>Soil by the head frame with elevated arsenic and lead, high acidity pH (3.8).</td>
</tr>
<tr>
<td>AEC 3</td>
<td>Soil by the conveyor gallery with elevated arsenic and low pH (4.7).</td>
</tr>
<tr>
<td>AEC 4</td>
<td>Soil by the mine dry core room with elevated arsenic.</td>
</tr>
<tr>
<td>AEC 5</td>
<td>Soil by the blacksmith / assay building with elevated arsenic, lead, and selenium, and low pH.</td>
</tr>
<tr>
<td>AEC 6</td>
<td>Soil by the warehouse with elevated arsenic and viscous tar in the building.</td>
</tr>
<tr>
<td>AEC 7</td>
<td>Soil by the cookhouse with elevated arsenic.</td>
</tr>
<tr>
<td>AEC 8</td>
<td>Soil by the bunkhouse with elevated arsenic.</td>
</tr>
<tr>
<td>AEC 9</td>
<td>Soil by dump 9 with elevated arsenic.</td>
</tr>
<tr>
<td>AEC 17</td>
<td>Soil by the hoist room with elevated arsenic, nickel, chromium, and selenium.</td>
</tr>
<tr>
<td>AEC 20</td>
<td>Soil by dump 3 with elevated arsenic, copper, and nickel.</td>
</tr>
<tr>
<td>AEC 21</td>
<td>Soil by dump 7 with elevated arsenic.</td>
</tr>
<tr>
<td>AEC 22</td>
<td>Soil by dump 4 and the dock facilities with elevated arsenic and low pH.</td>
</tr>
<tr>
<td>AEC 25</td>
<td>Soil by the mine shafts with elevated aluminum, arsenic, cadmium, cobalt, iron, lead, manganese, nickel, and zinc.</td>
</tr>
<tr>
<td>AEC 10</td>
<td>Small tailings area with elevated arsenic, chromium, copper, lead, and nickel. NP: AP ratios are between 0.28 and 1.72.</td>
</tr>
<tr>
<td>AEC 11</td>
<td>Large tailings area with elevated arsenic, chromium, copper, lead, nickel, and mercury. NP: AP ratios are between 0.64 and 5.12.</td>
</tr>
</tbody>
</table>
### Area of Environmental Concern ID | Site Condition
--- | ---
AEC 14 | Tam Lake sediment affected by arsenic, copper, nickel, mercury, zinc, and cadmium.
Various | Physical hazards include two mine shafts (one at the former head frame and the other 40 m north of the former head frame), trenches (north of the former head frame perpendicular to quartz vein and 0.4 to 1.2 m in depth), sharp and angular waste rock, and dilapidated/burned buildings.
Various | Non-hazardous and hazardous waste debris types were identified at the site, including: wood, building contents, old mining equipment, metal debris, process sands/mixtures (lead), batteries, minor amounts of PHC impacted wood building materials, lead and mercury-impacted building materials, and asbestos-containing insulation.
Various | The findings of the geochemical assessment performed by Franz (2009) indicated that the waste rock is likely to produce acid with metal-rich effluent. It was indicated that the tailings have a low sulfide content with little to no acid generation potential.

#### 2. Bullmoose Mine: Minorly impacted by 2014 forest fires.

| Area of Environmental Concern ID | Site Condition |
--- | --- |
AEC 6 and 8 | Shop / camp has metal contamination in surface soils. |
AEC 1-9, 11, and 15 | Fuel handling and storage area has PHC impacts. |
AEC 2 | Mill Area has metal-contaminated soils on the surface of the waste rock pad by the mill and warehouse. |
AEC 10 & 23 | Exposed tailings at the Beta Lake spillway covering, and submerged tailings at Skeeter Lake and Beta Lake. |
AEC 18 | Waste Rock may be a source of metal impacts to surface water bodies. Waste rock is spread out in an area of approximately 10 ha. |
AEC 7 | Elevated metals in the sediment area downgradient from the mine portal seepage area. There is also PHC contaminated soil and sediment associated with the mine portal seepage area. |
AEC 14 | Sediments with elevated levels of arsenic and mercury along Bullmoose Creek. There are also PHC impacts in the stream believed to be due to upstream sources. |
AEC 13 | Bullmoose Lake has metal-impacted sediments. |
AEC 9 | Sewage lagoon has metal-impacted sediments. |
Various | Non-hazardous waste includes wood, metal, and other non-hazardous waste observed at numerous locations across the site. |
Various | Hazardous waste includes creosote-soaked timber and Asbestos-containing materials (ACMs). Hazardous materials are mostly found near the mill and fuel storage area. |
Various | The findings of the geochemical assessment performed by Franz (2009) indicated that the waste rock is likely the main source of metal loading to the environment, resulting from acid rock drainage which may cause metal rich effluent. |
### Beaulieu Mine:

<table>
<thead>
<tr>
<th>Area of Environmental Concern ID</th>
<th>Site Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEC 1</td>
<td>Former mill / waste rock piles and small tailings areas have approximately 15 m³ of metal impacted soil. The impacts were limited due to soil cover.</td>
</tr>
<tr>
<td>AEC 5</td>
<td>Area of environmental concern ID</td>
</tr>
<tr>
<td>AEC 10</td>
<td>Area of black PHC stain and burnt debris metal and hydrocarbon impacts.</td>
</tr>
<tr>
<td>Various</td>
<td>There are several AECs at the site that have localized soil impacts (metals and hydrocarbons).</td>
</tr>
<tr>
<td>AEC 19</td>
<td>Water impacts at the site were identified from water samples collected from the unnamed trench at AEC 19, and are considered to be related to historical mining activities at the site.</td>
</tr>
<tr>
<td>Various</td>
<td>Painted materials containing lead are present on materials at the sites.</td>
</tr>
<tr>
<td>AEC 21</td>
<td>One drum located south at AEC 21 contains approximately 100 L of hydrocarbons, possibly engine oil.</td>
</tr>
<tr>
<td>Various</td>
<td>Two batteries are present at the site, both possibly containing sulfuric acid and lead, and are considered to be hazardous.</td>
</tr>
<tr>
<td>Various</td>
<td>Miscellaneous non-hazardous material across the site consisting of wood, metal, concrete, roofing material, a snow cat, and small and large drums.</td>
</tr>
<tr>
<td>Various</td>
<td>The findings of the geochemical assessment indicated that there are materials present at each of the waste rock piles and tailings area which have the potential to produce acid rock drainage or metal-rich effluent.</td>
</tr>
</tbody>
</table>

### Spectrum Mine: Impacted by 2014 forest fires; however wood along the central line from the Lake to the former shaft remains unburned. Tailings and drum cache areas nearshore are heavily burned.

<table>
<thead>
<tr>
<th>Area of Environmental Concern ID</th>
<th>Site Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEC 1</td>
<td>Tailings by the mill have metal impacts related to mining activities.</td>
</tr>
<tr>
<td>AEC 6</td>
<td>Hydrocarbon staining east of the mine shaft.</td>
</tr>
<tr>
<td>AEC 2, 4, 7, 8, 10, 11, and 26</td>
<td>There are several AECs at the site containing localized soil impacts (metals and hydrocarbons).</td>
</tr>
<tr>
<td>Spectrum Lake</td>
<td>Impacted sediment within Spectrum Lake related to historical mining activities.</td>
</tr>
<tr>
<td>AEC 3 &amp; 4</td>
<td>Impacted water was identified in the flooded trench north of the mine shaft (AEC 4) and the flooded underground mine shaft (AEC 3), and is considered to be related to historical mining activities at the site.</td>
</tr>
<tr>
<td>Spectrum Lake and Shore</td>
<td>Impacted water related to historical mining activities was found downgradient of the tailings area, within a low lying drainage area. This area flows towards Spectrum Lake between rock outcrops. The impacted area in the lake is limited to an area approximately 30 m from the shoreline.</td>
</tr>
<tr>
<td>AEC 1 &amp; 28</td>
<td>Vegetation impacts were present in samples collected from the tailings by the mill (AEC 1) and an area close to a metal tank just north of the tailings (AEC 28).</td>
</tr>
<tr>
<td>AEC 23 &amp; 26</td>
<td>ACMs on-site include: yellow linoleum within the north cabin (AEC 23) and the east cabin (AEC 26), and fiberboard within the east cabin (AEC 26). These ACMs will be within the burned remains of the structures.</td>
</tr>
</tbody>
</table>
### Bullmoose Area Mine Sites, NT

#### Summary of Work

<table>
<thead>
<tr>
<th>Area of Environmental Concern ID</th>
<th>Site Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Various</td>
<td>The total and leachable lead-containing materials on-site are present on three (3) 75 L drums, eighty nine (89) 205 L drums, pressurized cylinders (4.5 m³) and metal machinery or equipment (338 m³) located in thirteen (13) of the twenty nine (29) AECs.</td>
</tr>
<tr>
<td>Various</td>
<td>Approximately 5,795 L of total hydrocarbon content was identified on-site, most of which is diesel; with some lube oil, gasoline and anti-freeze. The hydrocarbons are located in drums at the site, within buildings and in machinery. Some of these hydrocarbons may have spilled or burned as a result of the 2014 forest fire.</td>
</tr>
<tr>
<td>Various</td>
<td>A total of 3.5 m³ of pressurized cylinders possibly containing propane, acetylene or oxygen, were identified on-site.</td>
</tr>
<tr>
<td>Various</td>
<td>A total of 3.5 m³ of batteries were found on-site, mostly assumed to contain sulfuric acid and lead.</td>
</tr>
<tr>
<td>AEC 22</td>
<td>One (1) box of explosive material (0.5 m³ carbon nitrate) was identified.</td>
</tr>
<tr>
<td>AEC 23</td>
<td>Two refrigeration units (2 m³) were identified in the north cabin.</td>
</tr>
<tr>
<td>Various</td>
<td>Miscellaneous non-hazardous materials consisting of wood debris, metal debris, insulation, roofing material, rubber debris, and tanks are located across the site.</td>
</tr>
<tr>
<td>Various</td>
<td>The findings of the geochemical assessment indicate that there are materials present at each of the waste rock piles and tailings area which have the potential to produce acid rock drainage or metal-rich effluent.</td>
</tr>
</tbody>
</table>

### Chipp Mine:

<table>
<thead>
<tr>
<th>Area of Environmental Concern ID</th>
<th>Site Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEC 1B</td>
<td>Trenches and loose waste rock with soil impacted by metals in this area.</td>
</tr>
<tr>
<td>AEC 1D</td>
<td>Trenches and loose waste rock with soil impacted by metals in this area.</td>
</tr>
<tr>
<td>AEC 1F</td>
<td>Trenches and loose waste rock with soil impacted by metals in this area.</td>
</tr>
<tr>
<td>AEC 1A and 1F</td>
<td>Impacted water was identified at the site in water samples 10CL-SW05 (AEC 1A) and 10CL-SW06 (AEC 1F). These water samples were collected from trenches at the site and are considered to be related to historical mining activities.</td>
</tr>
<tr>
<td>Various</td>
<td>There were no ACMs identified on-site.</td>
</tr>
<tr>
<td>AEC 4</td>
<td>One (1) 75 L red and blue drum on-site (AEC 4) is considered to contain total leachable lead paint in exceedance of the GNWT Lead and Lead Paint criteria, based on the age and type of drum.</td>
</tr>
<tr>
<td>Various</td>
<td>No liquids were identified in any drums or machinery at the site.</td>
</tr>
<tr>
<td>Various</td>
<td>Miscellaneous non-hazardous materials consisting of wood debris, metal debris, core, plastic, roofing material, and one (1) 75 L drum are located across the site.</td>
</tr>
<tr>
<td>Various</td>
<td>The findings of the geochemical assessment indicate that there are materials present at each of the waste rock piles and tailings area which have the potential to produce acid rock drainage or metal-rich effluent.</td>
</tr>
</tbody>
</table>
### .6 Storm Mine:

<table>
<thead>
<tr>
<th>Area of Environmental Concern ID</th>
<th>Site Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEC 1B</td>
<td>Blast rock area with soil impacted by metals in this area.</td>
</tr>
<tr>
<td>AEC 1C</td>
<td>Blast rock area with soil impacted by metals in this area.</td>
</tr>
<tr>
<td>AEC 2</td>
<td>Former mill and blast rock area with soil impacted by metals in this area.</td>
</tr>
<tr>
<td>Consolation Lake</td>
<td>Sediment from a single sample collected from Consolation was found to be impacted. However, this is not considered to be related to historical mining activities at the site but due to naturally occurring elevated levels within the Lake.</td>
</tr>
<tr>
<td>Various</td>
<td>The water samples collected were not considered impacted by historical mining activity.</td>
</tr>
<tr>
<td>Various</td>
<td>There were no ACMs identified on site</td>
</tr>
<tr>
<td>Various</td>
<td>The leachable lead containing materials on-site include one (1) 205 L drum.</td>
</tr>
<tr>
<td>Various</td>
<td>There are no liquid drum contents on-site.</td>
</tr>
<tr>
<td>Various</td>
<td>A total of two batteries (0.1 m³) were found on-site, likely lead-acid.</td>
</tr>
<tr>
<td>Various</td>
<td>Miscellaneous non-hazardous material consisting of wood debris, metal debris, cement, glass, plastic, roofing material, and textiles are located across the site.</td>
</tr>
<tr>
<td>Various</td>
<td>The findings of the geochemical assessment indicate that there are materials present at each of the waste rock piles and tailings area which have the potential to produce acid rock drainage or metal-rich effluent.</td>
</tr>
</tbody>
</table>

### .7 Joon Mine:

<table>
<thead>
<tr>
<th>Area of Environmental Concern ID</th>
<th>Site Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEC 1A</td>
<td>Open rock faces and loose blast rocks with soil impacted by metals in this area.</td>
</tr>
<tr>
<td>AEC 6D</td>
<td>Burn pit with metals impacts in soil in this area.</td>
</tr>
<tr>
<td>AEC 7A</td>
<td>Remains of a structure with metals impacts in soil in this area.</td>
</tr>
<tr>
<td>AEC 7E</td>
<td>Drum with metals impacts in soil in this area.</td>
</tr>
<tr>
<td>AEC 7I</td>
<td>Impacted water samples collected from trenches at AEC 7I, considered to be related to historical mining activities at the site.</td>
</tr>
<tr>
<td>Various</td>
<td>There were no ACMs identified on-site.</td>
</tr>
<tr>
<td>Various</td>
<td>Total and leachable lead containing materials on-site include metal machinery or equipment (10 m³).</td>
</tr>
<tr>
<td>Various</td>
<td>Approximately 2,211 L of total hydrocarbon content was identified on-site, most of which is diesel, with some heavy oil and gasoline. This includes mostly drum content, but also machinery fluids.</td>
</tr>
<tr>
<td>Various</td>
<td>A total of two (2) pressurized cylinders (0.8 m³) were identified on site.</td>
</tr>
<tr>
<td>Various</td>
<td>A total of five (5) batteries (0.5 m³) were found on site, likely lead-acid.</td>
</tr>
<tr>
<td>Main Building</td>
<td>One refrigeration unit (1 m³) was identified in the main building. It may contain ozone depleting substances (ODSs) and halocarbon alternatives.</td>
</tr>
<tr>
<td>Main Building</td>
<td>4 L container full of anti-freeze, 10 L drum of tar and four (4) mercury-containing fluorescent lights were observed.</td>
</tr>
</tbody>
</table>
### Area of Environmental Concern ID

<table>
<thead>
<tr>
<th>Area of Environmental Concern ID</th>
<th>Site Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Various</td>
<td>Miscellaneous non-hazardous material consisting of wood debris, metal debris, insulation, plastic, roofing material, rubber debris, tanks, and textiles are located across the site.</td>
</tr>
<tr>
<td>Various</td>
<td>The findings of the geochemical assessment indicate that there are materials present at each of the waste rock piles and tailings area which have the potential to produce acid rock drainage or metal-rich effluent.</td>
</tr>
</tbody>
</table>

### Existing Camp:

There are no usable existing camps at any of the Bullmoose Area Mine sites.

### Supporting Documents:

Supporting Documents will be provided as attachments to the posting on Buy and Sell. Attachment 001 is the directory and provides a summary of all supporting documentation related to this project.

### 1.3 DESCRIPTION OF WORK

#### Work of this Contract comprises the site remediation activities at the Bullmoose Area Mine Sites including, but not limited to, the following:

**Health and safety:**

1. Preparation of planning documents and submittals including but not limited to, Site-Specific Health and Safety Plan (SSHSP), as specified in Section 01 35 32 – Site Specific Health and Safety Plan.

2. Implementation of the SSHSP.

**Environmental protection:**

1. Preparation of planning documents and submittals including but not limited to: Environmental Protection and Sustainability Plan and Erosion, Sediment and Drainage Control Plan, as specified in Section 01 35 43 – Environmental Protection; and Spill Contingency Plan, as specified in 01 35 32 - Site Specific Health and Safety Plan.

2. Implementation of environmental protection measures.

**Transportation infrastructures:**

1. Winter road track survey: helicopter GPS survey of proposed winter road alignments to assess suitability, followed by DGPS ground survey of proposed road centerline.

2. Legacy winter road upgrades: geotechnical investigations if required, bank and slope improvements at stream or river crossings and removal of rock outcrops, if required.

3. New winter road spur construction to Ruth, Beaulieu, Spectrum and Joon mine sites: geotechnical investigations if required, bank and slope modifications at stream or river crossings and removal of rock outcrops, if required.

4. Winter road construction: with suitable conditions, complete initial compaction, followed by snow clearing/compaction, additional tree/vegetation clearing and ice thickening where required.

5. Airstrip condition improvements:


2. Bullmoose Mine Airstrip: Clearing of vegetation, re-grading/repair and compaction of existing airstrip. Increase length of airstrip from 900 m to
1,200 m. Vegetation clearing, grading and compaction of 4 km access trail between Bullmoose airstrip and Bullmoose mine.

.6 Ice airstrip: Clearing and compaction of Bullmoose and Ruth airstrips for winter use. Construction of additional ice airstrips at other mine sites as required.

.7 Construct floating docks: Floating docks to be accessed by float planes, to be constructed at Spectrum, Chipp and Storm mine sites;

.8 Winter road maintenance.

.9 Summer site trail maintenance.

.4 Ruth Mine:

.1 Mobilization, setup, operation, maintenance, monitoring and demobilization (tear-down, transport preparation, transportation and clean-up) of main camp. Sized to support operation of field crews, to include at a minimum;

.1 Two sleeper units;

.2 One office trailer;

.3 Kitchen, or combined kitchen/wet facility (showers, clothes washers/dryers).

.2 Seasonal mobilization and demobilization of all personnel, equipment, support facilities and materials required to complete the Work, including winter pre-placement via winter road.

.3 Upgrading of site roads and trails to facilitate construction and remediation activities.

.4 Construction of an on-site non-hazardous waste landfill (Ruth Landfill).

.5 Excavation, on-site stockpile, winter transport and summer disposal of non-hazardous metals and petroleum hydrocarbon-contaminated soils to the Ruth Landfill.

.6 Excavation, on-site stockpile, winter transport and summer disposal of non-hazardous metals-contaminated tailings to the Ruth Landfill.

.7 Collection, consolidation, containerization, transport and disposal of solid and liquid hazardous materials at Contractor’s Designated Contaminated Disposal Facility.

.8 Demolition and segregation of buildings, infrastructure, and associated debris remaining after fire in summer 2014.

.9 Collection, consolidation, sorting, winter transport and disposal of non-hazardous materials in the Ruth Landfill (including the depressurization of pressurized cylinders) with the exception of items designated for preservation by the Heritage Society.

.10 On-site burning of wood and placement of ash waste (if non-hazardous leaching) in Landfill.

.11 Construction of two mining shaft engineered caps.

.12 Placement of soil cover and vegetation over waste rock in high risk area (i.e., areas in proximity to surface water drainage).

.13 Examination of reported explosives storage locations by a suitably qualified individual to confirm absence of explosive materials.

.14 Provision of the following site support services:

.1 Construction Camp as specified in Section 01 54 00 – Camp Facilities, including operation, maintenance, catering and janitorial service.

.2 Provision and maintenance of Departmental Representative’s Vehicles, as specified in Section 01 52 00 – Construction Facilities.

.3 Safety, fire protection, office and medical services, as specified in Section
01 35 32 – Site Specific Health and Safety Plan.

.4 Transportation services for Departmental Representative and Departmental Representative’s support staff from Yellowknife to Ruth mine site.

.5 Communication services for Contractor and Departmental Representative, as specified in Section 01 54 00 – Camp Facilities.

.6 Provision of Wildlife Monitors, as specified in Section 01 35 32 – Site Specific Health and Safety Plan.

.5 Bullmoose Mine:

.1 Mobilization, setup, operation, maintenance, monitoring and demobilization (tear-down, transport preparation, transportation and clean-up) of main camp. Sized to support operation of field crews, to include at a minimum;

.1 Two sleeper units;

.2 One office trailer;

.3 Kitchen, or combined kitchen/wet facility (showers, clothes washers/dryers).

.2 Seasonal mobilization and demobilization of all personnel, equipment, support facilities and materials required to complete the Work, including winter pre-placement via winter road.

.3 Upgrading of site roads and trails to facilitate construction and remediation activities.

.4 Construction of an on-site non-hazardous waste landfill (Bullmoose Landfill).

.5 Construction of an on-site landfarming facility for petroleum hydrocarbon-impacted soils (Bullmoose Landfarm).

.6 Excavation, on-site transport and disposal of non-hazardous metals and petroleum hydrocarbon-contaminated soils to the on-site Bullmoose Landfill.

.7 Excavation, on-site transport and disposal of non-hazardous petroleum hydrocarbon-contaminated soils to the on-site Bullmoose Landfarm.

.8 Excavation, on-site transport and disposal of non-hazardous metals-contaminated tailings to the on-site Bullmoose Landfill.

.9 Excavation, on-site transport and disposal of non-hazardous metals-contaminated sediments to the Bullmoose Landfill.

.10 Collection, consolidation, containerization, winter transport and disposal of solid hazardous materials at Contractor’s Designated Contaminated Disposal Facility.

.11 Design and implementation of a petroleum hydrocarbon-contaminated soils treatment plan.

.12 Demolition and segregation of buildings, infrastructure, and associated debris remaining after fire in summer 2014.

.13 Collection, consolidation, sorting, transport and disposal of non-hazardous materials in the on-site Bullmoose Landfill.

.14 On-site burning of wood and placement of ash waste (if non-hazardous leaching) in on-site Bullmoose Landfill.

.15 Construction of six mining vent/raise engineered caps.

.16 Backfilling of two septic pits and one fault failure.

.17 Placement of soil cover and vegetation over waste rock in high risk area (i.e., areas in proximity to surface water bodies).

.18 Construction of Aquadam at Bullmoose Creek.

.19 On-site shaft and trench water treatment and discharge.

.20 Excavation of metals-contaminated soil/sediments/waste rock in Bullmoose Creek, solidification of soil/sediment, on-site stockpile, transport and disposal in
on-site Bullmoose Landfill.

.21 Excavation of metals-contaminated soil/sediments in Bullmoose sewage lagoon, solidification of soil/sediment, on-site stockpile, transport and disposal in on-site Bullmoose Landfill.

.22 Excavation of metals-contaminated soil in proximity to portal wetland, solidification, on-site stockpile, transport and disposal in on-site Bullmoose Landfill.

.23 Excavation, on-site transport and disposal of non-submerged, non-hazardous metals-contaminated tailings in Beta Lake Impoundment to the Bullmoose Landfill.

.24 Placement of engineered cover over remaining exposed metals-contaminated tailings in Beta Lake Impoundment.

.25 Weir installation at the Bullmoose Portal Seep and fencing of Portal Wetland.

.26 Provision of the following site support services:

.1 Construction Camp as specified in Section 01 54 00 – Camp Facilities, including operation, maintenance, catering and janitorial service.

.2 Provision and maintenance of Departmental Representative’s Vehicles, as specified in Section 01 52 00 – Construction Facilities.

.3 Safety, fire protection, office and medical services, as specified in Section 01 35 32 – Site Specific Health and Safety Plan.

.4 Transportation services for Departmental Representative and Departmental Representative’s support staff from Yellowknife to Bullmoose mine site.

.5 Communication services for Contractor and Departmental Representative, as specified in Section 01 54 00 – Camp Facilities.

.6 Provision of Wildlife Monitors, as specified in Section 01 35 32 – Site Specific Health and Safety Plan.

.6 Beaulieu Mine:

.1 Mobilization, setup, operation, maintenance, monitoring and demobilization (tear-down, transport preparation, transportation and clean-up) of limited camp. Sized to support operation of field crews, to include at a minimum; One miscellaneous trailer.

.2 Seasonal mobilization and demobilization of all personnel, equipment, support facilities and materials required to complete the Work, including winter pre-placement via winter road.

.3 Upgrading of site roads and trails to facilitate construction and remediation activities.

.4 Excavation, on-site stockpile, winter transport and summer disposal of non-hazardous metals and petroleum hydrocarbon-contaminated soils to the Bullmoose Landfill.

.5 Excavation, on-site stockpile, winter transport and summer disposal of non-hazardous petroleum hydrocarbon-contaminated soils to the Bullmoose Landfarm.

.6 Excavation, on-site stockpile, winter transport and summer disposal of non-hazardous metals-contaminated tailings to the Bullmoose Landfill.

.7 Collection, consolidation, containerization, winter transport and disposal of solid and liquid hazardous materials at Contractor’s Designated Contaminated Disposal Facility.

.8 Demolition and segregation of remaining buildings and infrastructure (Beaulieu Mine not burned in 2014).

.9 Collection, consolidation, sorting, winter transport and summer disposal of
non-hazardous materials in the Bullmoose Landfill.

.10 On-site burning of wood and placement of ash waste (if non-hazardous leaching) in Bullmoose Landfill.

.11 Construction of one mining shaft engineered cap.

.13 Placement of soil cover and vegetation over waste rock in high risk area (i.e., areas in proximity to surface water bodies).

.14 Provision of the following site support services:

.1 Construction Camp as specified in Section 01 54 00 – Camp Facilities, including operation, maintenance, catering and janitorial service.

.2 Provision and maintenance of Departmental Representative’s Vehicles, as specified in Section 01 52 00 – Construction Facilities.

.3 Safety, fire protection, office and medical services, as specified in Section 01 35 32 – Site Specific Health and Safety Plan.

.4 Transportation services for Departmental Representative and Departmental Representative’s support staff from Yellowknife to Beaulieu mine site.

.5 Communication services for Contractor and Departmental Representative, as specified in Section 01 54 00 – Camp Facilities.

.6 Provision of Wildlife Monitors, as specified in Section 01 35 32 – Site Specific Health and Safety Plan.

.7 Spectrum Mine:

.1 Mobilization, setup, operation, maintenance, monitoring and demobilization (tear-down, transport preparation, transportation and clean-up) of limited overnight camp. Sized to support operation of field crews, to include at a minimum;

.1 One sleeper unit;

.2 One decontamination trailer;

.2 Seasonal mobilization and demobilization of all personnel, equipment, support facilities and materials required to complete the Work, including winter pre-placement via winter road.

.3 Upgrading of site roads and trails to facilitate construction and remediation activities.

.4 Excavation, on-site stockpile, winter transport and summer disposal of non-hazardous metals and petroleum hydrocarbon-contaminated soils to the Bullmoose Landfill.

.5 Excavation, on-site stockpile, winter transport and summer disposal of non-hazardous petroleum hydrocarbon-contaminated soils to the Bullmoose Landfarm.

.6 Excavation, on-site stockpile, winter transport and summer disposal of non-hazardous metals-contaminated tailings to the Bullmoose Landfill.

.7 Collection, consolidation, containerization, winter transport and disposal of solid and liquid hazardous materials at Contractor’s Designated Contaminated Disposal Facility.

.8 Demolition and segregation of remaining buildings, infrastructure, and associated debris remaining after fire in summer 2014.

.9 Collection, consolidation, sorting, winter transport and disposal of non-hazardous materials in the Bullmoose Landfill.

.10 On-site burning of wood and placement of ash waste (if non-hazardous leaching) in Bullmoose Landfill.

.11 Construction of one mining shaft engineered cap.

.12 Backfilling of mine trench with waste rock and backfill.
.13 On-site water treatment and discharge.

.14 Provision of the following site support services:

.1 Construction Camp as specified in Section 01 54 00 – Camp Facilities, including operation, maintenance, catering and janitorial service.

.2 Provision and maintenance of Departmental Representative’s Vehicles, as specified in Section 01 52 00 – Construction Facilities.

.3 Safety, fire protection, office and medical services, as specified in Section 01 35 32 – Site Specific Health and Safety Plan.

.4 Transportation services for Departmental Representative and Departmental Representative’s support staff from Yellowknife to Spectrum mine site.

.5 Communication services for Contractor and Departmental Representative, as specified in Section 01 54 00 – Camp Facilities.

.6 Provision of Wildlife Monitors, as specified in Section 01 35 32 – Site Specific Health and Safety Plan.

.8 Chipp Mine:

.1 Mobilization, setup, operation, maintenance, monitoring and demobilization (tear-down, transport preparation, transportation and clean-up) of limited camp. Sized to support operation of field crews, to include a minimum:

.1 One miscellaneous trailer.

.2 Seasonal mobilization and demobilization of all personnel, equipment, support facilities and materials required to complete the Work, including winter pre-placement via winter road.

.3 Upgrading of site roads and trails to facilitate construction and remediation activities.

.4 Collection, consolidation, containerization, winter transport and disposal of solid and liquid hazardous materials at Contractor’s Designated Contaminated Disposal Facility.

.5 Demolition and segregation of buildings, infrastructure, and associated debris remaining after fire in summer 2014.

.6 Collection, consolidation, sorting, winter transport and disposal of non-hazardous materials in the Ruth Landfill.

.7 On-site burning of wood and placement of ash waste (if non-hazardous leaching) in Ruth Landfill.

.8 Construction of one mining shaft engineered cap.

.9 Remove overhanging rock from one mine trench.

.10 On-site water treatment and discharge.

.11 Provision of the following site support services:

.1 Construction Camp as specified in Section 01 54 00 – Camp Facilities, including operation, maintenance, catering and janitorial service.

.2 Provision and maintenance of Departmental Representative’s Vehicles, as specified in Section 01 52 00 – Construction Facilities.

.3 Safety, fire protection, office and medical services, as specified in Section 01 35 32 – Site Specific Health and Safety Plan.

.4 Transportation services for Departmental Representative and Departmental Representative’s support staff from Yellowknife to Chipp mine site.

.5 Communication services for Contractor and Departmental Representative, as specified in Section 01 54 00 – Camp Facilities.

.6 Provision of Wildlife Monitors, as specified in Section 01 35 32 – Site Specific Health and Safety Plan.
Specific Health and Safety Plan.

.9 Storm Mine:
.1 Mobilization, setup, operation, maintenance, monitoring and demobilization (tear-down, transport preparation, transportation and clean-up) of limited camp. Sized to support operation of field crews, to include at a minimum;
.1 One miscellaneous trailer.

.2 Seasonal mobilization and demobilization of all personnel, equipment, support facilities and materials required to complete the Work, including winter pre-placement via winter road.

.3 Upgrading of site roads and trails to facilitate construction and remediation activities.

.4 Collection, consolidation, containerization, winter transport and disposal of solid and liquid hazardous materials at Contractor’s Designated Contaminated Disposal Facility.

.5 Demolition and segregation of buildings, infrastructure, and associated debris remaining after fire in summer 2014.

.6 Collection, consolidation, sorting, winter transport and disposal of non-hazardous materials in the Ruth Landfill.

.7 On-site burning of wood and placement of ash waste (if non-hazardous leaching) in Landfill.

.9 Provision of the following site support services:
.1 Construction Camp as specified in Section 01 54 00 – Camp Facilities, including operation, maintenance, catering and janitorial service.
.2 Provision and maintenance of Departmental Representative’s Vehicles, as specified in Section 01 52 00 – Construction Facilities.
.3 Safety, fire protection, office and medical services, as specified in Section 01 35 32 – Site Specific Health and Safety Plan.
.4 Transportation services for Departmental Representative and Departmental Representative’s support staff from Yellowknife to Storm.
.5 Communication services for Contractor and Departmental Representative, as specified in Section 01 54 00 – Camp Facilities.
.6 Provision of Wildlife Monitors, as specified in Section 01 35 32 – Site Specific Health and Safety Plan.

.10 Joon Mine:
.1 Mobilization, setup, operation, maintenance, monitoring and demobilization (tear-down, transport preparation, transportation and clean-up) of limited overnight camp. Sized to support operation of field crews, to include at a minimum;
.1 One sleeper unit;
.2 One decontamination trailer;

.2 Seasonal mobilization and demobilization of all personnel, equipment, support facilities and materials required to complete the Work, including winter pre-placement via winter road.

.3 Upgrading of site roads and trails to facilitate construction and remediation activities.

.4 Excavation, on-site stockpile, winter transport and summer disposal of non-hazardous metals and petroleum hydrocarbon-contaminated soils to the Ruth Landfill.

.5 Excavation, on-site stockpile, winter transport and summer disposal of
non-hazardous petroleum hydrocarbon-contaminated soils to the Bullmoose Landfarm.

.6 Collection, consolidation, containerization, winter transport and disposal of solid and liquid hazardous materials at Contractor's Designated Contaminated Disposal Facility.

.7 Demolition and segregation of remaining buildings and infrastructure (Spectrum Mine partially burned in 2014 fire).

.8 Collection, consolidation, sorting, winter transport and disposal of non-hazardous materials in the Ruth Landfill.

.9 On-site burning of wood and placement of ash waste (if non-hazardous leaching) in the Ruth Landfill.

.10 Backfilling of mine trenches with waste rock.

.11 Provision of the following site support services:

.1 Construction Camp as specified in Section 01 54 00 – Camp Facilities, including operation, maintenance, catering and janitorial service.

.2 Provision and maintenance of Departmental Representative’s Vehicles, as specified in Section 01 52 00 – Construction Facilities.

.3 Safety, fire protection, office and medical services, as specified in Section 01 35 32 – Site Specific Health and Safety Plan.

.4 Transportation services for Departmental Representative and Departmental Representative’s support staff from Yellowknife to Joon mine site.

.5 Communication services for Contractor and Departmental Representative, as specified in Section 01 54 00 – Camp Facilities.

.6 Provision of Wildlife Monitors, as specified in Section 01 35 32 – Site Specific Health and Safety Plan.

1.4 DEFINITIONS

.1 Departmental Representative: Within the context of these Specifications, the term Departmental Representative refers to the person exercising the roles and attributes of Canada under the contract.

.2 Departmental Representative's Authorized Personnel: Within the context of these Specifications, the term Departmental Representative's Authorized Personnel refers to personnel appointed by Departmental Representative or authorized on site by Departmental Representative. Departmental Representative’s Authorized Personnel provide recommendations/technical guidance to Departmental Representative as required, for the enforcement of these specifications.

.3 Contractor: Principle Contractor as defined by the NWT AHJs, retained to undertake the Remediation Work as defined within the context of these specifications.

.4 Contractor’s Site Superintendent: Contractor's resident site representative, who is authorized to make decisions on behalf of Contractor.

.5 The word “provide” means supply and install, operate, submit or any other procedure necessary to complete the work as intended.

.6 Authorities Having Jurisdiction (AHJ): Government agency or sub-agency that regulates the codes and standards that are to be met during the remediation processes.

.7 Sub-contractor: A contractor under contract to Principle Contractor and subject to the same contract requirements as the Principle Contractor.
.8 Mine Site Manager: person appointed as the manager for a mine as defined in the Mine Health and Safety Act (S.N.W.T. 1994, c.25), as amended.

1.5 SUBMITTALS

.1 All submittals in accordance with Section 01 33 00 - Submittal Procedures

1.6 ON-SITE DOCUMENTS

.1 Maintain at job site, one copy each of the following:
   .1 Contract drawings.
   .2 Specifications.
   .3 Requests for clarification and responses.
   .4 Addenda.
   .5 Change Orders.
   .6 Reviewed shop drawings.
   .7 Other modifications to Contract.
   .8 Field test reports.
   .9 Copy of approved Work Schedule.
   .10 Manufacturers' installation and application instructions.
   .11 Posted in conspicuous location (Safety Board) in common area: EHS Policy (signed by INAC and PWGSC), Camp Rules and Zero Tolerance Policy, Wildlife Policy, Site Hazards (Risk Register), MSDS binder(s), Wildlife Sightings, OSH Committee Meeting Minutes, H&S signs as required by AHJ (Fire Exit, Fire Extinguisher, First Aid Room, list of Medics and First Aid responders), Emergency Response Team members.
   .12 Site Specific Health and Safety Plan including:
      .1 Spill Contingency Plan.
      .2 Fire Safety Plan.
      .3 Emergency Response Plan.
   .13 Waste disposal Work plan.
   .14 Land Use Permit.
   .15 Water Licence.
   .16 Quarry Permit.
   .17 Labour conditions and wage Schedules.
   .18 Site Medic credentials.
   .19 Up-to-date record drawings.
   .20 Licence for radio communication.
   .21 All applicable Territorial permits and licences.
   .22 All applicable Federal permits and licences.
   .23 Copies of manifests and bills of loading.
   .24 Demolition Audit.
   .25 Hazardous material audit.
   .26 Worker Training Program.
   .27 Workers’ Safety & Compensation Commission (WSCC) Notification of Project.
   .28 Letter of Good Standing with WSCC.
   .29 Kitchen permit and Food Handler Certification.
   .30 Burn permit.
   .31 Other documents as specified.

1.7 WORK SCHEDULE
.1 Provide and maintain Work Schedule in accordance with instructions of Section 01 32 18 – Construction Progress Schedules - Bar (GANTT) Chart.

.2 Keep the Departmental Representative advised of planned Work activities in accordance with the instructions of Section 01 33 00 – Submittal Procedures.

1.8 CONTRACTOR USE OF SITE

.1 Contractor use of site is restricted to the terms and conditions of the issued permits, and all applicable guidelines and regulations.

.2 Do not disturb archaeological features as identified on the Drawings or as identified during the work.

.3 Coordinate use of facilities and services under direction of Departmental Representative.

.4 Do not unreasonably encumber sites with materials or equipment.

.5 Use of the site will comply with the environmental requirements of Section 01 35 43 – Environmental Procedures.

.6 Use of site is restricted as per Departmental Representative direction until substantial performance.

.7 Sites are federal lands under INAC custody and all access must be authorized by the Departmental Representative.

.8 Commencement of demobilization will not occur without completion of Final Inspection and approval by Departmental Representative.

1.9 EXAMINATION OF SITE

.1 Prior to mobilization, perform a Pre-Mobilization Site Visit to check field conditions and obtain actual conditions required to ensure correct execution of the Work, and notify Departmental Representative in writing, of all matters which could prejudice proper execution of the Work. Provide a minimum of fourteen (14) days’ notice to Departmental Representative prior to examining the site.

.2 Commencement of mobilization constitutes acceptance of existing conditions, and verification of dimensions.

1.10 PERMITS AND LICENCES

.1 Aboriginal Affairs and Northern Development Canada Representative will obtain a Land Use Permit and Quarry Permit. All restrictions and requirements of these apply to Contractor.

.2 Be responsible for obtaining and paying for all permits, licences and approvals associated with the development and operation of a construction camp.

.3 Register, obtain and pay for all required licences and permits for individual tradesmen employed for Work as referenced in the various Sections of the Contract Specifications.

.4 Obtain and pay for any other licences or permits required to perform the activities required on site,
i.e. burn permit, etc.

.5 Provide supplemental information to the regulators for any necessary licence amendments or reporting requirements.

.6 Pay all costs associated with complying with the requirements for the permits and licences noted in the above clauses.

1.11 SITE SUPERVISION

.1 Designate Contractor's Site Superintendent to be on site at all times during construction, to have full authority to make decisions for Contractor, to be knowledgeable of the requirements of the contract, and to act upon Departmental Representative's instructions.

.2 Employ a Level 2 Supervisor on site as per GNWT WSCC Mine Health and Safety Act. Level 2 Supervisor to be on site when mine openings are being inspected and when the openings are being sealed, as a minimum.

.3 Notify Departmental Representative two (2) weeks in advance of Site Superintendent change and provide updated chain-of-command.

1.12 ADDITIONAL DRAWINGS

.1 Departmental Representative may furnish additional drawings to assist with proper execution of the Work. These drawings will be issued for clarification only. Such drawings have the same meaning and intent as if they were included with plans referred to in Contract documents.

1.13 WORKER ORIENTATION SEMINAR

.1 Develop, prior to the start of Work, course material for a Worker Orientation Seminar. The outline of this seminar will be approved by Departmental Representative and is intended to describe the remediation activities at the site, and provide instruction for the applicable health, safety, and environmental policies and regulations as related to the site Work activities. Course material will be prepared and presented in the English language and the local dialect.

.2 Submit two (2) hard copies and one (1) electronic copy of the Worker Orientation Seminar course material to Departmental Representative for review at least 30 days prior to the seminar. Include information describing the facility to be used for conducting the seminars.

.3 The Orientation Course will address, but is not necessarily limited to, the following topics:

.1 General Site Specific Health and Safety

.1 Team Work.

.2 Work attitudes/productivity.

.3 Anti-Harassment Policy.

.4 First aid procedures.

.5 Protective equipment and clothing.

.6 Safe operation of equipment and tools.

.7 WHMIS requirements.

.8 Wildlife awareness.

.2 Project Communication
.1 Roles of Departmental Representative and Departmental Representative's authorized representatives.

.2 Roles of Contractor and Contractor's authorized representatives

.3 Lines of Project communication.

.3 Remediation Activities (Scope of Work): covering information listed in Section 1.3 Description of Work, including but not limited to:

.1 Demolition and containerization of demolition waste materials.

.2 Excavation and containerization of contaminated soils.

.3 Asbestos abatement.

.4 Collection and disposal of site debris.

.5 Collection, containerization, and transportation of hazardous waste material.

.4 Regional Overview of the site

.1 Land use of area (hunting, fishing activities, etc.).

.2 Location of site relative to communities.

.3 Heritage resources including location of gravesites.

.4 Climate.

.5 Geology and hydrology.

.6 Flora and fauna.

.5 Project Organization/Schedule/Administration

.1 Personnel policies.

.2 Supervisory reporting relationships.

.3 Communication.

.4 Payroll and banking procedures.

.5 Work Schedules and hours.

.6 Camp rules.

.6 Environmental Issues and Protection Procedures

.1 Climate.

.2 Land use.

.3 Water resources/fisheries.

.4 Terrestrial resources.

.5 Heritage resources.

.6 Spill contingency plans/procedures.

.7 Training activities

.7 Work Specific Task Requirements

.1 Asbestos abatement.

.2 Contaminated soil cleanup.

.3 Demolition and material disposal.

.4 Transportation of Dangerous Goods (TDG).

.5 Permafrost protection.

.6 Environmental mitigation procedures.

.7 Emergency spill response training.

.8 Barrel collection and disposal/containerization.

.4 Prior to the start of Work, conduct Worker Orientation Seminars for all supervisors, foremen, Contractor's general Workforce, Departmental Representative and Departmental Representative's Authorized Personnel staff based on the course material approved by Departmental Representative.
.5 Provide a training seminar for supervisors, foremen, Departmental Representative, Departmental Representative's on-site support staff and Contractor's general Work force. Each person on site will attend one of the seminars. Require each attendee to sign a record of attendance upon completion of the seminar. Retain, for Departmental Representative's review at any time, this record of attendance.

1.14 MEASUREMENT FOR PAYMENT

.1 Work under this contract will be paid for as follows:

.1 Lump sum pay items will be paid at the lump sum price tendered for each lump sum item listed in the Basis of Payment Form.

.2 Unit price items will be paid at the unit price tendered for each unit price item listed in the Basis of Payment Form.

.3 Miscellaneous Project costs will be paid at the lump sum price tendered for "Balance of Project Costs" (BOPC) on the Basis of Pricing Form.

.2 Unit price items and lump sum pay items will be paid under the Basis of Pricing which will form the Basis of Payment Schedule of the proposed contract. All other items, whether specifically defined in the specific sections of the Specifications or not, will be paid under Item BOPC-1, Balance of Project Costs, in the Basis of Payment Schedule.

.3 Direct costs include all costs directly attributable to a particular pay item including equipment, operators, materials, equipment maintenance and depreciation, etc. All direct costs for lump sum and unit price items are to be included in the appropriate price item in the Basis of Payment Schedule.

.4 Indirect costs include all costs not directly attributable to the pay items including profit, supervision, overhead, administration, CGL Insurance, WCB, allowance for equipment maintenance and depreciation repairs, and any other relevant costs. All indirect costs associated with specific unit price or lump sum items will be included in Item BOPC-1, Balance of Project Costs, in the Basis of Payment Schedule.

.5 Include costs of any statement of or requirement for Work, goods or services required in this section that are not covered by appropriate payment clauses in other sections in Item BOPC-1, Balance of Project Costs, in the Basis of Payment Schedule.

.6 Notify Departmental Representative of planned Work activities in accordance with requirements of Section 01 33 00 - Submittal Procedures, and at least two (2) days in advance of operations to permit required measurements for payment.

.7 All costs for the preparation of the Worker Orientation Seminar Material and for conducting the seminars, including the preparation of meeting room facilities as required, are to be included in the unit price for Worker Orientation Seminar, Item 01 11 00-1, as indicated in the Basis of Payment Schedule.

.8 All direct costs for the Worker Orientation Seminar are to be included in the lump sum price. Payment will be made in two progress instalments as follows:

.1 Sixty percent (60%) of the lump sum for the Worker Orientation Seminar will be paid upon completion by Contractor and review by Departmental Representative of the Worker.
Orientation Seminar course material, and upon conducting the seminar prior to the start of Work.

.2 Forty percent (40%) of the lump sum for the Worker Orientation Seminar will be paid split evenly over each subsequent construction season upon demonstration by Contractor to Departmental Representative that all of Contractor's Workforce have attended the seminar at the start of each subsequent construction season. The Worker Orientation Seminar will be paid under Item 01 11 00-1.

.9 All direct costs for the Pre-Mobilization Site Visit are to be included in the lump sum price for Pre-construction Meeting, Item 01 11 00-2, as indicated in Basis of Payment Schedule.

.10 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 – Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION
PART 1 - GENERAL

1.1 GENERAL

.1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Departmental Representative are specified under various sections.

.2 Provide and pay for all transportation and analyses required for all Contractor’s samples to an accredited laboratory to meet the requirements specified.

.3 Provide and pay for all transportation required for all Departmental Representative samples to the Departmental Representative’s designated testing laboratory.

1.2 SUBMITTALS

.1 All submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit to the Departmental Representative within thirty (30) days of Contract Award, details of Contractor’s proposed methodology to complete sampling and testing requirements but not limited to:

   .1 The Contractor’s proposed analytical laboratory.
   .2 Details of proposed sampling personnel and protocols.
   .3 Details of the proposed sampling packaging and transportation methods.
   .4 Quality Assurance and Quality Control procedures.

.3 Proposed methodologies are to meet or exceed requirements of specifications, certified laboratory requirements, and industry best practice. The Departmental Representative will review the Contractor’s submittal.

1.3 APPOINTMENT AND PAYMENT

.1 Departmental Representative will appoint and pay for services of testing laboratory required for the following:

   1. Confirmatory testing as described in 1.5 below.
   2. Testing for the classification of hazardous contaminated soil for licensed disposal facility acceptance requirements.
   3. Leachate testing associated with contaminated soil, tailings and sediments for the purpose of determining suitability for placement in Bullmoose or Ruth landfills.
   4. Compaction and gradation testing.
   5. Testing associated with the identification and characterization of hazardous waste materials.

.2 Contractor will appoint and pay for testing services for quality control of Contractor’s own Work including the following:

   1. Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities including, but not limited to, those prescribed in the Land Use Permit, Quarry Permit, and Burn Permit.
   2. Inspection and testing performed exclusively for Contractor’s convenience.
   3. Testing of potable water as described in Contract and/or Guidelines for Canadian Drinking Water Quality (GCDWQ).
   4. Testing of hazardous waste materials in accordance with all appropriate regulations for packaging, transport and off-site disposal.
   5. Testing of solvent rinsate used during cleaning of barrels.
   6. Testing to determine the disposal requirements of oil-absorbent material used as a filter for
liquid wastes resulting from equipment decontamination, fuel tank/pipeline cleaning and barrel processing operations.

7. Testing of water resulting from all dewatering operations.
8. Testing of explosive vapour concentrations associated with degassing of tanks.
9. Testing of sewage effluent as indicated in Section 01 54 00 – Camp Facilities or as directed by Departmental Representative.
10. Testing of wash water resulting from all cleaning activities, including barrel washing and equipment decontamination.
11. Tests specified to be carried out by Contractor under the supervision of Departmental Representative.
12. All tests required by Contractor to ensure conformance and quality control of Contractor’s Work.
13. Inspection and testing required by the conditions of permits issued for the Work.

.3 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Departmental Representative to verify acceptability of corrected Work.

.4 The analytical testing laboratory designated by Contractor to carry out off-site tests, to be approved by Departmental Representative and certified by the Canadian Association for Environmental Analytical Laboratories (CAEAL) for the specific tests required and in advance of analytical testing. Submit copies of the laboratory’s CAEAL certification to Departmental Representative upon request. The proposed independent laboratory must be independent from the Contractor.

1.4 CONTRACTOR’S RESPONSIBILITIES

.1 Provide labour, equipment and facilities to:
   .1 Provide access to Work to be inspected and tested by Departmental Representative.
   .2 Facilitate inspections and tests.
   .3 Make good Work disturbed by inspection and test.

.2 Notify Departmental Representative sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.

.3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.

.4 Instruct testing laboratory to include Departmental Representative on result distribution list via facsimile or e-mail.

.5 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Departmental Representative.

.6 Maintain interior temperatures of coolers at approximately 4 degrees Celsius during transport.

.7 Assume all responsibility for samples compromised during transport including all costs for re-sampling, shipping, analysis, and any resulting delays.

.8 Work to be done in accordance with industry best practice standards for the transfer and transportation of samples as well as the Contractor’s Quality Assurance and Quality Control Plan.
1.5 CONFIRMATORY TESTING

.1 Refer to the Remedial Action Plan (Stantec, 2014) for the Site Specific Target Levels established for each mine site, coupled with the applicable federal clean-up standards, to be used to guide the Departmental Representative in determining if the remediation work has been satisfactorily completed.

.2 Confirmatory testing will be carried out on contaminated soil areas by Departmental Representative’s testing laboratory as follows:
   .1 The actual location, frequency and method of testing will be determined by Departmental Representative.
   .2 Soil sampling will be carried out by Departmental Representative within the perimeter of each contaminated soil excavation and at depth within the completed excavation area, immediately upon completion of excavation.
   .3 Delineation will be based on boundary samples meeting the Site Specific Target Levels and applicable federal clean-up standards, as defined in the Remedial Action Plan (Stantec, 2014).

.3 If required, classification testing will be carried out at waste material processing areas to classify and delineate contaminated soil and other materials.

.4 It is anticipated that test results will be available within approximately fourteen (14) calendar days from the date that samples are transported from the site for laboratory analysis. Deliver Departmental Representative’s samples to Departmental Representative’s designated testing laboratory within two (2) days maximum from site departure.

.5 Be responsible for all costs associated with the packaging, preservation, handling and transport of Departmental Representative’s samples from the site to Departmental Representative’s designated testing laboratory. It is critically important that Contractor ensures that the samples are expeditiously delivered from the site and transferred to the designated testing laboratory depot. Where cargo transfers are required from charter to commercial air service, provide personnel at transfer locations to facilitate timely transfers.

.6 Assume all responsibility for samples damaged during transport including all costs for resampling, shipping, analysis and any resulting delays.

1.6 MEASUREMENT FOR PAYMENT

.1 The provision of packaging, handling and off-site transport of Departmental Representative’s samples to the Departmental Representative’s designated testing laboratory will be measured for payment by weight and paid under Item 01 29 83-1, Packaging, Handling and Off-site Transport of Departmental Representative’s Samples in the Basis of Payment Schedule.

.2 The provision of Contractor’s Testing Requirements, include sampling packaging, handling, off-site transport and testing of Contractor’s samples at an accredited laboratory of choice, will be paid as lump sum under Item 01 29 83-2, Contractor’s Testing Requirements including Sampling, Transportation and Analysis at an Accredited Laboratory of choice in the Basis of Payment Schedule.

.3 Except as indicated above, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate cost of the Work of this section as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules – Bar (GANTT).
PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION
PART 1 - GENERAL

1.1 DEFINITIONS

.1 Project Start-Up Teleconference: conference call to be held within 10 days of Contract Award and to include the Contractor and Departmental Representatives from AANDC and PWGSC.

.2 Pre-Construction Meeting: meeting to be held prior to Contractor Mobilization at location of Contractor’s choice and to include the Contractor, and Departmental Representatives from AANDC and PWGSC.

.3 Pre-Mobilization Site Visit: Contractor’s visit to the site with Departmental Representative to check field conditions and obtain actual conditions required to ensure correct execution of the Work prior to site mobilization.

.4 Monthly Meeting: meeting to be held on-site at approximately monthly intervals during the construction season and to include the Contractor and Departmental Representatives from AANDC and PWGSC.

.5 Inter-Season Meeting: meeting to be held between construction seasons at location of Contractor’s choice and to include the Contractor and Departmental Representatives from AANDC and PWGSC.

.6 Construction Meeting: meeting to be held on-site at approximately weekly intervals during the construction season and to include the Contractor, major Sub-Contractors, and Departmental Representative.

.7 Daily Safety Meeting: meeting to be held on-site daily during the construction season and to include Contractor, all construction staff, and on-site Departmental Representative.

.8 Community Meeting: meeting to be held prior to the commencement of work, after each construction season, and upon completion of project in English with Departmental Representative, AANDC, local leaders, officials, authorities and public. This meeting shall be led by the Contractor, with the Departmental Representative, AANDC and PWGSC typically in attendance. This meeting shall be open to the public and advertised by appropriate means in advance.

.9 Contract Closeout Meeting: meeting to be held upon completion of the program in Yellowknife with the Departmental Representative, AANDC and will include lessons learned component.

1.2 ADMINISTRATIVE

.1 Responsibilities of Departmental Representative:
   .1 Schedule and administer Project meetings throughout the progress of the Work at the call of Departmental Representative.
   .2 Prepare agenda for meetings unless otherwise specified.
   .3 Distribute written notice of each meeting five (5) days in advance of meeting date, except for Daily Safety Meetings.
   .4 Preside at meetings unless otherwise specified.
   .5 Record the meeting minutes unless otherwise specified. Include significant proceedings and decisions. Identify actions by parties.
   .6 Reproduce and distribute copies of minutes within three (3) days after meetings and transmit to meeting participants and affected parties not in attendance.

.2 Responsibilities of Contractor:
   .1 Provide physical space and make arrangements for meetings.
.2 Representative of Contractor, Sub-Contractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.3 PROJECT START-UP TELECONFERENCE MEETING

.1 Within 10 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities. The meeting will be a teleconference between all parties in attendance.

.2 Departmental Representative, Contractor, AANDC, PWGSC, major Sub-Contractors, field inspectors and supervisors will be in attendance.

.3 Establish time and location of meeting and notify parties concerned minimum five (5) days before meeting.

.4 Departmental Representatives will chair the meeting and take minutes. Meeting will be informal and agenda to include the following:
   .1 Appointment of official representative of participants in the Work.
   .2 Preliminary Schedule of Work.
   .3 Preliminary Schedule of submission of Work Plan and Cost Breakdown and other submissions.
   .4 Preliminary requirements for temporary facilities, site security, camp facilities, equipment and proposed methods of mobilization and demobilization.
   .5 Set-up of Pre-Construction Meeting.

1.4 PRE-CONSTRUCTION MEETING

.1 As per Project Start-up Teleconference Meeting, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 Departmental Representative, Contractor, AANDC, PWGSC, major Sub-Contractors, field inspectors and supervisors will be in attendance.

.3 Establish time and location of meeting and notify parties concerned minimum ten (10) days before meeting.

.4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.

.5 Agenda to include:
   .1 Appointment of official representative of participants in the Work.
   .2 Schedule of Work: in accordance with Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.
   .3 Schedule of submission in accordance with Section 01 33 00 - Submittal Procedures including but not limited to:
      .1 Site Specific Health and Safety Plan,
      .2 Emergency Response Plan,
      .3 Spill Contingency Plan,
      .4 Wildlife Management Plan,
      .5 Insurances and transcripts,
      .6 Equipment to be used by Contractor,
      .7 Proposed camp facilities in accordance with Section 01 54 00 - Camp Facilities,
      .8 Location of equipment and proposed methods for mobilization and demobilization,
      .9 Shop drawings and samples.
.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.

.5 Delivery Schedule of specified equipment.

.6 Site security in accordance with Section 01 54 00 – Camp Facilities and Section 01 56 00 – Temporary Barriers and Enclosures.

.7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.

.8 Departmental Representative provided products.

.9 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.

.10 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.

.11 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.

.12 Monthly progress claims, administrative procedures, and hold backs.

.13 Appointment of inspection and testing agencies or firms.

.14 Regulatory Issues

.15 Aboriginal involvement and reporting.

.16 Project photographs requirements.

.17 Requirements for Waste Management.

.18 Regulatory Review of all Permits required to complete work.

1.5 PRE-MOBILIZATION SITE VISIT

.1 Prior to mobilization, perform a Pre-Mobilization Site Visit to check field conditions and obtain actual conditions required to ensure correct execution of the Work. Site visit to include, at a minimum:

.1 Winter road track survey of proposed winter road alignments.

.2 Airstrip condition assessments.

.2 Provide a minimum of fourteen (14) days’ notice to Departmental Representative prior to examining the site.

.3 Departmental Representatives, Contractor, PWGSC and AANDC will be in attendance.

.4 Notify Departmental Representative in writing by submitting a Pre-Mobilization Site Visit Report within seven (7) days of completing the visit, of all matters which could prejudice proper execution of the Work.

.5 Include payment for this item in Section 01 11 00 - Summary of Work.

1.6 MONTHLY PROGRESS MEETINGS

.1 Departmental Representatives will schedule Monthly Progress Meetings to be held on-site.

.2 Departmental Representative, Contractor, AANDC, PWGSC, major Sub-Contractors, field inspectors, and supervisors will be in attendance.

.3 Departmental Representative will notify parties five (5) days prior to meetings.

.4 Departmental Representative will record minutes of meetings and circulate to attending parties and affected parties not in attendance shortly after meeting.

.5 Agenda may include the following:

.1 Summary of the previous month’s site activities.

.2 Comparison of progress achieved with the Project Schedule.
.3 Schedules and action Contractor plans to take to get back on Schedule, if required.
.4 Confirmation of quantities.
.5 Health, safety and security issues.
.6 Summary of interactions with Authorities having Jurisdiction (AHJ).
.7 Work plan for the following month.
.8 Camp requirements.
.9 Other business.

1.7 INTER-SEASON MEETINGS

.1 Request a meeting of parties in contract to discuss the previous and upcoming construction season and resolve issues arising from same.

.2 Departmental Representative, Contractor, AANDC, PWGSC, major Sub-Contractors, field inspectors and supervisors will be in attendance.

.3 Establish time and location of meeting and notify parties concerned minimum ten (10) days before meeting.

.4 Departmental Representative will preside.

.5 Agenda may include:
   .1 Summary of the previous season’s site activities.
   .2 Comparison of progress achieved with the Project Schedule.
   .3 Schedules and action Contractor plans to take to get back on Schedule, if required.
   .4 Confirmation of quantities.
   .5 Health, safety and security issues.
   .6 Summary of interactions with AHJ.
   .7 Work plan for the following season, if any.
   .8 Camp requirements.

.6 Departmental Representative will record minutes of meetings and circulate to attending parties and affected parties not in attendance within seven (7) days after meeting.

1.8 CONSTRUCTION MEETINGS

.1 During course of Work and weeks prior to Project completion, Departmental Representative will schedule weekly construction meetings.

.2 Contractor, major Sub-Contractors involved in Work and Departmental Representative are to be in attendance.

.3 Departmental Representative will record minutes of meetings and circulate to attending parties and affected parties not in attendance shortly after meeting.

.4 Agenda to include the following:
   .1 Review, approval of minutes of previous meeting.
   .2 Review of Work progress since previous meeting.
   .3 Field observations, problems, conflicts.
   .4 Problems which impede construction schedule.
   .5 Review of off-site fabrication delivery schedules.
   .6 Project Schedule review, identifying activities that are behind schedule and providing measures to regain slippage.
.7 Corrective measures and procedures to regain projected schedule.
.8 Revision to construction Schedule.
.9 Progress Schedule, during succeeding Work period.
.10 Review submittal Schedules: expedite as required.
.11 Maintenance of quality standards.
.12 Review proposed changes for effect on construction Schedule and on completion date.
.13 Health, Safety and Security issues.
.14 Correspondence from AHJ or expected visits from AHJ.
.15 Camp requirements
.16 Other business.

.5 Provide written explanations on activities which are overrunning estimated time. If any such activities are on the critical path, indicate what corrective action will be taken to bring them back on Schedule.

1.9 SAFETY MEETINGS

.1 Daily Safety Meetings: To be held on-site daily during the construction season and to include Contractor, all on-site staff, on-site Departmental Representative and Departmental Representative’s authorized personnel. The Daily Safety Meeting may be split into task or crew specific meetings as required. Record attendance and discussion topic(s) for daily safety meeting(s) and make available to Departmental Representative.

.2 Weekly Safety Meeting: Contractor to preside over weekly meetings for all site personnel during the contraction season. Minutes are to be recorded and attendance taken. Post minutes and attendance list on-site and provide copy to Departmental Representative within three (3) days of the meeting. May be combined with weekly Construction Meeting.

.3 Joint Occupational Health and Safety Committee Meeting: hold meeting according to attendance and frequency requirements of AHJs.

1.10 COMMUNITY MEETINGS

.1 Prior to the commencement of work and after each construction season is completed, arrange meetings with Departmental Representative, AANDC, PWGSC, local leaders, officials, authorities and public in Yellowknife. Be prepared to discuss local hiring practices and any other items of operations which may impact upon the local communities. Minutes will be taken by Departmental Representative. Provide a sign-in sheet for attendees.

.2 Contractor is responsible for advertising the community meeting at least seven (7) days in advance of the meeting. The meeting must be advertised in the local paper, on local radio, and posted within the town office, arena and community centre (if applicable). Postings and radio advertisements are to be pre-approved by AANDC and the Departmental Representative. Proof of advertising and postings must be presented to the Departmental Representative.

.3 Conduct presentations via computer and projector using “Power Point” software or using a similar suitable presentation. Provide wording in English. Submit presentations to Departmental Representative for review a minimum of 14 days prior to each community meeting.

.4 Provide and pay for the following associated with these meetings:
  .1 Meeting facility rental
  .2 Coffee, tea, pastries, cookies, etc.
  .3 All associated advertising costs.
1.11 CONTRACT CLOSE-OUT MEETING

.1 Request a meeting of parties in contract to discuss the results of the construction season, and document issues arising from same and the implemented solutions and lessons learned.

.2 Departmental Representative, Contractor, AANDC, major Sub-Contractor, field inspectors, and supervisors will be in attendance.

.3 Establish time and location of meeting and notify parties concerned a minimum of ten (10) days before meeting.

.4 Departmental Representative will preside.

.5 Agenda may include:

.1 Summary of the season's site activities.

.2 Comparison of progress achieved with the Project Schedule.

.3 Schedules and action Contractor plans to get back on Schedule, if required.

.4 Confirmation of quantities.

.5 Health, safety, and security issues.

.6 Summary of all interactions with Authorities Having Jurisdiction (AHJ).

.7 Work plan for the following season, if any.

.8 Camp requirements.

.9 Lessons learned

.6 Departmental Representative will record minutes of meetings, circulate to attending parties, and affected parties not in attendance within seven (7) days after meeting.

1.12 SUBMITTALS

.1 Provide submittals to the Departmental Representative for review. Include submittals as noted in Table 01 33 00-1 in Section 01 33 00 – Submittal Procedures.

1.13 MEASUREMENT FOR PAYMENT

.1 Costs for the Project Start-up Teleconference are incidental to the work.

.2 All direct costs for the Pre-Construction Meeting are to be included in the lump sum price for Pre-construction Meeting, Item 01 31 19-1, as indicated in Basis of Payment Schedule.

.3 All direct costs for the Inter-Season Meetings are to be included in the unit price bid for Inter-Season Progress Meetings at Location of Contractor's Choice, Item 01 31 19-2, as indicated in Basis of Payment Schedule. Contractor will arrange and pay for meeting facilities. Contractor will be responsible for travel and accommodation costs for its own personnel only.

.4 The facilitation of Monthly Progress Meetings will be measured for payment by the meeting held and paid under Item 01 31 19-3, Monthly Progress Meetings, in the Basis of Payment Schedule.

.5 The facilitation of Construction Meetings will be measured for payment by the meeting held and paid under Item 01 31 19-4, Construction Meetings, in the Basis of Payment Schedule.

.6 The provision of return transportation from the Yellowknife to the Bullmoose area mine sites of Departmental Representative's personnel during the Monthly Meetings will be measured by the number of person return trips, as described in Section 01 54 00 - Camp Facilities, and paid under item 01 54 00-4 – Departmental Representative and Departmental Representative Authorized Personnel Return Transportation -Yellowknife to Site, in the Basis of Payment Schedule.

.7 The facilitation of Community Meetings in Yellowknife will be measured for payment by the number of meetings held in Yellowknife and paid under Item 01 31 19-5, Community Meeting, in the Basis of
Payment Schedule. Payment will include provision for transportation of three (3) Departmental Representative(s) and/or Authorized Personnel from the Contractor’s Charter Base to Community Meeting Location.

.8 The facilitation of Closeout Meeting will be measured for payment by the meeting held and paid under Item 01 31 19-7, Closeout Meeting, in the Basis of Payment Schedule.

.9 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 – Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not used.

PART 3 - EXECUTION

3.1 Not Used

.1 Not used.

END OF SECTION
PART 1 - GENERAL

1.1 DEFINITIONS

.1 Activity: element of Work performed during course of Project. Activity normally has expected duration, expected cost and expected resource requirements. Activities can be subdivided into tasks.

.2 Bar Chart (GANTT Chart): graphic display of Schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized Project management system.

.3 Baseline: original approved plan (for Project, Work package, or activity), plus or minus approved scope changes.

.4 Construction Work Week: Monday to Sunday, inclusive, will provide seven (7) days Work week and define Schedule calendar working days as part of Bar (GANTT) Chart submission.

.5 Duration: number of Work periods (not including holidays or other nonworking periods) required to complete activity or other Project element. Usually expressed as workdays or workweeks.

.6 Milestone: significant event in Project, usually completion of major deliverable.

.7 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout Project life cycle.

1.2 REQUIREMENTS

.1 Ensure detailed Schedule is practical and remain within specified Contract duration.

.2 Plan to complete Work in accordance with prescribed milestones and time frame.

.3 Provide and maintain a work schedule showing anticipated progress stages and final completion of work within time period required by Contract.

.4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

.5 Prepare the schedule using critical path analysis techniques, showing resource loading. Identify tasks that lie on the critical path. Show total float for all activities.

1.3 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit the Bar (GANTT) Chart for the Preliminary Project Schedule to Departmental Representative within seven (7) working days of receipt of acceptance.
1.4 PROJECT SCHEDULE

.1 Develop detailed Project Schedule.

.2 Ensure detailed Project Schedule includes the following as minimum milestone and activity types, as applicable to each Bullmoose Area Mine site:

   .1 Award
   .2 Shop Drawings, Samples
   .3 Permits
   .4 Pre-Mobilization Site Visit
   .5 Winter road track survey
   .6 Legacy winter road upgrades
   .7 New winter road spur construction
   .8 Airstrip condition improvement
   .9 Borrow area and material development
   .10 Floating dock construction
   .11 Mobilization
   .12 Camp setup
   .13 Seasonal mobilization and demobilization
   .14 Construction of non-hazardous waste landfills
   .15 Construction of on-site landfarming facility
   .16 Construction of mine shaft caps
   .17 Construction of weir and temporary pool
   .18 Dewatering of trenches and shafts (where required)
   .19 Structure demolition
   .20 Non-hazardous debris collection and disposal
   .21 Excavation, stockpiling (where required), transport and treatment of hydrocarbon contaminated soil
   .22 Excavation, stockpiling (where required), transport and disposal of non-hazardous metals and hydrocarbon contaminated soil
   .23 Excavation and, stockpiling (where required), transport and disposal of metals contaminated tailings at non-hazardous waste landfills
   .24 Placement of soil cover over non-excavated waste rock
   .25 Collection and disposal of hazardous debris and materials
   .26 On-site burning of non-hazardous wood debris
   .27 Backfilling/capping of mine trenches and shafts, where required
   .28 Instrumentation and fencing of wetland area.
   .29 Regrading
   .30 Restoration of disturbed areas
   .31 Camp shut down
   .32 Interim Certificate of Completion
   .33 Demobilization
   .34 Closeout Submittals
   .35 Final Certificate of Completion

.3 Submit preliminary construction progress Schedule in accordance with Section 01 33 00 - Submittal Procedures to Departmental Representative coordinated with Departmental Representative’s Project Schedule.

.4 After review, revise and resubmit Schedule to comply with revised Project Schedule.
.5 During progress of Work revise, update and resubmit the Project Schedule as directed by Departmental Representative. Provide the Revised Project Schedule a minimum of three (3) days prior to scheduled monthly meetings, or as directed by Departmental Representative.

1.5 PROJECT PROGRESS REPORTING

.1 Update and submit Project Schedule on bi-weekly basis reflecting activity changes and completions, as well as activities in progress.

.2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.6 CONSTRUCTION MEETINGS

.1 Discuss Project Schedule at regular site meetings, identify activities that are behind Schedule and provide measures to regain slippage. Activities considered behind Schedule are those with projected start or completion dates later than current approved dates shown on baseline Schedule.

.2 Weather-related delays with their remedial measures will be discussed and negotiated.

1.7 COST AND QUALITY CONTROL

.1 Provide a Contract Work Breakdown Structure (CWBS) based on Contractor's Cost Breakdown and any modifications requested by Departmental Representative as follows:
   .1 CWBS to be an organization of the Work to be performed, services to be provided and data to be submitted by Contractor, as well as payments to be made to Contractor under the terms of the Contract.
   .2 The CWBS to clearly define the Work elements of each item of the CWBS.
   .3 The CWBS to include a breakdown of pay items included under Item BOPC -1, Balance of Project Costs in the Basis of Payment Schedule. All unit price, lump sum, and provisional cost sum allowance pay items included in the Basis of Payment Schedule to also be included in the CWBS.
   .4 Prepare the CWBS in computerized spreadsheet format compatible with the most recent release of Microsoft Excel software. Provide CWBS in hard copy format.
   .5 Submit the CWBS within 30 days following contract award date.
   .6 Update the CWBS bi-weekly reflecting changes and items completed to date. Submit the updated CWBS along with the bi-weekly project schedule updates.

.2 Equipment and Material Control:
   .1 Record data on status of construction material and equipment and report upon Departmental Representative's request.

.3 Manpower Performance Measures:
   .1 Record and report manpower listing for each company employed under this Contract, including Sub-Contractors (aboriginal/non-aboriginal) detailing daily man-hours during the current month and cumulative total to date and report upon Departmental Representative's request.
   .2 Provide statistical reporting to the Departmental Representative on a monthly basis.
   .3 Provide statistics related to lost time accidents upon Departmental Representative's request.
   .4 Monthly Performance Measures Templates are included in this specification in the Appendix.
1.8 MEASUREMENT OF PAYMENT

.1 Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in this Section 01 32 18 – Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not used.

PART 3 - EXECUTION

3.1 Not Used

.1 Not used.

END OF SECTION
PART 1 - GENERAL

1.1 DEFINITIONS

.1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

1.2 ADMINISTRATIVE

.1 Submit to Departmental Representative submittals listed for review. Contractor to provide submittals including but not limited to those listed in Submittal Table 01 33 00-1 at the end of this Section. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Work affected by submittal is not to proceed until review is complete.

.3 Present shop drawings and product data, in SI Metric units.

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

.5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific Project will be returned without being examined and will be considered rejected.

.6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.

.8 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.

.9 Keep one reviewed copy of each submission on site.

1.3 SHOP DRAWINGS SUBMISSION

.1 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.2 Submit shop drawings bearing stamp and signature of qualified professional Engineer registered or licensed in Northwest Territories, Canada as required.

.3 Submit Preliminary Shop Drawings ninety (90) days prior to mobilization. Submit Final Shop Drawings
forty-five (45) days prior to mobilization.

.4 Allow seven (7) days for Departmental Representative's review of each submission.

.5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative and receive written approval from the Departmental Representative prior to proceeding with Work.

.6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of any revisions other than those requested.

.7 Verify in shop drawings:
   .1 Field measurements;
   .2 Field construction criteria;
   .3 Catalogue numbers and similar data.

.8 Accompany submissions with transmittal letter, in duplicate, containing:
   .1 Date.
   .2 Project title and number.
   .3 Contractor's name and address.
   .4 Identification and quantity of each shop drawing, product data and sample.
   .5 Other pertinent data.

.9 Submissions to include:
   .1 Date and revision dates.
   .2 Project title and number.
   .3 Name and address of:
      .1 Sub-Contractor.
      .2 Supplier.
      .3 Manufacturer.
   .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
   .5 Details of appropriate portions of Work as applicable:
      .1 Fabrication.
      .2 Layout, showing dimensions, including identified field dimensions, and clearances.
      .3 Setting or erection details.
      .4 Capacities.
      .5 Performance characteristics.
      .6 Standards.
      .7 Operating weight.
      .8 Wiring diagrams.
      .9 Single line and schematic diagrams.
      .10 Relationship to adjacent Work.

.10 After Departmental Representative's review, distribute copies.

.11 Submit 3 prints and an electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

.12 Delete information not applicable to Project.
.13 Supplement standard information to provide details applicable to Project.

.14 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, 2 copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

.15 The review of shop drawings by Departmental Representative is for sole purpose of ascertaining conformance with general concept.

.1 This review does not mean that Departmental Representative approves detail design inherent in shop drawings, responsibility for which remains with Contractor submitting same, and such review does not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all requirements of construction and Contract Documents.

.2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of all sub-trades.

1.4 SAMPLES

.1 Submit for review samples in triplicate as requested in respective specification Sections. Label samples with origin and intended use.

.2 Deliver samples prepaid to Departmental Representative's business address site office.

.3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.

.4 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.

.5 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.

.6 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.5 PHOTOGRAPHS

.1 Provide digital photos in “Joint Photographic Experts Group” (.jpg) format for Progress Photographs and Final Photographs.

.2 Digital photographs to have a minimum of 2,592 x 1,944 pixel (5 Megapixel) resolution.

.3 Progress and Final Photographs to be submitted on a compact disc (CD). Provide one (1) copy of the Progress Photographs, and two (2) copies of the Final Photographs.

.4 Printed (colour) copies of digital photographs to be provided for Final Photographs only:

.1 Size: 100 mm x 125 mm.

.2 Two digital photographs per 215 x 280 mm page.
.3 Pages to be white, of photographic quality paper and to be three-hole punched, ready for insertion into a three-ring binder. Binder(s) to be vinyl, hard-covered, 3 inch D ring, sized for 215 x 280 mm paper, with spine pocket.

.5 Identification: Typewritten or generated by computer, the name and number of the Project on cover and spine of binder and CD case. Each photograph to be labelled with the digital photo file name positioned so as to not interfere with the view of the main activity or feature presented on the photograph. Also provide a description of each photograph in photographic log format. Photographic log to be included with each computer disk, CD, and binder. Description to include:
   .1 Digital photograph file name
   .2 Name and description of feature
   .3 View direction
   .4 Date of exposure.
   .5 GPS location

.6 Quantity: Provide sufficient number of photographs to adequately describe the Work activities carried out during the reporting period. A minimum of two photographs taken from two viewpoints are to be provided for each clean-up/construction activity. Viewpoint locations for final digital photographs to be determined by Departmental Representative.

.7 Provide “Before” and “After” photographs of the Site showing key areas before and after remediation from the same photographic viewpoint. Plot the viewpoint locations on the record drawing mark-up.

.8 Submit progress photographs monthly with last weekly report or as directed by the Departmental Representative.

.9 Provide two sets in two binders of final digital photographs.

.10 Submit final photographs prior to final progress payment request.

1.6 GIS SUBMISSIONS

.1 All submissions relating to MVLWB Permit Requirements are to conform to the MVLWB document entitled “Standards for Geographic Information Systems (GIS) Submissions” dated March 1, 2012.

1.7 MEASUREMENT FOR PAYMENT

.1 All direct costs for the submittal of shop drawings, samples, and photographs are to be included in the lump sum price for Submittals, Item 01 33 00-1, as indicated in Basis of Payment Schedule.

.2 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 – Construction Progress Schedules – Bar GANTT Chart.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.
PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION
<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 11 00</td>
<td>Worker Orientation Seminar material</td>
<td>30 days prior to seminar</td>
</tr>
<tr>
<td>01 11 00</td>
<td>Record of Attendance at Training Seminar</td>
<td>Upon Departmental Representative's request</td>
</tr>
<tr>
<td>01 29 83</td>
<td>Proposed sampling and testing methodology</td>
<td>Within 30 days of Contract Award</td>
</tr>
<tr>
<td>01 29 83</td>
<td>CAEAL Laboratory Certification</td>
<td>Upon Departmental Representative's request</td>
</tr>
<tr>
<td>01 31 19</td>
<td>Pre-Mobilization Site Visit Report</td>
<td>7 days following site visit</td>
</tr>
<tr>
<td>01 31 19</td>
<td>Daily Safety Meeting Minutes</td>
<td>Upon Departmental Representative's request</td>
</tr>
<tr>
<td>01 31 19</td>
<td>Weekly Safety Meeting Minutes</td>
<td>Within 3 days of Meeting</td>
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<tr>
<td>01 31 19</td>
<td>Community Meeting Presentation</td>
<td>14 days prior to meeting</td>
</tr>
<tr>
<td>01 32 18</td>
<td>Preliminary Project Schedule</td>
<td>7 days after Contract Award</td>
</tr>
<tr>
<td>01 32 18</td>
<td>Contractor Work Breakdown Structure (CWBS) - Cash flow projections</td>
<td>30 days after Contract Award</td>
</tr>
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<td>01 32 18</td>
<td>Monthly Statistical Reporting</td>
<td>Monthly with progress statement</td>
</tr>
<tr>
<td>01 33 00</td>
<td>Preliminary Shop Drawings</td>
<td>90 days prior to mobilization</td>
</tr>
<tr>
<td>01 33 00</td>
<td>Final Shop Drawings</td>
<td>45 days prior to mobilization</td>
</tr>
<tr>
<td>01 33 00</td>
<td>Progress Photographs</td>
<td>Monthly with progress statement</td>
</tr>
<tr>
<td>01 33 00</td>
<td>Final Photographs</td>
<td>Prior to final progress payment request</td>
</tr>
<tr>
<td>01 35 15</td>
<td>Wastewater Management Plan incl. Wastewater Treatment Facility Design</td>
<td>60 days after Contract Award</td>
</tr>
<tr>
<td>01 35 15</td>
<td>Hazardous Material Audit</td>
<td>30 days after Contract Award</td>
</tr>
<tr>
<td>01 35 15</td>
<td>Wastewater testing records</td>
<td>Prior to discharging water</td>
</tr>
<tr>
<td>01 35 32</td>
<td>Draft Site Specific Health and Safety Plan</td>
<td>30 days after Contract Award</td>
</tr>
<tr>
<td>01 35 32</td>
<td>Final Site Specific Health and Safety Plan</td>
<td>60 days prior to mobilization</td>
</tr>
<tr>
<td>01 35 32</td>
<td>Updated Site Specific Health and Safety Plan</td>
<td>45 days prior to start of each construction season</td>
</tr>
<tr>
<td>01 35 32</td>
<td>Site assessment of deficiencies in health, safety, medical/first aid supplies including schedule for upgrading deficiencies</td>
<td>As required</td>
</tr>
<tr>
<td>01 35 32</td>
<td>Inventory of Contractor’s health, safety, medical and first aid equipment and supplies including schedule for upgrading deficiencies</td>
<td>Within 10 days of Seasonal mobilization</td>
</tr>
<tr>
<td>01 35 32</td>
<td>Proof of PPE certification (i.e., respiratory fit testing), as part of Site Specific Health and Safety Plan</td>
<td>Prior to Work activities</td>
</tr>
<tr>
<td>01 35 32</td>
<td>Minutes of Weekly Safety Meetings</td>
<td>Weekly, within 3 days of meeting</td>
</tr>
<tr>
<td>01 35 32</td>
<td>Wastewater Management Plan, as part of Site Specific Health and Safety Plan</td>
<td>45 days prior to mobilization</td>
</tr>
<tr>
<td>01 35 32</td>
<td>Wildlife Management Plan, as part of Site Specific Health and Safety Plan</td>
<td>45 days prior to mobilization</td>
</tr>
<tr>
<td>01 35 32</td>
<td>Fire Safety Program, as part of Site Specific Health and Safety Plan</td>
<td>45 days prior to mobilization</td>
</tr>
<tr>
<td>01 35 32</td>
<td>Notice of Work (file with AHU)</td>
<td>Prior to commencing Work</td>
</tr>
<tr>
<td>01 35 43</td>
<td>Environmental Protection and Sustainability Plan</td>
<td>30 days after Contract Award</td>
</tr>
<tr>
<td>01 35 43</td>
<td>Details of Sewage / Disposal System</td>
<td>60 days after Contract Award</td>
</tr>
<tr>
<td>01 35 43</td>
<td>Erosion, Sediment and Drainage Control Plan</td>
<td>Prior to commencing Work</td>
</tr>
<tr>
<td>01 35 43</td>
<td>Copies of Environmental Agency Submittals/Approvals</td>
<td>As required</td>
</tr>
<tr>
<td>01 35 43</td>
<td>Work Plans for Work Adjacent to Waterways</td>
<td>45 days prior to commencing Work</td>
</tr>
<tr>
<td>01 35 43</td>
<td>Inventory of Contractor’s Environmental Protection Supplies</td>
<td>45 days prior to commencing Work</td>
</tr>
<tr>
<td>01 35 43</td>
<td>Wildlife Protection Plan</td>
<td>60 days prior to commencing Work</td>
</tr>
<tr>
<td>01 41 00</td>
<td>WHRMIS Material Data Sheets</td>
<td>Upon delivery of materials to the Site</td>
</tr>
<tr>
<td>01 45 00</td>
<td>Inspection and Testing Reports</td>
<td>As required</td>
</tr>
<tr>
<td>01 50 00</td>
<td>Field Drawings Indicating Equipment and Fixtures</td>
<td>Upon Departmental Representative's request</td>
</tr>
<tr>
<td>01 53 00</td>
<td>Draft Mobilization and Demobilization Plan</td>
<td>30 days after Contract Award</td>
</tr>
<tr>
<td>01 53 00</td>
<td>Final Mobilization and Demobilization Plan</td>
<td>30 days prior to mobilization</td>
</tr>
<tr>
<td>01 53 00</td>
<td>Draft Airstrip and Site Access Road Upgrading and Maintenance Plan</td>
<td>30 days after Contract Award</td>
</tr>
<tr>
<td>01 53 00</td>
<td>Final Airstrip and Site Access Road Upgrading and Maintenance Plan</td>
<td>30 days prior to mobilization</td>
</tr>
<tr>
<td>01 53 00</td>
<td>Construction Equipment List</td>
<td>30 days prior to mobilization</td>
</tr>
<tr>
<td>01 54 00</td>
<td>Camp Facilities Plan</td>
<td>20 days after Contract Award</td>
</tr>
<tr>
<td>01 54 00</td>
<td>Plan of Construction Detailed, Camp Layout and Siting</td>
<td>Prior to installation</td>
</tr>
<tr>
<td>01 54 00</td>
<td>Camp Facilities Inspection Report, including plan for corrective action for identified deficiencies</td>
<td>30 days prior to mobilization</td>
</tr>
<tr>
<td>01 54 00</td>
<td>Potable Water test results</td>
<td>Before opening camp</td>
</tr>
<tr>
<td>01 54 00</td>
<td>Camp Licences, permits, authorizations</td>
<td>Prior to establishing camp</td>
</tr>
<tr>
<td>01 54 00</td>
<td>Proof of Adherence to Environmental Regulations</td>
<td>Before opening camp</td>
</tr>
<tr>
<td>01 54 00</td>
<td>Sketch of Proposed Field and Laboratory</td>
<td>20 days before fabrication or construction</td>
</tr>
<tr>
<td>01 54 00</td>
<td>Foodsafe Certification for all food preparation staff</td>
<td>Prior to mobilization</td>
</tr>
<tr>
<td>01 54 00</td>
<td>Camp Rules</td>
<td>Prior to commencing camp operations</td>
</tr>
<tr>
<td>01 61 00</td>
<td>Material and Equipment List</td>
<td>20 days after Contract Award</td>
</tr>
<tr>
<td>01 71 01</td>
<td>Surveyor Information</td>
<td>20 days after construction commencement each season</td>
</tr>
<tr>
<td>01 71 01</td>
<td>Survey Data Submissions</td>
<td>As required and with Progress Claims</td>
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<tr>
<td>01 71 01</td>
<td>Survey Equipment Calibration Records</td>
<td>30 days prior to construction commencement each season</td>
</tr>
<tr>
<td>01 77 00</td>
<td>Completion Certificate</td>
<td>Prior to Final Inspection</td>
</tr>
<tr>
<td>01 78 00</td>
<td>Closeout Submittals</td>
<td>Prior to project completion</td>
</tr>
<tr>
<td>01 78 00</td>
<td>Records and Survey Information</td>
<td>Prior to project completion</td>
</tr>
<tr>
<td>01 80 00</td>
<td>Winter Road Construction Plan and Conditions Reports</td>
<td>Prior to commencement of Work and every Monday morning during Work</td>
</tr>
<tr>
<td>01 80 00</td>
<td>Winter Road Schedule</td>
<td>Prior to commencement of Work</td>
</tr>
<tr>
<td>01 80 00</td>
<td>Product Data</td>
<td>Prior to commencement of Work</td>
</tr>
<tr>
<td>02 41 16</td>
<td>Waste Reduction Work Plan</td>
<td>Prior to commencing Work</td>
</tr>
<tr>
<td>02 41 16</td>
<td>Certified Weigh Bills, Bill of Lading, Receipts from Disposal Sites</td>
<td>Weekly as requested by Departmental Representative</td>
</tr>
<tr>
<td>02 81 00.01</td>
<td>Detailed Soil Remediation Plan</td>
<td>90 days prior to construction</td>
</tr>
<tr>
<td>02 81 00.01</td>
<td>Analytical Results related to Soil Treatment</td>
<td>Within 1 week of receipt</td>
</tr>
</tbody>
</table>

TABLE 01 33 00.1
CONTRACTOR SUBMITTAL SCHEDULE

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### TABLE 01 33 00-1
CONTRACTOR SUBMITTAL SCHEDULE

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<tr>
<th>Specification</th>
<th>Description</th>
<th>Date</th>
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<tbody>
<tr>
<td>02 61 00.01</td>
<td>Soil Remediation Operation Report</td>
<td>Monthly during the soil remediation activities</td>
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<tr>
<td>02 61 00.01</td>
<td>Interim Soil Remediation Report</td>
<td>Within 30 days of completion of each field season</td>
</tr>
<tr>
<td>02 81 01</td>
<td>Hazardous Materials Management Plan</td>
<td>Prior to mobilization</td>
</tr>
<tr>
<td>02 81 01</td>
<td>Personnel qualifications and training certificate</td>
<td>Prior to commencing Work</td>
</tr>
<tr>
<td>02 81 01</td>
<td>Hazardous Materials Disposal Tracking Information</td>
<td>Prior to transportation off-site</td>
</tr>
<tr>
<td>02 81 01</td>
<td>Waste transport manifests, chain of custody, and transportation documentation</td>
<td>Prior to transportation off-site</td>
</tr>
<tr>
<td>02 81 01</td>
<td>Destruction Certificates</td>
<td>Within 14 days of destruction</td>
</tr>
<tr>
<td>02 81 01</td>
<td>Specifications of Hazardous Materials Containers</td>
<td>45 days prior to mobilization</td>
</tr>
<tr>
<td>02 81 01</td>
<td>Details of Hazardous Materials Processing Areas</td>
<td>1 week prior to commencing Work</td>
</tr>
<tr>
<td>02 81 01</td>
<td>Detailed Inventory of the Temporary Storage Area</td>
<td>Within 30 days of completion of each field season</td>
</tr>
<tr>
<td>02 81 01</td>
<td>Photographic record of interior of all shipping containers</td>
<td>Upon completion of Work</td>
</tr>
<tr>
<td>02 81 01</td>
<td>Proposed drum processing methodology</td>
<td>45 days prior to mobilization</td>
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<tr>
<td>02 82 00.01</td>
<td>Proof of suitable arrangements for disposal of ACM</td>
<td>1 week prior to commencing Work</td>
</tr>
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<td>02 82 00.01</td>
<td>Proof of Contractor's Asbestos Liability Insurance</td>
<td>1 week prior to commencing Work</td>
</tr>
<tr>
<td>02 82 00.01</td>
<td>Copies of permits for transportation and disposal of ACM and records indicating waste has been received and properly disposed</td>
<td>1 week prior to commencing Work</td>
</tr>
<tr>
<td>02 82 00.01</td>
<td>Copies of asbestos workers training/education records</td>
<td>1 week prior to commencing Work</td>
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<tr>
<td>02 82 00.01</td>
<td>Worker's Safety &amp; Compensation Commission Board Clearance Certificate</td>
<td>1 week prior to commencing Work</td>
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<tr>
<td>02 82 00.02/03</td>
<td>Documentation for chemicals and/or materials to be used for ACM abatement</td>
<td>1 week prior to commencing Work</td>
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<tr>
<td>02 83 10/11/12</td>
<td>Layout of proposed enclosures and decontamination facilities</td>
<td>1 week prior to commencing Work</td>
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<tr>
<td>02 83 10/11/12</td>
<td>Proof of suitable arrangements for disposal of lead-based paint waste</td>
<td>1 week prior to commencing Work</td>
</tr>
<tr>
<td>02 83 10/11/12</td>
<td>Proof of General and Environmental Liability Insurance</td>
<td>1 week prior to commencing Work</td>
</tr>
<tr>
<td>02 83 10/11/12</td>
<td>Copies of permits for transportation and disposal of lead-based paint waste and records indicating waste has been received and properly disposed</td>
<td>1 week prior to commencing Work</td>
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<td>Copies of workers training/education records for lead-based paint works</td>
<td>1 week prior to commencing Work</td>
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<tr>
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<td>Copies of notification to AHJ and site workers of presence of lead-containing material on Site</td>
<td>2 days prior to commencing Work</td>
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<tr>
<td>02 84 00</td>
<td>Certificate of Approval for Transporation of PCB Waste and Location of Destruction Facility</td>
<td>1 week prior to commencing Work</td>
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<td>02 84 00</td>
<td>PCB Management Plan</td>
<td>1 week prior to commencing Work</td>
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<td>02 84 00</td>
<td>PCB records (receipt of waste, removal of waste, monthly inspection, repair and replacement reports)</td>
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<td>Proposed aggregate source</td>
<td>14 days prior to commencing production</td>
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<td>31 05 16</td>
<td>Quarry Operations Plan</td>
<td>30 days of Contract Award</td>
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<td>31 22 13</td>
<td>Site Access Upgrade Plan</td>
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<tr>
<td>31 22 13</td>
<td>Landfill Design Plan</td>
<td>45 days prior to construction</td>
</tr>
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<td>31 22 13</td>
<td>Landfarm Design Plan</td>
<td>45 days prior to construction</td>
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<tr>
<td>31 23 33.01</td>
<td>Existing Conditions Survey</td>
<td>7 days prior to excavation</td>
</tr>
<tr>
<td>31 23 33.01</td>
<td>Notice of excavation work</td>
<td>7 days prior to excavation</td>
</tr>
<tr>
<td>31 23 33.01</td>
<td>Notice of bottom of excavation</td>
<td>Upon reaching bottom of excavation</td>
</tr>
<tr>
<td>31 23 33.01</td>
<td>Testing and inspection results</td>
<td>Upon Departmental Representative’s request</td>
</tr>
<tr>
<td>31 23 33.01</td>
<td>Equipment list for major equipment</td>
<td>7 days prior to excavation</td>
</tr>
<tr>
<td>31 23 33.01</td>
<td>Samples and sieve analyses</td>
<td>As requested</td>
</tr>
<tr>
<td>31 32 19.01</td>
<td>Product Data</td>
<td>2 weeks prior to delivery to site.</td>
</tr>
<tr>
<td>31 32 19.01</td>
<td>Samples and Testing and Evaluation Reports</td>
<td>4 weeks prior to commencing Work</td>
</tr>
<tr>
<td>31 32 19.02</td>
<td>Product Data</td>
<td>2 week prior to delivery to site.</td>
</tr>
<tr>
<td>31 32 19.02</td>
<td>Samples and Testing and Evaluation Reports</td>
<td>4 weeks prior to commencing Work</td>
</tr>
<tr>
<td>31 32 19.02</td>
<td>Shop Drawings</td>
<td>4 weeks prior to commencing Work</td>
</tr>
<tr>
<td>31 32 19.02</td>
<td>Manufacturer's Mill Test Data</td>
<td>4 weeks prior to commencing Work</td>
</tr>
<tr>
<td>31 32 19.02</td>
<td>Certificates, including Test Results</td>
<td>2 week prior to delivery to site.</td>
</tr>
</tbody>
</table>
PART 1 - GENERAL

1.1 DEFINITION

.1 Process wastewater: Water from decontamination activities, water from dewatering work areas, potentially contaminated groundwater, contact water, and/or any other liquid effluent stream created or encountered during Work activities.

.2 Contact water: Water that has been in physical contact with known petroleum hydrocarbon and/or metal contaminated soil, either in defined soil excavations or excavated soil in treatment areas or stockpiles.

.3 Camp wastewater: Wash water, rinse water, water from operations of camp facilities, and/or any other liquid effluent stream created or encountered during camp activities.

.4 Processed wastewater: Wastewater processed through the Wastewater Treatment Facility.

.5 Treated wastewater: Processed wastewater which has been tested and shown to be in compliance with applicable discharge criteria and requirements of this Section and Section 01 35 43 – Environmental Procedures.

1.2 REFERENCES


.2 Hazardous material information presented on Drawings.

1.3 REGULATORY REQUIREMENTS

.1 Comply with federal, territorial, and local anti-pollution laws, ordinances, codes, and regulations when disposing of waste materials, debris, and rubbish.

.2 Comply with all terms and conditions of the Land Use Permit, Quarry Permit, and any other permits or licences obtained.

1.4 SUBMITTALS

.1 All submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit to the Departmental Representative a Wastewater Management Plan, conforming to requirements of AHJ and Specifications as part of the Erosion, Sediment and Drainage Control Plan, prior to the commencement of earth works.

.3 Submit to Departmental Representative, three (3) hard copies and one (1) electronic copy of the Hazardous Material audit thirty (30) days after contract award.

1.5 EQUIPMENT DECONTAMINATION FACILITY

.1 Prior to commencing Work involving equipment contact with potentially contaminated materials, construct equipment decontamination pad to accommodate largest piece of on-site potentially contaminated equipment.
.2 Construct equipment decontamination pad in accordance with 1.10 below and Contractor’s approved Equipment Decontamination Facility Design.

.3 Provide, operate, and maintain suitable portable, high-pressure, low-volume decontamination wash unit[s] equipped with self-contained water storage tank and pressurizing system and capable of heating and maintaining wash waters to 80° C and providing nozzle pressure of 1,035 Kpa.

.4 Provide, operate, and maintain necessary equipment, pumps, and piping required to collect and contain equipment decontamination wastewater and sediment and transfer same to approved storage facilities.

1.6 NON-HAZARDOUS WASTE LANDFILL

.1 Prior to commencing Work involving non-hazardous wastes, construct non-hazardous waste landfills at Ruth Mine Site and Bullmoose Mine Site.

.2 Construct non-hazardous waste landfills in accordance with Contract.

.3 Maintain and operate non-hazardous waste landfills in accordance with Contract, applicable regulations, and Authorities Having Jurisdiction (AHJ).

1.7 LANDFARMING FACILITY

.1 Prior to commencing Work involving non-hazardous petroleum hydrocarbon-contaminated soils, construct landfarming facility at Bullmoose Mine Site.

.2 Construct landfarming facility in accordance with Contract.

.3 Maintain and operate landfarming facility in accordance with Contract, applicable regulations, and AHJ.

1.8 SOIL STOCKPILING FACILITIES

.1 Provide, maintain, and operate storage/stockpiling facilities as specified in Section 31 23 33.01 – Excavating, Trenching and Backfilling.

.2 Install geomembrane liner below all proposed stockpile locations to prevent contact between stockpile material and ground. With the exception of non-contaminated soil stockpiles, the geomembrane liner shall be raised at the edges to facilitate collection of any liquids draining from the soils. Cover all stockpiles with tarps capable of completely covering stockpiled material at all times, unless materials are being added to or taken from the stockpiles.

.3 Segregate all contaminated soil from non-contaminated soil in separate stockpiles.

.4 Segregate soils contaminated only by petroleum hydrocarbons from soils contaminated by metals in separate stockpiles.

.5 The Contractor shall prevent any liquids from contaminated or impacted stockpiles from escaping the geomembrane liners. Liquids shall be contained and transferred to the wastewater treatment facility.

1.9 AQUADAM

.1 Prior to commencing Work at Bullmoose Creek, construct and maintain Aquadam in accordance with Contract, applicable regulations and AHJ.
.2 Size Aquadam sufficiently to block flow of Bullmoose Creek and permit bypass pumping to Bullmoose Lake during Creek sediments excavation and creekbed reinstatement, in accordance with Drawings.

1.10 WASTEWATER TREATMENT FACILITY DESIGN REQUIREMENTS

.1 Submit design details of wastewater treatment facilities conforming to requirements of AHJ 60 days after contract award date. Wastewater treatment facility designs will be stamped by an Engineer registered or licensed to practice in the Northwest Territories.

.2 Contain wastewater separately from the following sources:
   .1 Camp Operations: including but not limited to, grey water, kitchen sumps, traps and blackwater.
   .2 Contact water from dewatering or from the draining of water from soil in the event that submerged impacted soils are encountered.
   .3 All other process wastewater; including but not limited to, wastewater streams from decontamination, process water, contact water and wash/rinse water.

.3 Wastewater Treatment Facilities:
   .1 Design wastewater treatment facilities capable of filtering water generated from dewatering shafts, trenches, excavations, process water and Work areas to meet the following requirements:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Maximum Allowable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volatile Hydrocarbons</td>
<td>15 mg/L</td>
</tr>
<tr>
<td>Extractable Hydrocarbons</td>
<td>5 mg/L</td>
</tr>
<tr>
<td>Oil and Grease</td>
<td>5 mg/L, non visible</td>
</tr>
<tr>
<td>Non-Aqueous Phase Liquid / Free Product</td>
<td>Not Present</td>
</tr>
<tr>
<td>pH</td>
<td>6 to 9</td>
</tr>
<tr>
<td>Arsenic (total)</td>
<td>100 µg/L</td>
</tr>
<tr>
<td>Cadmium (dissolved)</td>
<td>10 µg/L</td>
</tr>
<tr>
<td>Chromium (total)</td>
<td>100 µg/L</td>
</tr>
<tr>
<td>Cobalt (dissolved)</td>
<td>50 µg/L</td>
</tr>
<tr>
<td>Copper (dissolved)</td>
<td>200 µg/L</td>
</tr>
<tr>
<td>Lead (dissolved)</td>
<td>50 µg/L</td>
</tr>
<tr>
<td>Mercury (total)</td>
<td>0.6 µg/L</td>
</tr>
<tr>
<td>Nickel (dissolved)</td>
<td>200 µg/L</td>
</tr>
<tr>
<td>Zinc (total)</td>
<td>1,000 µg/L</td>
</tr>
<tr>
<td>Phenols</td>
<td>20 µg/L</td>
</tr>
<tr>
<td>PCBs</td>
<td>1,000 µg/L</td>
</tr>
</tbody>
</table>

   .2 Design wastewater treatment facilities capable of filtering water generated from camp operations to meet the following requirements:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Maximum Allowable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>6 to 9</td>
</tr>
<tr>
<td>Mineral Oil and Grease</td>
<td>5 mg/L, non visible</td>
</tr>
<tr>
<td>Total Suspended Solids</td>
<td>100 mg/L</td>
</tr>
<tr>
<td>BOD</td>
<td>80 mg/L</td>
</tr>
</tbody>
</table>
## Parameter | Maximum Allowable Concentration
--- | ---
Fecal Coliforms | 10,000 CFU/dL
Residual Chlorine | 0.1 mg/L

.3 Provide separate storage for wastewater generated by camp operations and wastewater generated from remediation activities.

.4 Ensure that discharges from site are in compliance with applicable permit requirements and limitations. Make adjustments to process or provide alternative equipment (at no additional cost) such that wastewater meets the applicable discharge criteria.

.5 Provide suitable piping or mobile storage to transfer liquid/solid mixtures generated by dewatering operations which require water filtering to wastewater treatment facility.

.6 Ensure wastewater treatment facilities are capable of receiving liquid/solid mixtures to not cause delay to dewatering operations.

.7 Ensure wastewater treatment facilities are capable of oil/water separation.

.8 In the event of a discrepancy between the above listed wastewater requirements and those provided in the Water Licence/Land Use Permit, the requirements in the Land Use Permit will govern.

.9 Provide adequate storage for wastewater such that samples of wastewater can be obtained and analyzed prior to discharge.

.10 Salvage of tanks on site is permitted, provided that the tanks are empty and clean prior to use.

.11 Wastewater storage ponds meeting all requirements of AHJ are permitted.

.12 Contractor is responsible for transporting and disposing of wastewater to an approved off-site disposal facility in the event that the on-site facility is not functioning. The Contractor is responsible for additional testing required by the off-site facility.

### Piping

.4 Piping: Suitable material type, of sufficient diameter and structural thickness for purpose intended; satisfactorily tested for leaks with potable water in presence of Departmental Representative before handling wastewater.

### Installation

.5 Installation:

.1 Provide labour, materials, and equipment and do Work required for setup and construction of wastewater treatment facility.

.2 Install component systems in accordance with installation procedures and as indicated.

.3 Following installation of system, implement initial operation test in accordance with procedures developed by Contractor and submitted to Departmental Representative for review.

.4 Install piping in accordance with manufacturer's instructions and test for leakage using potable water prior to commencing dewatering and filtering operations.

### Initial Testing

.6 Initial Testing: Performance of wastewater treatment facility provided by Contractor will initially be determined by Departmental Representative.

### Operation

.7 Operation:

.1 Obtain and analyze influent and effluent samples required to operate the system.

.2 Make system modifications required for effluent to satisfy effluent criteria based on analytical results.

.3 Operate wastewater treatment facility by experienced, qualified personnel in accordance with manufacturer's instructions and procedures submitted by Contractor and approved by Departmental Representative.

.4 Operate the wastewater treatment facility such that storage tanks and storage ponds are either empty at the end of the construction season or have allowances for expansion of water due to freezing.
.8 Decommissioning/Dismantling:
.1 Decontaminate and remove salvageable components of wastewater treatment facility including water filtering system, pumps, piping, and electrical equipment.
.2 Dispose of non-salvageable equipment and materials at approved on-site or off-site disposal facility. Decontaminate salvageable equipment within facility area as required prior to removal from site.

1.11 WASTEWATER STORAGE TANKS
.1 Provide, operate, and maintain wastewater storage tanks to store wastewater.
.2 Provide separate storage facilities for wastewater generated by camp operations and wastewater generated by remediation activities.
.3 Discharges: Comply with applicable discharge limitations and requirements; do not discharge wastewater that does not conform to or is in violation of such limitations or requirements; and obtain Departmental Representative’s approval prior to discharge of wastewater.
.4 Provide pumps and piping to convey collected wastewater to designated wastewater storage tanks; provide wastewater storage tanks with minimum total live capacity of 20,000 L each such that effluent quality can be analyzed and approved prior to discharge to discharge on-site.
.5 Install wastewater storage tanks in locations as approved by Departmental Representative.
.6 Support tank(s) on temporary aboveground foundation(s).
.7 Connect pumps, piping, valves, miscellaneous items, and necessary utilities as required for operation of facilities; and protect tanks, valves, pumps, piping, and miscellaneous items from freezing.
.8 Do not operate wastewater storage tanks until inspected and approved by Departmental Representative.
.9 Notify Departmental Representative three (3) days minimum in advance of when wastewater storage tank is anticipated to be full.
.1 Do not discharge additional liquids to filled tank following sampling by Departmental Representative.
.2 Departmental Representative will determine appropriate disposition of wastewater based on sample analysis.

1.12 WASTEWATER TREATMENT FACILITY DISCHARGE REQUIREMENTS
.1 Provide adequate containment facilities for processed wastewater, prior to discharge, to complete testing and analytical requirements.
.2 Water discharge on-site must be in compliance with applicable permits, authorizations and approvals. Make adjustments to Water Treatment Facilities or provide alternative equipment, at no additional cost, such that processed wastewater meets applicable permit requirements and limits for discharge.
.3 Wastewater discharges from the site must be in compliance with applicable permit requirements:
.1 Treated wastewater will be released onto the ground at a location that is a minimum of 30 metres from natural drainage courses and 100 metres of fish bearing waters, and will conform to the discharge requirements set out in the Land Use Permit and only upon approval from the
Departmental Representative and AHJ.

.2 If unable to meet the discharge criteria, provide additional storage and/or treatment necessary to meet criteria prior to discharge.

.3 No direct discharge to surface waters or wetlands is allowed.

.4 Transport and dispose of wastewater not meeting the applicable discharge requirement at off-site disposal facility as identified by Contractor and approved by the Departmental Representative.

1.13 DRUMS

.1 Storage of Liquid Waste: use steel containers meeting Transportation and Dangerous Goods Act, closable lids, complete with labels for marking contents and date filled.

.2 Storage of Solid Waste: use steel containers meeting Transportation and Dangerous Goods Act, closable lids, complete with labels for marking contents and date filled.

1.14 DUST AND PARTICULATE CONTROL

.1 Execute Work by methods to minimize raising dust from construction operations.

.2 Implement and maintain dust and particulate control measures immediately during construction and in accordance with all applicable regulations and standards during work and in accordance with Section 01 35 43 – Environmental Procedures

1.15 EQUIPMENT DECONTAMINATION

.1 Commence Work involving equipment contact with potentially contaminated material only after Equipment Decontamination Facility is operational.

.2 Decontaminate equipment after working in potentially contaminated Work areas and prior to subsequent Work or travel on clean areas.

.3 Collect decontamination wastewater and sediments which accumulate on equipment decontamination pad. Transfer wastewater to designated wastewater storage tank.

.4 Furnish and equip personnel engaged in equipment decontamination with protective equipment including suitable disposable clothing, respiratory protection, and face shields.

1.16 WATER CONTROL

.1 Maintain excavations free of water.

.2 Protect site from puddling or running water. Grade site to drain. Provide water barriers as necessary to protect site from soil erosion and from runoff of potentially impacted water and soil.

.3 Prevent surface water runoff from leaving Work areas.

.4 Do not discharge decontaminated water, or surface water runoff, or groundwater which may have come in contact with potentially contaminated material without testing and confirmation it meets applicable guidelines for discharge and approval has been provided by Departmental Representative.
.5 Prevent precipitation from infiltrating or from directly running off stockpiled materials. Cover stockpiled materials with an impermeable liner during periods of Work stoppage including at end of each working day, periods of heavy precipitation, and as directed by Departmental Representative. Contain waters in contact with stockpiled waste materials.

.6 Direct surface waters that have not contacted potentially contaminated materials to existing surface drainage systems.

.7 Control surface drainage including ensuring that drainage paths are kept open, water is not directed across or over roads or pathways except through approved pipes or properly constructed troughs, and runoff from unstabilized areas is intercepted and diverted to suitable outlet.

.8 Dispose of water in manner not injurious to public health or safety, to property, or to any part of Work completed or under construction.

.9 Provide, operate, and maintain necessary equipment appropriately sized to keep excavations, staging pads, and other Work areas free from water.

.10 Contain water from stockpiled materials. Transfer potentially contaminated surface waters to wastewater storage tanks separate from wastewater from camp operations.

.11 Have on hand sufficient pumping equipment, machinery, and tankage in good working condition for ordinary emergencies, including power outage, and competent workers for operation of pumping equipment.

.12 Contain and collect wastewater and transfer such collected wastewater to Contractor-supplied drums for off-site disposal or wastewater storage tanks/ponds for transfer to on-site treatment facilities.

1.17 DEWATERING

.1 Dewater various parts of Work including, without limitation, excavations, structures, foundations, and Work areas, as required to complete work.

.2 Employ construction methods, plant procedures, and precautions that ensure Work, including excavations, are stable, free from disturbance, and dry.

.3 Provide sufficient and appropriate labor, plant, and equipment necessary to keep Work free of water including standby equipment necessary to ensure continuous operation of dewatering system.

.4 Take precautions necessary to prevent uplift of any structure or pipeline and to protect excavations from flooding and damage due to surface runoff.

.5 Test and analyze water generated from dewatering activities and treat to meet required discharge or disposal criteria.

1.18 EROSION AND SEDIMENT CONTROL

.1 Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas, from stockpiles, staging areas, and other Work areas. Prevent erosion and sedimentation.
.2 Minimize amount of bare soil exposed at one time. Stabilize disturbed soils as quickly as practical. Strip vegetation, re-grade, or otherwise develop in such a way as to minimize erosion. Remove accumulated sediment resulting from construction activity from adjoining surfaces, drainage systems, and water courses, and repair damage caused by soil erosion and sedimentation as directed by Departmental Representative.

.3 Provide and maintain temporary measures which may include, but are not limited to, silt fences, hay or straw bales, ditches, geotextiles, drains, berms, terracing, riprap, temporary drainage piping, sedimentation basins, vegetative cover, dikes, and any other construction required to prevent erosion and migration of silt, mud, sediment, and other debris off site or to other areas of site where damage might result, or that might otherwise be required by Laws and Regulations. Make sediment control measures available during construction. Place silt fences and/or hay or straw bales in ditches to prevent sediments from escaping from ditch terminations.

.4 Hay or Straw Bale: Wire bound or string tied; securely anchored by at least 2 stakes or rebars driven through bale 300 mm to 450 mm into ground; chinked (filled by wedging) with hay or straw to prevent water from escaping between bales; and entrenched a minimum of 100 mm into ground.

.5 Silt Fence: An assembled, ready to install unit consisting of geotextile attached to driveable posts. Geotextile to be uniform in texture and appearance, having no defects, flaws, or tears that would affect its physical properties; and contain sufficient ultraviolet ray inhibitor and stabilizers to provide minimum 2-year service life from outdoor exposure.

.6 Net Backing: Industrial polypropylene mesh joined to geotextile at both top and bottom with double stitching of heavy-duty cord, with minimum width of 750 mm.

.7 Posts: Sharpened wood, approximately 50 mm square, protruding below bottom of geotextile to allow minimum 450 mm embedment; post spacing 2.4 m maximum. Securely fasten each post to geotextile and net backing using suitable staples.

.8 Plan construction procedures to avoid damage to Work or equipment encroachment onto water bodies or drainage ditch banks. In event of damage, promptly take action to mitigate effects. Restore affected bank or water body to existing condition.

.9 Installation:
  .1 Construct temporary erosion control items as indicated. Actual alignment and/or location of various items as directed by Departmental Representative.
  .2 Do not construct bale barriers and silt fence in flowing streams or in swales.
  .3 Check erosion and sediment control measures weekly after each rainfall; during prolonged rainfall check daily.
  .4 Bales and/or silt fence may be removed at beginning of workday, but will be replaced at the end of workday.
  .5 Whenever sedimentation is caused by stripping vegetation, re-grading, or other development, remove it from adjoining surfaces, drainage systems, and watercourses, and repair damage as quickly as possible.
  .6 Prior to or during construction, Departmental Representative may require the installation or construction of improvements to prevent or correct temporary conditions on site. Improvements may include berms, mulching, sediment traps, detention and retention basins, grading, planting, retaining walls, culverts, pipes, guardrails, temporary roads, and other measures appropriate to specific condition. Temporary improvements must remain in place and in operation as necessary or until otherwise directed by Departmental Representative.
.7 Repair damaged bales, end runs, and undercutting beneath bales.
.8 Unless indicated or directed by Departmental Representative, remove temporary erosion and sediment control devices upon completion of Work. Spread accumulated sediments to form a suitable surface for native plant growth or dispose of, and shape area to permit natural drainage to satisfaction of Departmental Representative. Materials once removed become property of Contractor.

.10 Construct fill areas by selective placement to avoid erosive surface silts or clays.
.11 Do not disturb existing embankments or embankment protection.
.12 Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
.13 If soil and debris from site accumulate in low areas, roadways, ditches, or other areas where in Departmental Representative’s determination it is undesirable, remove accumulation and restore area to original condition.

1.19 PROGRESS CLEANING

.1 Maintain cleanliness of Work and surrounding site to comply with federal, territorial, and local fire and safety laws, ordinances, codes, and regulations.
.2 Coordinate cleaning operations with disposal operations to prevent accumulation of dust, dirt, debris, rubbish, and waste materials.

1.20 FINAL DECONTAMINATION

.1 Perform final decontamination of construction facilities, equipment, and materials which may have come in contact with potentially contaminated materials prior to removal from site.
.2 Perform decontamination as specified to satisfaction of Departmental Representative. Departmental Representative will direct Contractor to perform additional decontamination if required.

1.21 REMOVAL AND DISPOSAL

.1 Remove surplus materials and temporary facilities from site.
.2 Dispose of contractor generated waste materials, litter, debris, and rubbish off site.
.3 Do not burn rubbish and waste materials on site unless approved by Departmental Representative.
.4 Do not burn or bury rubbish and waste materials on site.
.5 Do not discharge wastes into streams or waterways.
.6 Dispose of following materials at appropriate off-site facility identified by Contractor and approved by Departmental Representative: solid and liquid hazardous waste; non-contaminated litter and rubbish; disposable PPE worn during final cleaning; wastewater generated from final decontamination operations including wastewater storage tank cleaning; and lumber from decontamination pads.
1.22 TESTING

.1 Carry out and pay for all testing required to confirm that Wastewaters comply with Wastewater Treatment and Discharge Criteria outlined in this Section. Submit records of this testing to Department Representative.

.2 Carry out and pay for all testing required for the classification of waste and licensed disposal facilities acceptance requirements outlined in this Section and Section 01 29 83 – Payment Procedures for Testing Laboratory Services.

1.23 MEASUREMENT FOR PAYMENT

.1 All direct costs for the treatment of contaminated groundwater and contact water are to be included in the unit price item for Treated Groundwater and Contact Water, Item 01 35 15-1, as indicated in Basis of Payment Schedule.

.2 Include all direct costs for the treatment of camp waste water in the lump sum price for Supply, Operation and Maintenance of Camp Facilities, Item 01 54 00-1, as indicated in the Basis of Payment Schedule.

.3 Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar GANTT Chart.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION
PART 1 - GENERAL

1.1 SITE SPECIFIC HEALTH AND SAFETY REQUIREMENTS

.1 Maintain and complete all health and safety, fire safety, and environmental compliance activities in accordance with applicable sections, and the Territorial Authorities Having Jurisdiction (AHJ).

.2 Schedule a compliance meeting on an as required basis, as directed by Departmental Representative. Compliance meetings may be held in conjunction with regular meetings.

.3 The intent of the compliance meeting is to review reporting and inspection requirements to meet the intent of the NWT Safety Act, the Water License, the Land Use Permit, regulatory, and other requirements as may be required.

.4 Compliance meetings to be held at the Work site.

.5 Departmental Representative will record minutes, chair the meeting and distribute minutes to parties of record prior to the next Scheduled meeting.

.6 Compliance Meeting Attendees:
   .1 Contractor: Manager and / or Supervisor(s), representatives of major Sub-Contractors, and others as necessary.
   .2 Departmental Representative, and representatives of Independent Inspection Agencies.
   .3 AANDC representative(s).

.7 Agenda:
   .1 Review and approval of minutes of previous meeting.
   .2 Review of items of significance that could affect Work.
   .3 Review of site inspections and identified hazards inspect the site on a monthly basis, or more or less often, as determined by the Departmental Representative or as dictated by the AHJ.
   .4 Identify and record field observations, problems, and conflicts that must be noted in reports required by the AHJ.
   .5 Identify corrective measures and procedures to regain approval from AHJ.
   .6 Identification of requirements for maintenance of quality standards needed for compliance with applicable Codes and Legislation.
   .7 Review site safety and security issues.
   .8 Review environmental and regulatory compliance.
   .9 Other topics for discussion as appropriate to current status of the Work.

.8 Contract non-conformance or regulatory non-compliance will be addressed through PWGSC Escalation process.

1.2 SUBMITTALS

.1 All submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit an Issued for Construction Site Specific Health and Safety Plan (SSHSP) no later than 30 days after contract award to the Departmental Representative for review. Any items, which are identified as missing, will be added and the plan revised, so as to incorporate the additional items. Submit three (3) hard copies and one (1) electronic copy of the Final SSHSP 45 days prior to crew mobilization. The revised safety plan will be submitted to the AHJ for review and recommendations to ensure all the
elements required by the NWT Safety Act, OSHA Regulations, other AHJ, all relevant legislation, and Contract Specifications have been addressed.

.3 Update the SSHSP at the beginning of each construction season and submit to the Departmental Representative no later than thirty (30) days before the start of the construction season.

.4 The SSHASP should include sections for all the types of work being performed and as well as the associated SOP's for the procedures that work may entail. The SSHSP will include, but is not limited to the following sections:

.1 A Statement of Contractor's Safety Policy.
.2 Safety Responsibilities of all on-site personnel.
.3 Safe Work Practices and/or Job Procedures.
.4 Camp Rules and their enforcement.
.5 Results of safety and health risk or hazard analysis for camp and construction activities.
.6 Procedures for, but not limited to, cold weather survival, remote Work and general worker health and safety.
.7 Procedures for confined space entry.
.8 Name and telephone number of Contractor's corporate Safety Officer and on-site Safety Representative.
.9 Emergency Response Plan.
.10 Fire Safety Plan
.11 Spill Contingency Plan
.12 Winter Road Safety Plan
.14 Aircraft Safety Plan
.15 Call-in Procedures
.16 Safety Incident Reporting Mechanism
.17 Medivac phone numbers
.18 Helicopter/Aircraft companies phone numbers
.19 Ice Monitoring and Safety Procedures (IMSP)
.20 Corporate Policies on Workplace Harassment and Workplace Conduct

.5 Conduct and submit to Departmental Representative, a site assessment of deficiencies in health, safety, and medical/first aid supplies. Submit to Departmental Representative a Schedule for upgrading deficiencies to meet requirements of AHJ.

.6 The On-site Emergency Response Plan (ERP) is to address standard operating procedures to be implemented during emergency situations. Plans including procedures are to meet as a minimum the Safety Requirements below.

.1 Prepare and coordinate an ERP with contributions from appropriate authorities including the Government of the Northwest Territories (GNWT) Safety Act, Hospitals, RCMP, Ministry of Transportation, and Ministry of Health. Plan will identify the off-site Emergency Response Coordinator through whom all information and coordination will flow in the event of an incident.

.2 Departmental Representative will have Contractor's On-site ERP reviewed by AHJ and may request modifications or additions as necessary for the work.

.3 Medivac procedures
.4 Forest fire evacuation

.7 Complete an inventory of Contractor's health, safety, medical and first aid equipment and supplies on-site to assess compliance with AHJ requirements. Submit the inventory to Departmental Representative within ten (10) days of mobilization each season. Include a schedule for upgrading deficiencies to meet requirements of AHJ.
The Personal Protective Equipment (PPE) Program will include, but is not limited to, the following:

1. Donning and doffing procedures.
2. PPE Selection based upon site hazards.
3. PPE use and limitations of equipment.
5. PPE decontamination and disposal.
6. PPE inspection procedures prior to, during, and after use.
7. Evaluation of effectiveness of PPE program and limitations during temperature extremes, and other appropriate medical considerations.
8. Medical surveillance requirements for personnel assigned to work at site.
9. Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used, including methods of maintenance and calibration of monitoring and sampling equipment.
10. Contaminated site working and decontamination procedures for both personnel and equipment.
11. Written respiratory protection program for project activities and proof of respiratory fit testing.

1.3 CONSTRUCTION SAFETY MEASURES


2. Designate a resident Health and Safety Officer

3. Arrange regular safety meetings, to be held no less frequently than once per week. Record the minutes of such meetings and maintain a complete file for review by the appropriate authorities. Submit a copy of these meeting minutes to Departmental Representative within three (3) days of the meeting.

4. Maintain at the site, six safety hats with liners, and six safety hi-visibility vests for use by Departmental Representative and visitors. Maintain a supply of ear plugs.

5. Maintain a supply of Tyvek or equivalent disposable PPE suits of various sizes as required for Contractor's staff, Departmental Representative, and up to three visitors for the duration of the Work.

6. Departmental Representative or his representative has the authority to stop Work on the contract if, in his/her opinion, the Work is being performed in an unsafe manner as required by the applicable safety legislation.

7. Verify that emergency procedures including appropriate First Aid facilities and First Aid personnel are in place at the Work Site. First Aid facilities and First Aid personnel must be in compliance with the NWT Safety Act.

8. Verify that procedures meet the WSCC and ESDC requirements.

9. Develop, as part of Site Specific Health and Safety Plan written Contaminated Site Working and Decontamination procedures. Working procedures to outline personal protective equipment (PPE) requirements for various parts of site and for different operations.

10. Working Procedures and Decontamination procedures consistent with requirements OSHA's 29 CFR
1910.120 HAZWOPER and territorial environmental regulations for:

.1 Working activities, where employees are likely to be exposed to 50% of Threshold Limit Values (TLV) listed by American Conference of Governmental Hygienists (ACGIH), TLVs and BEIs based on documentation of Threshold Limit Values (TLV) for Chemical Substances and Physical Agents and Biological Exposure Indices (BEI) 2004 and amendments thereto.

.11 Hazardous Material Discovery

.1 Immediately stop Work and notify Departmental Representative for further instructions with respect to abatement procedures required for asbestos conditions encountered when Work occurs in areas having materials resembling asbestos during course of Work.

.12 Prepare and coordinate a Contingency Emergency Response Plan with contributions from appropriate authorities including, but not limited to, Government of NWT Safety Act, Hospitals, RCMP, Ministry of Transportation, and Ministry of Health. Plan will identify off site Emergency Response Coordinator through whom all information and coordination will follow in the event of an incident.

1.4 FILING OF NOTICE

.1 File Notice of Work with Federal and Territorial AHJ prior to commencement of Work.

1.5 REGULATORY REQUIREMENTS

.1 Comply with specified standards, regulations and orders of AHJ to ensure safe operations at sites containing hazardous or toxic materials and other hazards (such as wildlife encounters, falls, etc.).

.2 Employ a Level 2 Supervisor on site as per GNWT WSCC Mine Health and Safety Act. Level 2 Supervisor to be on site when mine openings are being inspected and when the openings are being sealed, as a minimum.

.3 All equipment brought to the site must meet the Mine Health and Safety Act, equipment must have rotating beacons and vehicles should have beacons and buggy whips.

1.6 RESPONSIBILITY

.1 The health and safety of personnel and the public take precedence.

.2 Be responsible for safety of persons and property on site and for protection of public off site and environment to extent that they may be affected by the site and conduct of Work.

.3 Control access to the site. Persons with business at the site and who are not Contractor’s employees must be briefed on site specific health and safety issues, and provided with a copy of the SSHSP.

.4 Contractor may refuse access to the site to any person not complying with site specific health and safety standards.

.5 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, territorial, and local statutes, regulations, and ordinances, and with Site-Specific Health and Safety Plan:

.1 Conduct appropriate safety training for all personnel working on the site.

.2 Conduct Work place safety inspections for all Work activities.

.3 Maintain a log of first aid and safety supplies, and notify appropriate personnel for restocking after each incident, and periodical restocking to replace out dated or consumable (e.g.,
headache medicines, bandages) products.

1.7 HAZARD COMMUNICATION REQUIREMENTS

.1 Comply with Work Site Hazardous Materials Information System Regulations of the AHJ.

.2 Provide Departmental Representative with Material Safety Data Sheets (MSDS) and documentation on any "hazardous" chemical that Contractor or Contractor Representatives plan to bring onto site; bound in one place and stored in accordance with the Site Specific Health and Safety Plan.

.3 Communicate known and potential hazards to workers and all site visitors.

1.8 UNFORESEEN HAZARDS

.1 Should any unforeseen or peculiar safety related factor, hazard, or condition become evident, stop Work, assess, take steps to mitigate if necessary at that time and immediately advise Departmental Representative verbally and in writing.

.2 Monitor potential low oxygen and Lower Explosive Limits areas with oxygen/LEL monitor if workers are working in and around area. These areas include but are not limited to trenches, excavations, and areas near machinery exhaust.

1.9 SAFETY AND HYGIENE

.1 Provide training for all persons entering the site in accordance with specified personnel training requirements, maintain log of who was trained, what training was provided, and by whom the training was conducted.

.2 Personal Protective Equipment (PPE):

   .1 Furnish site personnel with appropriate PPE as required by legislation.

   .2 Verify that safety equipment and protective clothing is kept clean and well maintained.

   .3 Ensure all clothing and personal protective equipment used on site, must remain on site, to be either decontaminated or disposed of. No Work clothing is to leave the Work site without having been properly decontaminated. This includes, but is not limited to working coveralls.

   .4 Outline and designate PPE for each site and Work activity in accordance with AHJ.

.3 Develop written PPE care and use procedures to be included in the SSHSP and verify that procedures are strictly followed by site personnel including, but not limited to, the following:

   .1 Provisions for prescription eyeglasses with side shields worn as safety glasses and do not permit contact lenses on site within Work zones.

   .2 Provisions, for footwear, are steel toed safety shoes or boots and are covered by rubber overshoes when entering or working in potentially contaminated Work areas.

   .3 Dispose of or decontaminate PPE worn on site at end of each workday.

   .4 Decontaminate reusable PPE before reissuing.

   .5 Provisions for decontamination arising from entry or exit into contaminated areas.

.4 Develop a written Respiratory Protection program to be included in the SSHSP and ensure that the program is strictly followed by site personnel; include the following procedures as minimum:

   .1 Provide site personnel with extensive training in usage and limitations of, and qualitative fit testing for, air purifying and supplied air respirators in accordance with specified regulations.
.2 Monitor, evaluate, and provide respiratory protection for site personnel.
.3 Verify that levels of protection as listed have been chosen to be consistent with site specific potential airborne hazards associated with major contaminants identified on site.
.4 Immediately notify Departmental Representative when level of respiratory protection required increases.
.5 Verify that appropriate respiratory protection during Work activities is available and readily accessible; all personnel entering potentially contaminated Work areas will be supplied with and use appropriate respiratory protection.
.6 Assess ability for site personnel to wear respiratory protection.
.7 Verify that site personnel have passed respirator fit test prior to entering potentially contaminated Work areas.
.8 Verify that facial hair does not interfere with proper respirator fit.
.9 Submit proof of fit testing for site personnel to Departmental Representative. Update submission when new personnel are added to the Work or when new Work activities occur.

.5 Heat Stress/Cold Stress: Implement heat stress and cold stress monitoring program as applicable and include in the SSHSP.

.6 Personnel Hygiene and Personnel Decontamination Procedures. Provide minimum as follows:
  .1 Suitable containers for storage and disposal of used disposable PPE.
  .2 Potable water and suitable sanitation facility.
  .3 Access to shower facilities.
  .4 Provisions for proper disposal of contaminated PPE.

1.10 SITE COMMUNICATIONS

.1 Post emergency numbers near site telephones.

.2 Staff will be equipped with radios, and emergency radio-in procedures will be established prior to commencing work. If radios do not provide sufficient range for continuous communication, Contractor to provide satellite phones or repeater stations and/or booster stations as required such that all workers are in live contact or have the ability to immediately contact base operations/wildlife monitors at all times.

.3 Train personnel in the use of “buddy” system.

.4 Implement measures consistent with best practices for communications during winter road construction and operations.

.5 Provide alarm system to notify employees of site emergency situations or to stop Work activities if necessary. Identify emergency stations and muster points. Test alarm system regularly and train personnel to use alarm system as required.

1.11 TASK-SPECIFIC SAFETY MEETING

.1 Conduct task specific safety meetings (toolbox) as per Project requirements and as directed by Departmental Representative.

.2 Conduct safety meetings with workers engaged in constructing, maintaining or traveling on winter roads. Workers must be instructed on the dangers inherent with winter roads, and hazard avoidance procedures.

.3 Conduct safety meetings with workers engaged in outdoor Work under summer or winter conditions.
Topics must include hot and cold stress, exhaustion, snowmobile safety, buddy systems, and any other items inherent in working outdoors in winter in isolated environments.

.4 Conduct mandatory daily safety meetings for personnel, and additionally as required by special or work-related conditions; include refresher training for existing equipment and protocols, review ongoing safety issues and protocols, and examine new site conditions as encountered. Hold additional safety meetings on an as-needed basis or as specified by the AHJ. Keep records of meetings on file.

1.12 FUEL MANAGEMENT

.1 All vehicle and equipment refuelling must be conducted by appropriately trained personnel using the effective PPE in a manner which meets or exceeds regulatory requirements including using drip pans.

.2 Records of fuel usage by activity must be maintained.

.3 All fuel transports including mobile refuelling trucks and fuel transport to stationary equipment such as generators or pumps or distributed storage areas, must occur in approved (CSA) containers with the notification and consent of site safety personnel.

1.13 VEHICLE AND EQUIPMENT USAGE

.1 Seatbelts must be worn at all times vehicle or equipment is in operation.

.2 Speed limits must be set and obeyed.

.3 If road conditions are unsafe or marginally unsafe, maintain roads to acceptable standards. Do not risk property damage or injury.

.4 Vehicles are to not be idled for longer than 10 minutes (warm up) unless explicitly used as a place of refuge during animal encounters or for personnel working outdoors during winter operations. Exceptions are to be made in consultation with Departmental Representative.

.5 Perform vehicle maintenance and lubrication of equipment in a manner that avoids spillage of fuels, oils, grease, and coolants. When refuelling equipment, use leak-free containers and reinforced rip and puncture proof hoses and nozzles. Remain in attendance for duration of refuelling operation, and ensure that all storage container outlets are properly sealed after use.

.6 Place drip pans under stationary equipment with potential leaks.

.7 All equipment brought to the site must have rotating beacons and vehicles should have beacons and buggy whips.

1.14 FLAMMABLE LIQUIDS

.1 The handling, storage and use of flammable liquids will be governed by the current National Fire Code of Canada.

.2 Flammable liquids such as gasoline, kerosene and naphtha may be kept for ready use in quantities not exceeding 45 litres provided they are stored in approved safety cans bearing the Underwriter's Laboratory of Canada or Factory Mutual seal of approval. Storage of quantities of flammable liquids exceeding 45 litres for work purposes, requires the permission of the permitting authority.

.3 Do not transfer flammable liquids in the vicinity of open flames or any type of heat-producing devices.
.4 Do not use flammable liquids having a flash point below 38°C such as naphtha or gasoline as solvents or cleaning agents.

.5 Store flammable waste liquids, for disposal, in approved containers located in a safe ventilated area. Quantities are to be kept to a minimum and Departmental Representative is to be notified when disposal is required.

.6 Dispose of all flammable liquids in accordance with all applicable environmental regulations and with the requirements of Section 02 61 33 - Hazardous Waste Material.

1.15 STORAGE AND HANDLING OF FUEL

.1 Locate fuel storage areas as approved by AHJ and as specified in the approved Fuel Management Plan as part of the SSHSP. Location to be reviewed by Departmental Representative. Provide secondary containment as required by AHJ.

.2 Inspect fuel storage and dispensing facilities daily. Make available fire fighting and spill response equipment for immediate access at each fuel storage location.

.3 Store all barrels containing fuel and/or hazardous materials in an elevated position, either on their side with bungs facing 9 and 3 o'clock position, or on pallets, upright, and banded.

.4 All barrels to be individually identified. Label will be to industry standards and will provide all information necessary for health and safety and environmental purposes. Make available, to all personnel, Material Safety Data Sheets for all materials maintained at site or along right-of-ways.

.5 All barrels/fuel containers to be labelled with AANDC's name, and Contractor's name as required by the Land Use Permit. All tanks required registration, including assignment of a registration number with Environment Canada's Federal Identification Registry for Storage Tank Systems (FIRSTS).

.6 Treat all waste petroleum products, including used oil filters as hazardous materials.

.7 Conduct regular inspections of all machinery hydraulic, fuel and cooling systems. Repair leaks immediately.

.8 Pre-assemble and maintain emergency spill equipment, including at least two fuel pumps, empty 200 L barrels and absorbent material sufficient to clean up a 1000 litre spill at all fuel storage sites. Maintain spill mats or pan under mobile fuelling containers and a spill kit at the refuelling area.

.9 Remove all full and empty barrels, fuel storage facilities and associated materials and equipment from site at conclusion of Work.

.10 All fuel drums delivered to site, regardless of ownership, will be returned to supplier by Contractor for reuse or cleaned, crushed and disposed in accordance to Section 02 81 01 - Hazardous Materials. Fuel drums, if transported, will comply with Section 02 81 01 - Hazardous Materials and applicable regulations.

1.16 SPILL CONTINGENCY PLAN

.1 Submit to Departmental Representative for approval, detailed Spill Contingency Plan as part of SSHSP. Update the Plan prior to each construction season as part of the seasonal update. Identify
response capabilities by detailing response times, and types and volumes of spills to which Contractor can respond. Following information is required as a minimum:

1. Fuel type and volumes, storage, transfer, containment, response and reporting
2. A description of pre-emergency planning.
3. Personnel roles, lines of authority and communication, emergency phone numbers.
5. Evacuation routes and procedures, safe distances and places of refuge.
6. Directions/methods of getting to nearest medical facility.
7. Emergency decontamination procedures.
8. Emergency medical treatment and First-Aid.
10. Emergency protective equipment.
11. Procedures for reporting incidents, and
12. Spill response and containment plans for all materials that could potentially be spilled.

1.17 MEDICAL

1. Provide and maintain first aid and medical care and facilities for all workers as required by the Statutes of the NWT Safety Act.

2. Maintain first aid supplies and sick quarters separately from general living quarters when camp population normally ranges between 26 and 50 occupants.

3. Provide the appropriate NWT first aid kit, based on the number of workers, in accordance with the NWT Safety Act.

4. Establish an Emergency Response Plan acceptable to Departmental Representative, for the removal of any injured person to medical facilities or a doctor's care in accordance with applicable legislative and regulatory requirements. In the event that the Emergency Medical Technician (EMT) departs the site with patient, replace EMT as soon as possible.

5. Provide proof of First Aid credentials to Departmental Representative prior to the start of each construction season. Provide the appropriate number of first aid attendants on site in accordance with the NWT Safety Act (minimum of one) and a minimum of one person trained in Wilderness First Aid for each separated work group.

6. Emergency and First Aid Equipment:

1. Locate and maintain emergency and first aid equipment in appropriate location on site including first aid kit to accommodate number of site personnel; portable emergency eye wash; fire protection equipment as required by legislation.

2. Locate sufficient self-contained breathing apparatus units; blankets and towels; stretcher; and 1 hand held emergency siren in all confined access locations.

3. Provide a minimum of 1 qualified first aid attendant on site at all times when Work activities are in progress; duties of first aid attendant may be shared with other light duty Work related activities.

4. Provide a full time EMT - Emergency Medical Technician, c/w 1000 hours of classroom and practical training, 6 weeks of practical experience with required # of emergency response calls. The EMT will be territorially certified by a required exam and refresher exams every 2 years. An EMT is a highly trained medical professional who responds to medical and trauma emergencies in the pre-hospital setting ("in-field") for the purpose of stabilizing a patient's condition before and during transportation to an appropriate medical facility.
1.18 INCIDENTS AND ACCIDENT REPORTS

.1 Immediately report, verbally, followed by a written report within 24 hours, to Departmental Representative, all incidents and accidents of any sort arising out of or in connection with the performance of the Work, giving full details and statements of witnesses. If death or serious injuries or damages are caused, report the accident promptly to Departmental Representative by telephone or facsimile in addition to any report required under federal and territorial laws and regulations.

.2 If a claim is made by anyone against Contractor or Sub-Contractor on account of any accident, promptly report the facts in writing to Departmental Representative, giving full details of the claim.

1.19 SECURITY

.1 Enforce the Camp Rules as provided under Section 01 54 00 - Camp Facilities.

.2 Limit site access only to persons employed on the Project. Unauthorized persons will be permitted on site only with the approval of Departmental Representative or Contractor.

.3 Contractor’s winter road users are required to follow security procedures and requirements of the Tibbitt to Contoyto winter road.

4 Dispatch responsibilities along the winter road to remain with primary haul operator.

1.20 WILDLIFE MANAGEMENT

.1 Develop a wildlife management plan, as part of the SSHSP, that includes bear and large mammal safety and as a minimum meets the following requirements:

1 Firearms must be stored and used in accordance with all AHJ. Terms of Use for firearms must be submitted to Departmental Representative as part of SSHSP.

2 All wildlife encounters and sightings must be reported to Departmental Representative as part of the weekly report.

3 A sufficient number of people must be designated as a wildlife monitor and trained in firearms and wildlife deterrent use.

4 All persons on-site must be made aware of wildlife attractants and proper procedures to be followed in the event of wildlife encounter.

5 Hunting and fishing are prohibited*.

6 Dogs at camp are only allowed if approved by the AHJ.

7 Alarmed trip wires installed around camp must be tested regularly and results reported to Departmental Representative as part of weekly report.

1.21 WILDLIFE MONITORS

.1 Provide for the duration of the construction seasons, full-time wildlife monitors acceptable to Departmental Representative. Provide sufficient number of wildlife monitors with firearms and ammunition to protect the safety of all workers in all areas, day and night, including Departmental Representative and Departmental Representative’s support staff during site operations.

.2 Assign a wildlife monitor to accompany Departmental Representative and Departmental Representative’s support staff during all inspections and soil/material sampling activities that take place away from the construction camp area.

.3 All Wildlife Monitors are required to have a valid Firearm Certificate as per AHJ. Copies of the firearms
certificates to be provided upon request by the Departmental Representative.

.4 Assume full responsibility for reporting incidents associated with wildlife encounters.

.5 Supply one All Terrain Vehicle (ATV) per wildlife monitor to facilitate his duties. Ensure wildlife monitors are fully trained in the safe use of the ATV equipment.

.6 Provide the wildlife monitors with mobile communication radios with charging units for on-site communication between the wildlife monitors, Contractor base radio, and Departmental Representative and Departmental Representative’s Authorized Personnel. If radios do not provide sufficient range for continuous communication, provide satellite phones.

.7 Qualifications and training plans for wildlife monitors must be submitted to Departmental Representative as part of the Site Specific Safety Plan.

.8 Where possible, use non-lethal ammunition to deter wildlife prior to the use of lethal ammunition.

1.22 FIRE SAFETY

.1 Provide all fire prevention, fire protection and firefighting services at the Project site.

.2 Implement a fire safety program that includes fire prevention, fire protection and firefighting requirements. Submit details of the fire safety program in writing to Departmental Representative for review as part of SSHSP prior to start of construction. Such review does not relieve Contractor from any obligations or responsibilities required by the Contract.

.3 Ensure that any Sub-Contractors and other Contractor personnel on-site are briefed on fire safety requirements and are familiar with the fire prevention, fire protection and firefighting program.

.4 The fire safety program to meet or exceed the most recent editions of the following codes and standards:

.1 NWT Safety Act.
.2 National Fire Code of Canada.
.3 Canada Labour Code.

.5 Personnel designated for firefighting services must be provided with training for any special hazards that may be present. These personnel must also be provided with protective equipment as required by AHJ.

1.23 REPORTING FIRES

.1 A person discovering a fire and all fire related incidents will report immediately, by fastest available means, to Departmental Representative and site superintendent.

.2 A person discovering a fire will if possible, remain in the vicinity to direct firefighting personnel.

1.24 FIRE EXTINGUISHERS

.1 Provide and maintain fire extinguishers in sufficient quantity to protect, in an emergency, the Work in progress and the camp on site.

1.25 SMOKING PRECAUTIONS
.1 Do not permit smoking in hazardous areas. Exercise care in the use of smoking materials in non-restricted areas.

.2 Smoking is prohibited within the camp facilities unless in accordance with AHJ and as directed by Departmental Representative.

.3 Provide and place signs prohibiting smoking in areas where smoking is not permitted.

.4 Signs prohibiting smoking will be in English and will have black lettering not less than 50 mm high, with a 12 mm wide stroke on a yellow background. In lieu of lettering, symbols of not less than 150 mm by 150 mm may be used.

.5 Smoking is prohibited within 7.5 metres of fuel storage and dispensing facilities.

.6 Provide designated outdoor camp smoking area that is at least 3m away from any entrances/exits to buildings. These areas must be equipped with fire-proof containers for ash and cigarette butts that are emptied regularly.

.7 Cigarette butts cannot be left on the ground at both the worksites and around camp

.8 Fireproof cigarette disposal containers will be made available outside of camp perimeter

.9 No smoking while in or on machinery as well as while within vehicles

.10 Fire-proof ash trays shall be used and NO smoking in or around and vehicles

.11 Camp smoking policy will be in accordance with section 25 of the WSCC Safety Act, Environmental Tobacco Smoke Worksite Regulations

.12 Provide and place signs indicating that smoking within 7.5 metres of fuel storage and dispensing facilities is not permitted, and that the vehicle ignition must be turned off while the vehicle is being refuelled. Provide at least one weather-resistant sign at each fuel dispensing location. The signs will have a minimum dimension of 200 mm and letters not less than 25 mm high. In lieu of lettering, signs may have international "No Smoking - Ignition Off" symbols not less than 100 mm in diameter. Install signs in a location visible to all drivers approaching the dispensing location, and at the dispensing unit.

1.26 RUBBISH AND WASTE MATERIALS

.1 Rubbish and waste materials are to be kept to a minimum.

.2 Storage:

.1 Extreme care is required where it is necessary to store oily waste in Work areas to ensure maximum possible cleanliness and safety.

.2 Greasy or oily rags or materials subject to spontaneous combustion will be disposed of in a manner that prevents spontaneous combustion.

1.27 PRESSURIZED CYLINDERS

.1 Work entails the handling and disposal of pressurized cylinders. Work will be in accordance with the National Fire Code of Canada, Occupational Health and Safety Legislation, and WHMIS.

.2 Special precautions are necessary to safeguard life and property from damage by fire or explosives.

.3 Eliminate all sources of ignition where pressurized cylinders and explosives are stored.
.4 Provide proper substance-specific environmental conditions for storage, handling and transport of explosives:
   .1 Keep dry and well ventilated.
   .2 Keep as cool as possible and free from excessive or frequent changes of temperature.
   .3 Protect from direct sunlight.
   .4 Keep free from excessive and constant vibration.

.5 Do not store explosive materials within 30 m of the Temporary PCB Materials Storage Area.

1.28 HAZARDOUS SUBSTANCES

.1 If the Work entails the use of any toxic or hazardous materials or chemicals, or otherwise creates a hazard to life, safety or health, Work will be in accordance with the National Fire Code of Canada, Occupational Health and Safety Legislation, WSCC, and WHMIS.

.2 Departmental Representative is to be advised, and a "Hot Work" permit issued by Contractor’s designated representative in all cases involving welding, burning or the use of blow torches and salamanders, in buildings or facilities. Special precautions are necessary to safeguard life and property from damage by fire or explosives.

.3 Wherever Work is being carried out in dangerous or hazardous areas involving the use of heat, fire watchers, equipped with sufficient fire extinguishers, will be provided. The determination of dangerous or hazardous areas along with the level of precaution necessary for Fire Watch will be at the discretion of Contractor. Notify Departmental Representative prior to that determination.

.4 Provide proper ventilation and eliminate all sources of ignition where flammable liquids, such as lacquers or urethanes are used.

.5 Do not store flammable substances within 30 m of the Temporary PCB Materials Storage Area.

1.29 QUESTIONS AND CLARIFICATIONS

.1 Direct any questions or clarification to Departmental Representative.

1.30 UNIQUE HAZARDS

.1 The hazards unique to each site are identified in Section 01 11 00 – Summary of Work.

.2 Ensure workers receive training specific to the PPE requirements for working at each site.

1.31 WINTER ROAD HEALTH AND SAFETY

.1 Contractor’s winter road construction crew must have ice rescue training with current certification and maintain compliant ice rescue and hypothermia response kits in their camps.

1.32 MEASUREMENT FOR PAYMENT

.1 All costs for the preparation and completion of the Site Specific Health and Safety Plan, are to be included in the lump sum price paid for under Item 01 35 32-1, as indicated in Basis of Payment Schedule. The lump sum price for the Site Specific Health and Safety Plan will be paid after a
satisfactory Site Specific Health and Safety Plan has been submitted to Departmental Representative.

\[.2\] The provision of Wildlife Monitors, including ATVs for their exclusive use, will be measured for payment by the day that the services are provided. The provision of wildlife monitoring services will be paid under Item 01 35 32-2, Wildlife Monitors c/w ATVs in the Basis of Payment Schedule.

\[.3\] Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 - Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 NOT USED

\[.1\] Not used.

PART 3 - EXECUTION

3.1 NOT USED

\[.1\] Not used.

END OF SECTION
PART 1 - GENERAL

1.1 DEFINITIONS

.1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.

.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2 REGULATORY OVERVIEW

.1 Comply with all applicable environmental laws, regulations and requirements of Federal, Territorial and other regional authorities, and acquire and comply with such permits, approvals and authorizations as may be required.

.2 Comply with and be subject to those permits and approvals obtained from Departmental Representative to conduct the Work.

.3 Pay specific attention to the Land Use Permit, Water License and Quarry Permit(s).


.5 Pay specific attention to the Fisheries Act.

.6 Comply with the Treasury Board of Canada Secretariat’s Policy on Green Procurement where practical and as directed by Departmental Representative.

1.3 SUBMITTALS

.1 Submit all required Contractor submittals to satisfy environmental requirements directly to the responsible agency and Authorities Having Jurisdiction (AHJ).

.2 Submit one complete copy of all submittals and agency approvals to Departmental Representative.

.3 All submittals in accordance with Section 01 33 00 - Submittal Procedures

1.4 HISTORICAL OR ARCHAEOLOGICAL SITES

.1 Historical and antiquities and items of historical or scientific interest such as cairns, tent rings, commemorative plaques, inscribed tablets, and similar objects found on-site or in buildings to be demolished will remain the property of the appropriate AHJ.

.2 Prior to commencing Work at the site, review the following with Departmental Representative:

  .1 The extent of the archaeological sensitive areas including gravesites.
  .2 The methods to be used by Contractor to mark and protect the areas from construction/remediation activities.
.3 Give immediate notice to Departmental Representative if evidence of archaeological finds are encountered during construction/remediation activities, and await Departmental Representative’s written instructions before proceeding with Work in this area.

.4 Protect archaeological finds and similar objects found during course of Work.

1.5 SITE MAINTENANCE

.1 Keep the site free from the accumulation of waste materials and debris.

.2 Upon completion of the Work, clean away and dispose of all surplus material, supplies, rubbish and temporary works leaving the site neat and tidy to the requirements of Departmental Representative and the Land Use Permit.

1.6 FIRES

.1 Fires and burning of rubbish on site, other than waste incineration in accordance to the contract, is not permitted unless approved by Departmental Representative, with the exception of unpainted wood, as stated in Section 02 41 16.

.2 Where fires or burning are permitted, prevent staining or smoke damage to structures, materials or vegetation which is to be preserved. Restore, clean and return to new condition stained or damaged Work.

.3 Provide supervision, attendance and fire protection measures as directed.

.4 Obtain all required permits from AHJ.

.5 Comply with the GNWT ENR guidance document "Municipal Wastes Suitable for Open Burning", 1993.
   .1 Any ash produced from open burning or incineration may also be subject to testing for contents of hazardous materials.
   .2 Dispose of any ash material from open burning or incineration accordingly.

1.7 DISPOSAL OF WASTES

.1 Do not bury rubbish and waste materials on site unless approved by Departmental Representative.

.2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner, or any other deleterious substances into waterways.

1.8 FUEL STORAGE

.1 Comply with CEPA Petroleum Products Regulations, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (2008), CCME Codes of Practice and any regulations obtained from Territorial and other regional authorities, for setting up and operating temporary fuel tanks. Provide Departmental Representative with copies of permits prior to the start of construction in accordance to Section 01 33 00 – Submittal Procedures.

1.9 WATER MANAGEMENT

.1 Provide potable water for drinking and cooking in accordance with Section 01 54 00 – Camp Facilities.
1.10 WASTEWATER MANAGEMENT

.1 Provide details for sewage and disposal system sixty (60) days after Contract Award in accordance to Section 01 33 00 – Submittal Procedures.

1.11 PROCESS WASTEWATER DISCHARGE CRITERIA

.1 Wash water, meltwater collection, rinse water resulting from the cleaning of fuel tanks and pipelines, contaminated groundwater, water from dewatering contaminated soil areas, and/or any other liquid effluent stream will be released onto the ground at a location that is a minimum of 30 metres from natural drainage courses and 100 metres from fish bearing waters, will meet the treatment requirements in Section 01 35 15, and will conform to the discharge requirements set out in the Land Use Permit.

.2 Contractor must obtain approval from the Departmental Representative prior to discharging treated wastewater.

1.12 CAMP WASTEWATER DISCHARGE CRITERIA

.1 Camp Wastewater will be released onto the ground at a location that is a minimum of 30 metres from natural drainage courses and 100 metres from fish bearing waters and conform to the discharge requirements set out in the Water Licence.

.2 If unable to meet the discharge criteria, provide additional storage and/or treatment necessary to meet criteria prior to discharge.

.3 Treat all camp wastewater to conform to the discharge requirements set out in the Water Licence.

.4 If unable to meet the discharge criteria, provide additional storage and/or treatment necessary to meet criteria prior to discharge (at no additional cost).

.5 No direct discharge is allowed to wetland or surface waters.

.6 Contractor must obtain approval from the Departmental Representative prior to discharging treated wastewater.

1.13 DRAINAGE

.1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.

.2 Do not pump water containing suspended materials into waterways or drainage systems.

.3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

.4 Submit an Erosion, Sediment and Drainage Control Plan to Departmental Representative for review and approval prior to commencing Work. Plan to identify type and location of erosion and sediment controls to be provided. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Territorial, and Municipal laws and regulations. Plan to specifically address the protection of water bodies, water courses, and the following:

.1 Details of grading Work to prevent surface drainage into or out of Work areas.
Details of erosion control works and materials to be used, including the deployment of silt fencing, floating silt curtains and containment booms during construction and excavation activities.

Work Schedule including the sequence and duration of all related Work activities.

The treatment of site runoff to prevent siltation of watercourses.

Dewatering procedures for excavated materials including silt removal procedures prior to discharge.

Stabilizing procedures during excavation.

Maintenance of filters and sedimentation traps.

Contingency plans must also be included to address unexpected sediment and erosion risk including those associated with rain events with greater than 5 mm of precipitation.

Comply with the requirements of all AHJ and the Crown EHS-MS.

Have on hand sufficient pumping equipment, machinery, and tankage in good working condition for ordinary emergencies, including power outage, and competent workers for operation of pumping equipment.

Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas, from stockpiles, staging areas, and other Work areas. Prevent erosion and sedimentation.

Minimize amount of bare soil exposed at one time. Stabilize disturbed soils as quickly as practical. Strip vegetation, re-grade, or otherwise develop in such a way as to minimize surfaces. Remove accumulated sediment resulting from construction activity from adjoining surfaces, drainage systems, and water courses, and repair damage caused by soil erosion and sedimentation as directed by Departmental Representative.

1.14 SITE CLEARING AND PLANT PROTECTION

Protect native vegetation on site and adjacent properties where indicated.

Demarcate areas adjacent to work areas as appropriate to protect native vegetation. This may include, but not be limited to use of snow fencing or burlap wrapping.

Minimize stripping of topsoil and vegetation.

1.15 WORK ADJACENT TO WATERWAYS

Submit Work Plans for work to be undertaken in or near a waterbody, to Departmental Representative for review forty-five (45) days prior to commencing the work. A separate plan to be submitted for following Work activities:

Construction of floating docks to be accessed by float planes at Spectrum, Chipp, and Storm mine sites.

Construction of Aquadam at Bullmoose Creek and dredging/excavation of metal-contaminated sediments from Bullmoose Creek.

Work Plans to include the following:

Sketch of working area, including placement of erosion control, culverts, and temporary roadways, as required.

Timing of Work.

List of equipment to be used in waterway.

List of materials, including source and manufacturer, to be placed in waterway.

Work schedule including the sequence and duration of all related Work activities.
.6 Maintenance, monitoring, and final removal of erosion control, culverts, and roadway works.

.3 Do not operate construction equipment in waterways.

.4 Do not use waterway beds for borrow material.

.5 Do not dump excavated fill, waste material or debris in waterways.

.6 Design and construct temporary crossings to minimize erosion to waterways.

.7 Do not skid logs or construction materials across waterways.

.8 Avoid indicated spawning beds when constructing temporary crossings of waterways.

.9 Do not blast under water or within 100 m of indicated spawning beds.

.10 Do not use shoreline grounds (30 metres from edge) as staging area, vehicle/equipment maintenance, parking, storage of fuel or for stockpiling of granular or other fill.

.11 If drainage course crossing is required, use methodologies to prevent sedimentation into waterbodies.

1.16 TEMPORARY WINTER ACCESS TRAIL ALIGNMENT

.1 Contractor is responsible for selection of the Winter Access Trail Alignment. The proposed trail alignment will be included as part of the Mobilization and Demobilization Plan, detailed in Section 01 53 00.

.2 Assessment of potential environmental impact of the proposed Winter Access Trail Alignment, once determined, is to be completed in accordance with the requirements of the AHJs prior to final approval of the route by Departmental Representative.

.3 Temporary Winter Access Trail Alignment shall be selected following consultation with the chosen departure community to avoid heavily used traditional areas, where practical.

.4 Contractor will comply with the requirements of this Section, the requirements of the AHJs, and the following:

.1 Construction and operation will only occur when the ground is frozen (e.g., December to April).

.2 Appropriate wildlife protection procedures and measures will be taken during construction and operation.

.3 Build-up and pre-packing of snow on winter access trail will be completed to a minimum of 0.10 m thickness to protect the underlying vegetation.

.4 Water withdrawal along the access trail route will comply with appropriate protocols, including Department of Fisheries and Ocean’s (DFOs) protocol for Winter Water Withdrawal from Ice-covered Waterbodies in the Northwest Territories and Nunavut.

.5 Construction and decommissioning of ice bridges and snow fills will comply with the former DFO Operational Statement for Ice Bridges and Snow Fills.

.6 If drainage course crossing is required use methodologies in accordance with DFO requirements.

1.17 DUST, PARTICULATE AND POLLUTION CONTROL

.1 Provide details on the dust suppressant to the Departmental Representative for approval prior to use.
.2 Maintain temporary erosion and pollution control features installed under this contract.

.3 Control emissions from equipment and plant to local authorities emission requirements.

.4 Execute Work using methods to minimize raising dust and ash from decontamination operations. Implement and maintain dust and particulate control measures as determined necessary by applicable regulations and standards during Work and in accordance with AHJ.

.5 Provide positive means to prevent airborne dust and ash from dispersing into atmosphere. The use of oil for dust control is prohibited.

.6 Prevent dust and ash from spreading to beyond the immediate work area.

.7 Departmental Representative or designate may stop work at any time when Contractor’s control of dusts and particulates is inadequate for worker exposure during Work.

.8 If Contractor’s dust and particulate control is not sufficient for controlling dusts and particulates into atmosphere, stop work. Contractor must discuss procedures to resolve the problem. Make all necessary changes to operations prior to resuming work that may cause release of dusts, particulates or ash.
   .1 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.
   .2 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.
   .3 Provide dust control for temporary roads.

1.18 ENVIRONMENT PROTECTION SUPPLIES

.1 Comply with federal and territorial fisheries and environmental protection legislation, including preventing the loss or destruction of fish habitat, and minimizing the impact of sedimentation, siltation or otherwise causing a degradation in water quality.

.2 Provide a minimum of 100 m, or more as required by the Erosion, Sediment and Drainage Control Plan, of polypropylene silt fence (typical height of 0.9 m) and the necessary stakes for installation. This will be used as necessary to prevent sediment transport into water bodies.

.3 Provide a minimum of 50 linear metres or more and as required of 200 mm diameter hydrophobic, sorbent booms. This will be used as necessary to prevent the migration of hydrocarbons.

.4 Supply, transport, install and maintain erosion, sediment and drainage controls necessary to complete the Work in accordance with the requirements of Departmental Representative.

.5 At the completion of construction, dispose of used silt fence off-site as non-Hazardous Waste. Dispose of used absorbent boom in accordance with Section 02 61 33 – Hazardous Waste Material.

.6 Unused Erosion, Sediment and Drainage Control supplies will remain the property of Departmental Representative until the completion of the Contract.

.7 Supply a Standard Spill Response Kit at each site which includes a spill response kit designated for a marine or aquatic spill.

.8 Submit a detailed inventory of environmental protection supplies forty-five (45) days prior to mobilization.
1.19 HISTORICAL ARCHAEOLOGICAL CONTROL

.1 Provide historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on Project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in area are discovered during construction.

.2 Review the contents of the Plan with staff prior to commencement of work on site.

.3 Plan: include methods to assure protection of known or discovered resources and identify lines of communication between Contractor personnel and Departmental Representative.

1.20 WILDLIFE PROTECTION PLAN

.1 Submit a Wildlife Protection Plan that defines procedures for the protection of wildlife known to frequent the Project and surrounding areas (including the winter access trail following the final selection as part of the Mobilization and Demobilization Plan, detailed in Section 01 53 00). Wildlife Protection Plan will include but is not limited to the following:

  .1 Avoidance of active animal dens.
  .2 Avoidance of active nests.
  .3 Potential access restrictions and/or disturbance minimizing of migration activities.
  .4 Minimizing disturbances caused by aircraft.

.2 Submit the Wildlife Protection Plan to the Departmental Representative sixty (60) days prior to initiation of on-site remediation activities in accordance to Section 01 33 00 – Submittal Procedures.

1.21 NOTIFICATION

.1 Departmental Representative will notify Contractor in writing of observed non-compliance with Federal, Provincial or Municipal environmental laws or regulations, permits, etc.

.2 Contractor: after receipt of such notice, will inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.

.3 Departmental Representative will issue stop order of Work until satisfactory corrective action has been taken.

.4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

1.22 MEASUREMENT FOR PAYMENT

.1 Include all direct costs for the installation, supply and transport of the specified Environmental Protection activities including the silt fence and the sorbent booms and all necessary stakes and connecting hardware in the lump sum price for Environmental Protection Supplies, Item 01 35 43-1, as indicated in the Basis of Payment Schedule.

.2 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 – Construction Progress Schedules – Bar (GANTT) Chart.
PART 2 - PRODUCTS

2.1 POLYPROPYLENE SILT FENCE

.1 Silt fence: An assembled, ready to install unit consisting of geotextile attached to driveable posts. Geotextile to be uniform in texture and appearance, having no defects, flaws, or tears that would affect its physical properties; and contain sufficient ultraviolet ray inhibitor and stabilizers to provide minimum 2-year service life from outdoor exposure. Product acceptance will be based on compliance with the following minimum/maximum average values:
   .1 Minimum Grab Tensile Strength (ASTM D4632): 520N
   .2 Maximum Elongation (ASTM D4632): 15%
   .3 Minimum Puncture Strength (ASTM D4833): 250N
   .4 Maximum Apparent Opening Size (ASTM D4751): 500 um

.2 Net Backing: Industrial polypropylene mesh joined to geotextile at both top and bottom with double stitching of heavy-duty cord, with minimum of 750 mm.

.3 Posts: Sharpened wood, approximately 50 mm square, protruding below bottom of geotextile to allow minimum 450 mm embedment; post spacing 2.4 m maximum. Geotextile and net backing to be securely fastened to each post using suitable staples.

2.2 HYDROPHOBIC SORBENT BOOM

.1 200 mm dia. Polypropylene material.

.2 Minimum gallons absorbed per 3 m lengths: 50L.

2.3 FLOATING SILK CURTAIN

.1 Provide floating silk curtains meeting the following values:
   .1 Minimum Flotation Buoyancy: 250 N/m
   .2 Minimum Floating Fabric Curtain Grab Tensile (ASTM D-5043): 1700 x 1650 N.
   .3 Connectors: brass grommets nominally 300 mm o/c for lacing.
   .4 Ballast Chain: minimum 8 mm galvanized chain, 1.4 kg/m.
   .5 Load Cable: minimum 8 mm galvanized, vinyl coated 7 x 19 wire rope, minimum loading 40 kN.
   .6 Constructed in panels.

.2 Provide mooring lines and anchors as necessary to secure the floating silt curtain in position.

2.4 AQUADAM

.1 Minimum Grab Tensile Strength (ASTM D4632): 1100 N.

.2 Minimum Filled Length: 20 metres.

2.5 WEIR

.1 Weir Box Steel Reinforced Concrete: per ASTM D5640 and D5242.

.2 Weir Plate corrosion-resistant Steel: hot-dip galvanized steel or stainless steel (Types 302 or 304 per ASTM A240).
PART 3 - EXECUTION

3.1 TEMPORARY EROSION SEDIMENTATION CONTROL

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff to adjacent properties, according to requirements of AHJ.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during Work.

.3 Implement silt curtains and other erosion control methods as directed by Departmental Representative.

3.2 INSTALLATION OF EROSION AND SEDIMENT CONTROL

.1 Install erosion and sedimentation control products in accordance with manufacturers specifications.

.2 Construct temporary erosion control items as required. Review actual alignment and/or location of various items with Departmental Representative prior to installation.

.3 Check erosion and sediment control measures daily.

.4 Whenever sedimentation is caused by stripping vegetation, re-grading, or other development, remove it from adjoining surface, drainage systems, and watercourses, and repair damage as quickly as possible.

.5 Maintain and/or repair damaged erosion control measures promptly.

.6 Unless indicated or directed by Departmental Representative, remove temporary erosion and sediment control devices upon completion of Work. Spread accumulated sediments to satisfaction of Departmental Representative. Materials once removed become the property of the Contractor.

3.3 INSTALLATION OF AQUADAM

.1 Construct temporary holding pond and bypass pump for Bullmoose Creek prior to Aquadam installation.

.2 Install and fill Aquadam to cease flow in Bullmoose Creek upstream of excavation area as indicated on Drawings.

.3 Deflate and remove Aquadam and reinstate temporary holding pond after completion of Bullmoose Creek excavation and creekbed rehabilitation.

3.4 INSTALLATION OF PORTAL SEEP WEIR

.1 Construct temporary bypass channel for seep flow, directed to the current receiving wetland.

.2 Install weir at grade at the seep outfall. For plates thicker than 2mm (0.08 in), the downstream edge must be bevelled 60 degrees.

.3 Reinstall bypass once weir installed.

END OF SECTION
PART 1 - GENERAL

1.1 REFERENCES AND CODES

.1 Perform Work in accordance with National Building Code of Canada (NBC) including all amendments and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.

.2 Meet or exceed requirements of:
   .1 Contract documents.
   .2 Specified standards, codes and referenced documents.

.3 Perform Work in accordance with the Specifications and meet or exceed all codes, standards and regulations applicable to the Work and issued under the authority of the Government of Canada and the Government of the NT. Advise Departmental Representative of any discrepancies in the codes, standards and regulations applicable to the Work.

1.2 REFERENCES AND CODES - FEDERAL

.1 Meet or exceed the governing codes, standards and guidelines, and regulations applicable to Work and issued under the authority of the Government of Canada as follows:
   .2 Canada Occupational Health and Safety Regulations (SOR/86-304).
   .3 Canadian Environmental Protection Act (S.C. 1999, C.33).
   .5 Inter-provincial Movement of Hazardous Waste Regulations (SOR/2002-301).
   .9 Transportation of Dangerous Goods Regulations (SOR/2014-159).
   .10 Territorial Land Use Regulations (R-012 -2014).
   .14 Guidelines for Canadian Drinking Water Quality (Health Canada, August 2012).
   .15 Wastewater Systems Effluent Regulations (SOR/2012-139).
   .16 Technical Document for Batch Waste Incineration (EC, 2010).
   .18 Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (CCME, 1999) and amendments.
   .20 Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCME, 1999) and amendments.
   .21 Northern Affairs Contaminated Sites Management Policy (INAC, 2002).
   .23 NCSP Project Level Risk Management Guidance (INAC, 2008).
   .26 Material Safety Data Sheets (MSDS), Health Canada / Workplace Hazardous Materials...
.27 Risk Management Tool and Reporting Tool User Guide (INAC, 2007)
.28 Environment, Health & Safety Management System Manual (INAC, 2008)
.30 Environment, Health and Safety Control Framework, Northern Contaminated Sites Program (INAC, 2008)
.31 Environment, Health and Safety Audit Program Guide (INAC, 2008)
.33 Abandoned Military Site Remediation Protocol (INAC, 2009)
.36 Canadian Environmental Assessment Act (S.C. 2012, c.19, s.52)
.38 Species at Risk Act (S.C., 2002, c.29)
.39 Canadian Electrical Code, 2012
.40 Canada Shipping Act (S.C., 2001, c.26)
.42 Federal Mobile PCB Treatment and Destruction Regulations (SOR/90-5).
.43 Canadian Environmental Protection Act, PCB Regulations (SOR/2008-273).
.44 Mobile PCB Destruction Facilities, RRO 1990, Reg 352.
.45 PCB Waste Export Regulations (SOR/97-109).
.49 Best Practice for Building and Working Safely on Ice Covers in Alberta, Government of Alberta (October 2009)

1.3 REFERENCES AND CODES – NORTHWEST TERRITORIES

.1 Meet or exceed the governing codes, standards and guidelines, and regulations applicable to Work and issued under the authority of the Government of the Northwest Territories as follows:
.1 Environmental Protection Act (R.S.N.W.T. 1988, c. E-7).
.4 Spill Contingency Planning and Reporting Regulations R-068-93
.5 Fire Prevention Act, R.S.N.W.T. 1988, c.F-6
.10 Workers’ Compensation Act, S.N.W.T. 2007, c.21
.11 Waters Act (S.N.W.T. 2014, c.18) All sections except 104 in force April 1, 2014.
.13 Environmental Tobacco Smoke Work Site Regulations (R-082-2003).
1.4 STANDARDS AND GUIDELINES

.1 Department of the Environment and Natural Resources, Government of the Northwest Territories:
   .1 Guideline for the Management of Waste Antifreeze, September 1998
   .2 Guideline for the Management of Waste Asbestos, April 2004
   .3 Guideline for the Management of Waste Batteries, September 1998
   .4 Guideline for the Management of Waste Lead and Lead Paint, April 2004
   .5 Guideline for the Management of Waste Solvents, September 1998
   .6 Guideline for Contaminated Site Remediation, November 2003
   .7 Guideline for Ambient Air Quality Standards in the Northwest Territories, February 2014
   .8 Guideline for Dust Suppression, June 2013
   .10 Guideline for Ozone Depleting Substances (ODS’s) and Halocarbon Alternatives, August 2007
   .11 Guideline for Industrial Waste Discharges in the NWT, April 2004


1.5 PERMITS AND LICENSES

.1 The following permits and licenses will be provided to Contractor when received by AANDC:
   .1 Type "A" Water License, granted by the Mackenzie Valley Land and Water Board in accordance with the Northwest Territories Waters Act.
   .2 Type "A" Land Use Permit, granted by the Mackenzie Valley Land and Water Board in accordance with the Mackenzie Valley Resource Management Act.
   .3 Quarry Permit(s), granted by AANDC.

.2 The contractor will be responsible for acquiring permits, authorizations, and/or licenses required for mobilization and demobilization. This includes, but is not limited to, ice airstrip construction, CAT Train, and/or winter road/ice access.

.3 Obtain permits from the respective AHJs as required to complete the work, including but not limited to Burn Permits and camp permits.

.4 Any deviations from the current remediation plan may require land use permit amendments or field authorizations. Notify Departmental Representative of any proposed deviations so AANDC can contact the appropriate agency to obtain approval for the deviation.

1.6 HAZARDOUS MATERIAL DISCOVERY

.1 Asbestos: Demolition of spray or trowel-applied asbestos is hazardous to health. Should material resembling spray or trowel-applied asbestos be encountered in course of demolition Work that is not identified in Appendix A and governed by a written work procedure, immediately stop Work and notify Departmental Representative. Refer to Section 02 82 10 - Asbestos Abatement (Minimum Precautions), 02 82 11 - Asbestos Abatement (Intermediate Precautions), and 02 82 12 - Asbestos Abatement (Maximum Precautions).

.2 Stop Work immediately and notify Departmental Representative upon discovery of following materials that are not identified in Appendix A during course of Work:
   .1 Designated substances such as PCBs, asbestos, and mercury.
   .2 Unknown and/or potentially hazardous substances.
   .3 Items that may have archaeological, cultural or scientific significance.
   .4 Unexploded Ordnance (blasting caps).
Work at site will involve contact with:

1. Metal impacted soil.
2. PHC (total petroleum hydrocarbons) impacted soils.
3. Hazardous liquids and petroleum based sludges.
4. Demolition debris with lead based and PCB amended paints.
5. Asbestos containing materials.

1.7 WHMIS

1. Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Labour Canada and Health and Welfare Canada.

2. Deliver copies of WHMIS data sheets to Departmental Representative on delivery of materials.

3. Provide inventory system to track movement of all workplace hazardous materials on and off site.

1.8 SUBMITTALS

1. All submittals in accordance with Section 01 33 00 - Submittal Procedures

1.9 MEASUREMENT FOR PAYMENT

1. Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 - Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 NOT USED

1. Not used.

PART 3 - EXECUTION

3.1 NOT USED

1. Not used.

END OF SECTION
PART 1 - GENERAL

1.1 INSPECTION

.1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.

.3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.4 Departmental Representative may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such Work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative will pay cost of examination and replacement.

1.2 SUBMITTALS

.1 All submittals in accordance with Section 01 33 00 - Submittal Procedures

1.3 INDEPENDENT INSPECTION AGENCIES

.1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.

.2 Provide equipment required for executing inspection and testing by appointed agencies.

.3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

.4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and re-inspection.

1.4 ACCESS TO WORK

.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

1.5 PROCEDURES

.1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.
.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.6 REJECTED WORK

.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

.2 Make good other Contractor's Work damaged by such removals or replacements promptly.

.3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Departmental Representative may deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

1.7 REPORTS

.1 Submit 3 copies of inspection and test reports to Departmental Representative.

.2 Provide copies to Sub-Contractor of Work being inspected or tested and manufacturer or fabricator of material being inspected or tested.

1.8 TESTS AND MIX DESIGNS

.1 Furnish test results and mix designs as may be requested.

.2 The cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Departmental Representative and may be authorized as recoverable.

1.9 MEASUREMENT FOR PAYMENT

.1 Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION
PART 1 - GENERAL

1.1 INSTALLATION AND REMOVAL

.1 Provide temporary utilities to facilitate all construction and camp activities.

.2 Remove from site all such Work after use.

.3 Provide all temporary utilities consisting of the design, supply, construction, maintenance, operation and removal of the utilities and services required to support the remediation of the site. Temporary utilities to meet requirements of Land Use Permit issued for the Work, satisfy requirements of Federal, Territorial and local Authorities Having Jurisdiction (AHJ), and comply with the requirements of Section 01 35 43 - Environmental Procedures.

1.2 SUBMITTALS

.1 All submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.3 EXISTING SERVICES

.1 The location of equipment and utility services specified or indicated on the Drawings is to be considered as approximate. The site has no known operational utility services.

.2 Before commencing Work, establish location and extent of services in area of Work, and notify Departmental Representative of findings.

.3 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.

.4 Record locations of maintained, joined, re-routed and abandoned service lines indicating horizontal distances and vertical elevations.

.5 Take necessary precautions and prevent damage to existing services and facilities.

.6 Repair and replace services or facilities damaged as a result of Contractor's operations at no additional cost to Departmental Representative.

1.4 WATER SUPPLY

.1 Provide continuous supply of potable water for construction use.

.2 Provide means to conserve water on-site, as suitable water sources may be seasonal. Consider using tanks to store water during high flow events.

.3 Abide by terms of Water Licence regarding water usage.

1.5 TEMPORARY HEATING AND VENTILATION

.1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.

.2 Construction heaters used inside building must be vented to outside or be non-flameless type. Solid fuel salamanders (multi-fuel cast iron stoves) are not permitted.
.3 Provide temporary heat and ventilation in enclosed areas as required to:
   .1 Facilitate progress of Work.
   .2 Provide adequate ventilation to meet health regulations for safe working environment.
   .3 Protect Work and products against dampness and cold.
   .4 Prevent condensation from forming on surfaces.
   .5 Provide ambient temperatures and humidity levels for storage and installation of materials.

.4 Maintain temperatures of minimum 10 degrees C in areas where construction is in progress.

.5 Provide functioning carbon monoxide and smoke detectors in occupied areas.

.6 Provide ventilation for temporary facilities as follows:
   .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
   .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
   .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
   .4 Ventilate storage spaces containing hazardous or volatile materials.
   .5 Ventilate temporary sanitary facilities.
   .6 Continue operation of ventilation and exhaust system for time after cessation of Work process to assure removal of harmful elements.

.7 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
   .1 Conform with applicable codes and standards.
   .2 Enforce safe practices.
   .3 Prevent abuse of services.
   .4 Prevent damage to finishes.
   .5 Vent direct-fired combustion units to outside.

.8 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.6 TEMPORARY POWER AND LIGHT

.1 Provide, operate, and maintain an electrical power supply system, in accordance with governing regulations, to service Contractor's site power requirements.

.2 Install temporary facilities as necessary for power distribution, such as power cable and pole lines, subject to Departmental Representative's approval.

.3 Provide lighting and power at site for use during Work by Contractor, Sub-Contractors, and Departmental Representative's support personnel including outdoor lighting for night shift as applicable.

1.7 TEMPORARY COMMUNICATIONS FACILITIES.

.1 Provide and pay for temporary telephone, fax, and data hook up equipment necessary for Contractor use and use of Departmental Representative in accordance with Section 01 54 00 – Camp Facilities.

1.8 FIRE PROTECTION

.1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.
1.9 DRAINAGE

.1 Refer to Section 01 35 43 - Environmental Procedures.

1.10 SIGNS AND NOTICES

.1 Safety and Instruction Signs and Notices:
   .1 Signs and notices for safety and instruction to be in English.

.2 Maintenance and Disposal of Site Signs:
   .1 Maintain approved signs and notices in good condition for duration of Project, and dispose of
     off site on completion of Project, or earlier if directed by Departmental Representative.

1.11 MEASUREMENT FOR PAYMENT

.1 Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project
   Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the
   cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION
PART 1 - GENERAL

1.1 INSTALLATION AND REMOVAL

.1 Provide construction facilities in order to execute Work expeditiously.

.2 Remove from site all such Work after use.

.3 Provide all temporary facilities consisting of the design, supply, construction, maintenance, operation and removal of the facilities and services required to support the remediation of the site. Provide temporary facilities as specified at the Work site, and any other location where temporary facilities are essential to the Work. Temporary facilities to meet requirements of Land Use Permit issued for the Work, satisfy requirements of Federal, Territorial and local Authorities Having Jurisdiction (AHJ), and comply with the requirements of Section 01 35 43 - Environmental Procedures.

.4 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.

1.2 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of equipment indicated or specified on Contract Documents are to be considered as approximate.

.2 Inform Departmental Representative of impending installation and obtain approval for actual location if deviation from specified location is contemplated.

.3 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

1.3 ACCESS AND DUST CONTROL

.1 Provide and maintain adequate access, including snow removal, to all working areas of the site, camp, utilities and offices during all periods of Work by Contractor, Sub-Contractors and other Contractors performing Work for Departmental Representative.

.2 Access includes removal of snow, as may be required, to gain access to site, as required, to meet the Project Schedule.

.3 Maintain access to site for use by emergency response vehicles/aircraft.

.4 Minimize dust creating activities and maintain dust control as specified in Section 01 35 43 – Environmental Procedures

1.4 HOISTING

.1 Provide, operate and maintain hoists required for moving of workers, materials and equipment. Make financial arrangements with Sub-Contractors for use thereof.

.2 Hoists to be operated by qualified operator.
1.5 SITE STORAGE/LOADING

.1 Confine Work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.

.2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

1.6 VEHICLES

.1 Provide sufficient vehicles (number and type) for use to perform the Work expeditiously and meet site safety requirements, including one (1) all-terrain vehicle (ATV) per wildlife monitor as specified in Section 01 35 32 – Site Specific Health and Safety for Contaminated Sites.

.2 Supply one (1) crew-cab 4-wheel drive pickup truck for use by Departmental Representative and Departmental Representative’s Authorized Personnel for the duration of this Project.

.1 Vehicles to be in new condition, having been driven for not more than 30,000 kilometres.

.2 Equip vehicles with heater, defroster, right and left hand mirrors, windshield washers, permanent type anti-freeze, spare wheel, jack, wheel wrench, snow tires with chains on drive wheels and spare, directional signals with two-way flasher, full width front seat and license in accordance with Territorial regulations.

.3 Provide two (2) two-passenger four-wheel drive ATVs (John Deere Gator or equivalent) complete with hard enclosure for use by Departmental Representative for the duration of the Work. ATVs must meet the following minimum criteria:

.1 an original equipment manufacturer supplied pick-up style rear box suitable for carrying samples and equipment.

.2 675 cc gasoline or equivalent diesel engine;

.3 Roll-over protection system;

.4 Hard enclosure with glass windshield and windshield wipers;

.5 Buggy whips and rotating beacon;

.6 Tire repair kit and air pump.

.4 Provide two (2) two-passenger snowmobiles. Snowmobiles will have original equipment manufacturer supplied windshields, side deflectors, and cargo box or cargo rack suitable for carrying samples and equipment. Equip snowmobile with buggy whips.

.5 Provide safety equipment appropriate to each vehicle including but not limited to helmets.

.6 The use of these vehicles will not be shared with Contractor.

.7 Vehicles provided for purposes of this contract are accepted at risk of supplier whether in possession of supplier or Departmental Representative.

.8 Deliver vehicles to location designated by Departmental Representative at the site.

.9 Store vehicles in accordance with manufacturer’s recommendations.

.10 Maintain all vehicles in good running order for duration of Project. If vehicles are out of commission for any period of time, provide other replacement vehicles.

.11 Repair and maintain vehicles expeditiously.
.12 Provide and pay for all fuel and lubricants required to operate the vehicles for the duration of the Project.

.13 Provide applicable insurance for damage to vehicles under use by Departmental Representative or Departmental Representative’s Authorized Personnel or absorb costs for damage to same

.14 Provide and maintain all site vehicles with appropriate health and safety supplies including first aid kits and fire extinguishers.

1.7 EQUIPMENT, TOOLS AND MATERIALS STORAGE

.1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with Work activities.

1.8 SANITARY FACILITIES

.1 Provide sanitary facilities for Work force in accordance with governing regulations and ordinances.

.2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

.3 Washroom facilities to be provided at, or in close proximity, to other respective camp facilities and Work areas.

.4 Washroom facilities to have running hot and cold water for workers not able to return to camp facilities for lunch.

1.9 CONSTRUCTION SIGNAGE

.1 Maintain approved signs and notices in good condition for duration of Project, and dispose of off site on completion of Project or earlier if directed by Departmental Representative.

1.10 START-UP AND WINTERIZING OF FACILITIES

.1 Commission camp, vehicles and equipment at the beginning of each construction season.

.2 Winterize and secure camp, equipment and vehicles at the end of each construction season.

.3 When Project is closed down at end of construction season, keep facilities operational until close down is approved by Departmental Representative.

1.11 GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, and roofs.

.2 Provide as required by governing authorities.

1.12 MEASUREMENT FOR PAYMENT

.1 All direct costs for the Start-up of Facilities for all construction years are to be included in the unit price
for Start-up of Facilities, Item 01 52 00-1, as indicated in Basis of Payment Schedule.

.2 All direct costs for the Winterizing of Facilities for all construction years are to be included in the unit price for Winterizing of Facilities, Item 01 52 00-2, as indicated in Basis of Payment Schedule.

.3 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 – Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 Temporary Storage Area

.1 Develop Temporary Storage Areas at Bullmoose Area Mine Sites for the processing and storage of containerized hazardous materials, non-hazardous materials, hydrocarbons and contaminated soil.

.2 Prepare Temporary Storage Areas to comply with the following (at minimum):
   .1 Provide an easy access to the off-site and on-site transport equipment.
   .2 The area is to be free of standing/ponding water.
   .3 Allow the containers to be flat and evenly distribute the weight of the containers to the supporting surface.
   .4 The area must not be subject to flooding or excessive snow drifting.
   .5 Supply, place, and compact additional granular fill as required.
   .6 Surface water run-on to the area must be minimized.
   .7 Size the area sufficiently so that it will accommodate all waste.
   .8 Sufficiently compact the area to prevent the containers from settling into the ground.

.3 Confirm the location of the Temporary Storage Areas with Departmental Representative at least one (1) week prior to commencing operations to allow for baseline sampling, if required.

.4 The Temporary Storage Areas are to be located as follows:
   .1 More than 30 metres away from any waterbody/wetland/spring.
   .2 On stable and compact ground and lined with a 20 mil impermeable geomembrane liner in accordance with Section 31 32 19.02 Geomembranes underneath all contents except non-hazardous materials.
   .3 In an area not routinely accessed or essential to Contractor’s employees or on-site personnel.
   .4 More than 30 metres away from all flammable materials.

.5 Temporary Storage Areas must segregate the various types of materials, as specified in Section 02 81 01 – Hazardous Materials, as follows:
   .1 Containerized Hazardous Solid and Liquid Materials.
   .2 Non-hazardous Materials (as required if waiting for landfill construction).
PART 1 - GENERAL

1.1 MOBILIZATION AND DEMOBILIZATION

.1 Provide all labour, equipment and materials, and performance of all Work necessary for mobilization to, and demobilization from site. This will include all Departmental Representative provided supplies, equipment and material.

.2 Mobilization to include transportation to site of Contractor's labour, equipment, materials, and assembling, erecting, and preparing site in readiness to start Work, all in accordance with Contractor’s Schedule.

.3 Demobilization to include dismantling and removal from site, of all Contractor's equipment, camp facilities and materials, waste resulting from cleanup of site and transportation of labour from site.

.4 Decontaminate and clean all equipment used on the Project prior to demobilization according to Section 01 35 15 – Special Procedures for Contaminated Sites.

.5 Do not mobilize to the site without written authorization from the Departmental Representative.

.6 Summarize the proposed mode, route, equipment, labour and all other requirements for the mobilization and demobilization of all required equipment, materials, waste and personnel to complete the remediation of the project, as indicated in these specifications, in a Mobilization and Demobilization Plan.

.7 If utilizing an ice air strip or existing Bullmoose and/or Ruth Mine airstrip, Contractor to construct and maintain in accordance with approved Airstrip and Site Access Road Upgrading and Maintenance Plan.

.8 All mobilization and demobilization methods to comply with the requirements of all applicable codes, standards, guidelines and Land Use Permit and Water License.

.9 A Post-Demobilization site visit will be required as part of the Post-Demobilization Inspection as per Section 01 77 00 – Closeout Procedures.

1.2 SUBMITTALS

.1 Submit Issued for Construction Mobilization and Demobilization Plan and Construction Equipment List in accordance with Section 01 33 00 - Submittal Procedure for review by Departmental Representative thirty (30) days after contract award.

.2 Submit to Departmental Representative, 3 hard copies and 1 electronic copy of the Final Mobilization and Demobilization Plan and Construction Equipment List a minimum of thirty (30) days prior to mobilization.

.3 Submit Issued for Construction Airstrip and Site Access Road Upgrading and Maintenance Plan in accordance with Section 01 33 00 - Submittal Procedure for review by Departmental Representative thirty (30) days after contract award.

.4 Submit to Departmental Representative, 3 hard copies and 1 electronic copy of the Final Airstrip and Site Access Road Upgrading and Maintenance Plan a minimum of thirty (30) days prior to mobilization.

1.3 MOBILIZATION AND DEMOBILIZATION PLAN AND CONSTRUCTION EQUIPMENT LIST

1. Provide a Mobilization and Demobilization Plan which shall include, but not be limited to, the following items:
   1. Proposed mode(s), route and timing.
   2. Mobilization strategy, health and safety and environmental protection, wildlife protection, camp facilities description, fuel management plan, communications plan, and other specific requirements to mobilization and demobilization.
   3. In-transit storage or staging areas.
   4. Equipment, labour and other requirements.
   5. Equipment and materials to be brought to the site to complete the remediation activities of the project, as indicated in the Specifications.
   6. Final Mobilization and Demobilization Plan will include any requirements specific to the review of the proposed winter access trail alignment.
   7. Winter Access Trail Upgrading and Maintenance Plan
   8. Inter-Mine Trails Upgrading and Maintenance Plan
   9. Airstrip Upgrading and Maintenance Plan
   10. Proposed location and design of floating docks, as required.

2. Submit to Departmental Representative 30 days prior to mobilization, a complete Construction Equipment List comprised of manufacturer name, model number, year, and hours for construction equipment that is being mobilized to the site.

1.4 TEMPORARY WINTER ACCESS TRAIL ALIGNMENT

1. The Contractor is responsible for the selection of the winter access trail alignment. The proposed trail alignment shall be included as part of the Mobilization and Demobilization Plan.

2. Assessment of potential environmental impact of the proposed winter access trail alignment, once determined, is to be completed in accordance with the requirements of the Authorities Having Jurisdiction (AHJ) and Section 01 35 43- Environmental Procedures prior to final approval of the route by Departmental Representative and AHJs. Potential environmental impacts may include, but are not limited to, damage due to vehicles, fuel spills, and lost equipment through ice.

3. Temporary Winter Access Trail route shall be selected following consultation with the chosen departure community to avoid heavily used traditional areas, where practical.

1.5 INTER-MINE ACCESS TRAILS

1. The Contractor is responsible for the selection of the inter-mine access roads alignment. The proposed alignment shall be included as part of the Mobilization and Demobilization Plan.

2. Assessment of potential environmental impact of the trail alignment, once determined, is to be completed in accordance with the requirements of the Authorities Having Jurisdiction (AHJ) and Section 01 35 43- Environmental prior to final approval of the route by Departmental Representative and AHJs.
3 The inter-mine route shall be selected following consultation with the local community to avoid heavily used traditional areas, where practical.

1.6 AIR STIP ACCESS

.1 If utilizing an ice air strip or existing Bullmoose and/or Ruth Mine airstrip, Contractor to construct and maintain in accordance with approved Airstrip Upgrading and Maintenance Plan.

.2 Use of airstrips to be in accordance with Transport Canada Aircraft Load Ratings (ALR) as determined through geotechnical investigation, and as applicable to applied loads on aircraft landing and takeoff.

1.7 MEASUREMENT FOR PAYMENT

.1 Mobilization via winter road and/or secondary mobilization via air charter to be paid for at the lump sum price tendered for under Item 01 53 00-1 on the Basis of Payment.

.2 Demobilization via winter road and/or secondary mobilization via air charter to be paid for at the lump sum price tendered for under Item 01 53 00-2 on the Basis of Payment.

.3 All costs for Mobilization of all equipment and materials, including the submission of the Mobilization and Demobilization Plan, are to be included in the lump sum price for Mobilization, Item 01 53 00-1, as indicated in the Basis of Payment Schedule. The lump sum price for mobilization is to include all labour, equipment, materials, meals, accommodation, flights and any other costs necessary to undertake work required.

.4 All costs for Demobilization of all equipment and materials are to be included in the lump sum price for Demobilization, Item 01 53 00-2 as indicated in the Basis of Payment Schedule. The lump sum price for Demobilization is to include all labour equipment, materials, meals, accommodation, flights and any other costs necessary to undertake the work required. Payment for Demobilization will be made after satisfactory clean-up of the site, removal from the site of all equipment, materials, site demolition debris materials and contaminated soils, as indicated and submission to Departmental Representative of all Contractor submittals.

.5 All costs for Transportation of Contractor’s Personnel, including all transportation cost for crew rotations, meals in transit, accommodations in transit and any other cost necessary to mobilize and demobilize Contractor’s Personnel are to be included in the lump sum for Transportation of Contractor’s Personnel, Item 01 53 00-3 as indicated in the Basis of Payment Schedule.

.6 All costs for the winter road are captured under Items 01 80 00-1 to 01 80 00-10 of the Basis of Payment schedule.

.7 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 – Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.
PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION
PART 1 - GENERAL

1.1 CAMP FACILITIES

.1 Prior to installation of camp facilities and service area submit a Camp Facilities Plan that addresses the minimum requirements outlined in this Section and the Contract Documents to Departmental Representative for review 20 days after contract award.

.1.1 Camp Facilities Plan to identify local water bodies to be used as water supplies for consumption and construction and non-drinking camp use (i.e., dust suppression, equipment decontamination, fire prevention, etc.).

.2 The locations of the camp facilities must be provided with the Camp Facilities Plan and must be approved by Departmental Representative. Provide 20 days after Contract award.

.3 Camp facilities to be established and operated in accordance with local regulations and Authorities Having Jurisdiction (AHJ).

.4 Provide and operate complete camp facilities services, including provision, preparation and serving of food, for own workforce, Sub-Contractor’s workforce, Departmental Representative, and Departmental Representative’s authorized personnel as follows:

.4.1 Contractor and Sub-Contractor personnel including but not limited to Resident Contractor Representative, labour force, site medic, wildlife monitors, and surveyors.

.4.2 Resident Departmental Representative: four (4) for duration of the Project.

.4.3 Specialist Inspectors: one (1) person for the duration of the Project.

.4.4 Allow for an additional three (3) personnel at any one time to accommodate the Departmental Representative’s Authorized Personnel, Representatives from Canada, visitors and shift change overlap.

.4.5 Separate sleeping quarters are to be provided for cook(s), cook’s helpers, and for female staff.

.5 Provision of camp facilities services consisting of but not limited to:

.5.1 Design, supply, installation, and operation and maintenance of camp facilities including:

.5.1.1 All associated facilities.

.5.1.2 Utilities and services required for camp facilities such as heating, lighting, fuel, potable, and domestic water systems.

.5.1.3 Sewage and greywater collection, treatment, and disposal systems.

.5.1.4 Waste, refuse and garbage collection and disposal system.

.5.1.5 Fire prevention.

.5.1.6 Alarm and firefighting system.

.5.1.7 Safety and security service, including wildlife management and fire prevention/protection systems.

.5.1.8 Water treatment system.

.5.1.9 Supply of potable drinking water.

.5.1.10 Meals and catering service.

.5.1.11 Shower/wash facilities.

.5.1.12 Sleeping and washroom facilities.

.5.1.13 Bedding and bedding laundry services.

.5.1.14 Janitorial services.

.5.1.15 Personnel laundry facilities.

.5.1.16 Recreational facilities.

.5.1.17 Snow removal services.

.5.1.18 Camp re-supply and staff rotation charter flights.

.5.1.19 Office facilities including satellite communications (phone, fax, and internet).

.5.1.20 First aid facilities and services.
.21 Main camps at Bullmoose and Ruth Mine sites, and small camps at the other project mine sites during periods when remediation activity is underway.

.22 Supply of potable water to small camps. Bottled water sourced from main camps may be used once provisions outlined in Section 1.2 are satisfied.

.2 Obtain and pay for, as part of provision of camp facilities services all licenses, permits, and authorizations required to comply fully with all laws, ordinances and regulations of Federal and local authorities in connection with the performance of Work of this section.

.6 Camp Facilities shall not be older than 20 years.

.1 Contractor to arrange to have the proposed camp facilities inspected by a third-party building inspector prior to mobilization.

.2 Submit inspection report to the Departmental Representative thirty (30) days prior to mobilization. The inspection report is to include planned corrective action for identified deficiencies.

.3 Contractor will address any recommendations arising from building inspector's report before camp facilities are paid.

.4 Contractor will maintain camp in good operating condition and provide adequate and suitable furnishings.

.7 Provide and maintain a digital communication system for the Site consisting of full duplex and secure voice, real time fax, and high speed internet, available at all camp locations. Provide three (3) separate phone lines for the Departmental Representative. Communication system must accommodate virtual private network (VPN) connections. The communication system is to be based on monthly charges with unlimited internet access. Provide wireless 802.11 B/G/N network access points such that the entire camp area has wireless network access.

.8 Maintain one (1) handheld satellite telephone on-site for emergency purposes or when the main communication system is non-functional. Use of the handheld satellite telephone for primary site communication for extended periods is not acceptable.

.9 Shared use areas, kitchens, dining areas and sleeping quarters shall be maintained as smoke-free areas. Provide smoking areas at Contractor's discretion, in accordance with Federal, Territorial, and local regulations and guidelines.

.10 Be responsible for security and surveillance of the camp and site facilities at all times, including during winter months and when the camps are not occupied. Provide security, site surveillance or other means to protect the camps and site facilities from vandalism and tampering.

.11 Provide an alarmed trip wire around the camps to provide warning of wildlife intrusions whenever wildlife monitors are not patrolling. A working wildlife deterrent is to be provided and a replacement will be made available within 24 hours should the primary system fail. Test the alarm systems as specified in Section 01 35 32 – Site Specific Health and Safety Plan.

.12 Incinerate all kitchen food waste in order to avoid attracting wildlife.

.13 Comply with wastewater and sewage treatment, disposal and closure requirements as outlined in Section 01 35 15 – Special Project Procedures for Contaminated Sites.

.14 Demobilize Camp Facilities from site at completion of contract.
1.2 REGULATORY REQUIREMENTS

.1 Camp facilities including utilities, services, location and operation is subject to Departmental Representative's approval and is to be designed, established and operated in accordance with applicable Federal, Territorial and local codes, regulations and requirements governing camp facilities.

.2 Obtain applicable licenses, permits and authorizations prior to establishing camps. Submit proof of same to Departmental Representative. Pay for all costs for inspection of camp facilities and electrical facilities by AHJ. Display all applicable regulatory permits at the Camp.

.3 Provide water that meets Health Canada Guidelines for Canadian Drinking Water Quality (GCDWQ). Submit information on water, including the source and water quality test results to Departmental Representative prior to opening the camp facilities. Provision of potable drinking water includes the following:

.1 All potable water withdrawn from on-site water sources will be treated to disinfect and meet Health Canada’s GCDWQ. Contractor will provide and pay for equipment, supplies and materials required to treat the water.

.2 Maximum water withdrawal rate shall meet regulatory requirements.

.3 Contractor is responsible for payment for sampling and analyses of any camp facilities water supply, as indicated in Section 01 29 83 – Payment Procedures for Testing Laboratory Services. The sampling and analysis is to be provided at the water supply source and at the distribution source prior to consumption. Results of all water quality testing are to be submitted to Departmental Representative as received.

.4 Regular quality control testing (including weekly sampling/testing for coliforms) will be completed throughout the duration of the Project to meet the requirements of the Departmental Representative and AHJs. If results from the analyses exceed the GCDWQ and/or there is insufficient water supply, commercially sealed bottle water is to be provided.

.5 Contractor is responsible for the provision of commercially sealed bottled water that meets Health Canada’s GCDWQ. In the absence of analytical test results, local sources must not be used, and the supply of bottled water must be maintained. Submit information on bottled water, including the source and water quality test results to the Departmental Representative prior to opening the camp.

.6 Comply with all requirements of the Water Use License, Land Use Permit and all other licenses, permits and authorizations.

.7 Water takings to satisfy camp requirements to be in accordance with Fisheries Act for water takings from surface waterbodies.

.4 Operate the camps in accordance with the camp rules as specified in this Section and the provisions of Section 01 35 32 – Site Specific Health and Safety Plan.

.5 Comply with wastewater and sewage treatment, disposal and closure requirements as outlined in Section 01 35 15 – Special Project Procedures for Contaminated Sites.

.6 Provide commercially sealed bottle water that meets Health Canada Guidelines for Canadian Drinking Water Quality until it is demonstrated, by a minimum of two consecutive sets of analytical test results, that the local source meets the Health Canada Guidelines for Canadian Drinking Water Quality. In the absence of analytical test results, local sources must not be used, and the supply of bottled water must be maintained. Submit information on bottled water, including the source and water quality test results to the Departmental Representative prior to opening the camp.

1.3 CAMP FACILITIES INSTALLATION AND REMOVAL

.1 Mobilize equipment, camp facilities, personnel, and materials.
1.4 SITE LOCATION

.2 Establish approved temporary buildings, shops, offices and facilities as required.

.3 Place all camp facilities so as not to interfere with any construction or other site activities.

.4 Carry out all Work necessary to protect environment, such as constructing pads (if required), prior to actual installation of camp facilities.

.5 Locate camp generators minimum 30 m to any sleeping facility, camp kitchen or an area with constant human presence.

.6 Winterize and secure camps, equipment, and vehicles at the end the construction season.

.7 Remove camp facilities, clean up, and leave site in condition satisfactory to Departmental Representative. Upon removal of camp facilities, grade as necessary to match surrounding terrain and to provide positive drainage as directed by Departmental Representative.
1.5 MAINTENANCE

.1 Maintain camp facilities, power plant, fuel storage facilities, water lines, sewage system, garbage disposal containers, heating and cooling units, appliances and furniture in neat, clean and good operating condition and make repairs as necessary.

.2 Clean camp facilities daily. Clean and sanitize toilets, urinals, showers, washbasins, washing machines, and laundry tubs daily.

.3 Provide adequate bug, pest and wildlife control to all buildings, and camp facilities.

.4 Heat camp facilities to provide environmentally controlled conditions between 20 and 22 degrees C.

.5 Equip camp facilities with furnaces sized to heat rooms and adjacent corridor spaces.

.6 Furnaces to have forced air circulation systems with minimum of one hot air outlet per room in sleeper trailers. Alternatively, trailers may be heated with electric space heaters.

.7 In the event of temporarily vacating a camp, clean up and leave camp in safe, tidy and secure condition.

1.6 DEPARTMENTAL REPRESENTATIVE’S AND DEPARTMENTAL REPRESENTATIVE’S AUTHORIZED PERSONNEL SLEEPING QUARTERS

.1 Provide for sole use of Departmental Representative, one room for sleeping at each main camp. Space to be furnished in same manner as rooms used by Contractor's personnel.

.2 Sleeping quarters for Departmental Representative and Authorized Personnel are to be within the camp complex, but segregated from those for Contractor’s staff.

.3 It is anticipated that Departmental Representative workforce will include both male and female personnel. Design and operate the camp facilities with due consideration of the separate and private requirements of this work force.

.4 For Departmental Representative’s Authorized Personnel, provide a minimum of 4.6 m² of floor space for each occupant, with one dimension not to be less than 2 m.

.5 Sleeping quarters for other Departmental Representative’s Authorized Personnel, as indicated in this Section, to provide for maximum double occupancy with a minimum floor area of 9.2 square metres. Design camp facilities such that specialist inspectors generally are accommodated in single occupancy rooms. Double occupancy of specialist inspectors will be considered by Departmental Representative for short period of time only, and at Departmental Representative’s discretion.

.6 Provide a minimum of 11 m³ of air space for each occupant.

.7 Provide storage lockers and/or shelving to store personal items. Provide at least one (1) power outlet per occupant. Provide one (1) reading light above each bed.

.8 Provide key locks and keys for Departmental Representative and Departmental Representative’s staff sleeping quarters upon their use of these facilities.

1.7 DEPARTMENTAL REPRESENTATIVE’S AND DEPARTMENTAL REPRESENTATIVE’S AUTHORIZED PERSONNEL SITE OFFICE
.1 Provide office accommodation and furniture on-site for Departmental Representative and special inspectors at each main camp. The use of this facility will not be shared with Contractor. Shared office and sleeping quarters for the Departmental Representative is not acceptable. Office space must be large enough to accommodate surveyors and additional specialist inspectors on a periodic basis.

.2 Provide electrical lighting system, giving a minimum of 200 lux, using surface mounted, shielded commercial fixtures with 10% upward lighting component.

.3 Furnish office space with:
   .1 Two (2) desks with top service not less than 150 cm (60") by 75 cm (30")
   .2 Two (2) desk chairs
   .3 Four (4) stacking type chairs
   .4 Two (2) 4-drawer file cabinets, with locking mechanism
   .5 One (1) plan table
   .6 One (1) bookcase, not less than 90 cm wide by 30 cm deep by 120 cm high, complete with adjustable shelves.
   .7 Two (2) waste paper baskets
   .8 Four (4) duplex receptacles, 120 V, 60 Hz equipped with surge protection
   .9 Two (2) Uninterruptible Power Supply (UPS) bars
   .10 Stationary as required to support a small office.

.4 Provide and maintain at Departmental Representative’s office two satellite phone lines or equivalent communication approved by Departmental Representative.

.5 Provide, for each mine site where activity is taking place, for the use by Departmental Representative and Departmental Representative’s Authorized Personnel, two (2) mobile communication radios, complete with charging units. The radios are to allow for on-site communication between Departmental Representative, Departmental Representative’s Authorized Personnel and Contractor. The radios are to have a minimum range of 10 km.

.6 It is critically important that the communication equipment provided by Contractor for Departmental Representative’s use is reliable and of the highest quality. Immediately repair or replace faulty equipment. The equipment is to be operational from the day the Work commences.

.7 Provide and maintain at Departmental Representative’s office one Multiple Function Centre (MFC) with capabilities for printing, copying, faxing and scanning. This unit is to be for Departmental Representative’s exclusive use and is to be Windows compatible with Parallel, USB, and Ethernet interfaces. Provide the MFC with all required consumable supplies such that it provides continuous operation. The MFC is required to also meet the following specifications:
   .1 Print Function: Black and White and Colour with a minimum of 32 MB of memory.
   .2 Copy Function: Black and White and Colour with capabilities for Automatic Document Feed (ADF) and Reduction/Enlargement.
   .3 Scan Function: Black and White and Colour Scan capabilities with a minimum optical scan resolution of 600 x 2400 dot per inch (dpi) and capabilities to scan to email, image, OCR and file.

.8 A fridge or fridge space shall be available for Departmental Representative’s sample storage prior to shipment off site.

1.8 FIELD LABORATORIES
.1 Supply and pay for a field laboratory, complete with furniture, for the use by the Departmental Representative’s Authorized Personnel. The lab will accommodate geotechnical testing.

.2 Locate the field laboratory in the main camp complex and make ready for use three (3) days prior to the first day work commences for which testing is required, and remain available for the duration for which testing is required.

.3 The lab will be complete with heating system, lighting system, a minimum of four (4) 110 volt and one (1) 220 volt, 60 cycle electric outlets, water and sewer system, sink, work benches, garbage cans, stove/oven, hood and fan, refrigerator and freezer (as specified below), shelving and clothes rack, two (2) desks, two (2) 0.75 metre x 1.50 metre tables, three (3) chairs, one (1) four-drawer filing cabinet and adequate windows.

.4 The lab will have a minimum floor area of 20 m², unless less space is accepted in writing by Departmental Representative.

.5 Provide and maintain phone and internet service for the field laboratory.

.6 Equip the lab with a standard refrigerator with a total minimum capacity of 0.48 cubic metres (17 cubic feet) and a chest freezer with a total minimum capacity of 0.28 cubic metres (10 cubic feet). The refrigerators and freezer will remain the property of the Contractor upon completion of the project.

.7 Equip the lab with the following granular material testing equipment:

    .1 One (1) forced convection bench top laboratory oven with digital controls, stainless steel interior and suitable for effective drying of soil samples and large enough to fit the pan sizes outlined below
    .2 One (1) 1.5” sample splitter
    .3 One (1) polyethylene tarp for sample splitting: 1.8 m x 1.8 m minimum size
    .4 One (1) 6” Proctor Mould for the Standard Proctor Test: ASTM 698
    .5 One (1) Standard Proctor Hammer
    .6 One (1) Motorized Sieve Shaker compatible with 200mm sieves
    .7 One (1) Set of 200mm Sieves to include the following opening sizes in millimetres: 112, 80, 56, 40, 28, 20, 14, 10, 5, 2.5, 1.25, 0.630, 0.315, 0.160, 0.08, pan
    .8 One (1) wash sieve (0.08 mm opening) with reinforced screen (300mm diameter), one 5mm wash screen (300mm diameter)
    .9 One (1) brass sieve brush and one soft sieve brush
    .10 Pans and Tares:
       .1 each 8” x 4” x 2.5” metal
       .2 each 11.5” x 9” x 2.5” metal
       .3 each 18” x 10.5” x 6” metal
       .4 each 19” x 11” x 4” metal
       .5 loaf pans – 80mm x 180mm (for use in oven)
    .11 One (1) precision grade electronic scale with accuracy and readability to 0.1 grams and a minimum capacity of 20 kilograms.
    .12 One (1) pair of oven mitts.
    .13 One (1) metal scoop
    .14 One (1) leveling rod
    .15 One (1) rubber mallet
    .16 One (1) scrub bucket

.8 Clean lab at least two times per week, and maintain all electric lights, heating, water and sewer systems in good working condition during the period the laboratory is required. Maintain facility in...
acceptable condition.

.9 Provide power to the laboratory on a 24 hour/day basis while the remediation activities, requiring laboratory services, are in operation. Equip all power supplies with adequate surge protection. Damage to equipment resulting from power surges will be repaired or replaced at no cost to the Departmental Representative or his/her Authorized Personnel.

.10 Submit to the Departmental Representative for review a sketch of the proposed laboratory with the camp layout and siting plan as specified in this section.

.11 Provide Departmental Representative with key-locks for the field laboratories prior to commencement of activities requiring laboratory services being in operation.

1.9 KITCHEN DINING COMPLEX

.1 Functional design of kitchen to include all equipment necessary for food storage, preparation, cooking and serving 3 meals daily (one meal will be bagged lunch) to meet camp population requirements.

.2 Provide dishwashing and garbage handling equipment, consistent with required function of kitchen.

.3 Provide seating capacity of dining area to meet camp population requirements.

.4 Store all non-perishable food supplies in adequate containers, kept in an orderly manner and under sanitary conditions, in vermin-proof enclosures.

.5 Store all perishable food supplies in properly refrigerated indoor areas within camp facilities to preclude attraction of wildlife.

.6 All food preparation staff are to have Foodsafe Certification with records provided to the Departmental Representative prior to mobilization.

.7 Supply and operate kitchens as required to comply with federal and territorial regulations and obtain any necessary inspections, permits or approvals prior to operating the camp kitchens. Provide a copy of all documentation to the Departmental Representative upon receipt from the AHJ.

1.10 LINEN, BEDDING AND LAUNDRY

.1 Supply three (3) blankets, two (2) sheets, one (1) bath towel, one (1) face cloth, and two (2) pillow and one (1) pillow case for each person living in camp facilities.

.2 Change two (2) sheets and one (1) pillow case weekly or whenever occupancy changes.

.3 Launder sheets and pillow covers regularly to provide weekly supply of clean linen.

.4 Provide clean blankets to all camp occupants. Clean blankets as conditions warrant.

.5 Cooking staff to wear suitable kitchen attire. Launder kitchen attire daily.

.6 Provide both personnel laundry facilities and facilities dedicated to the camp (e.g., bedding, kitchen linens). Provide additional laundry facilities for laundering of PPE (e.g., coveralls and other exterior clothing) at a separate location within or adjacent to Controlled Access Trailer.

1.11 ABLUTION AND LATRINE FACILITIES
.1 Provide ablution and latrine facilities as per AHJ and codes requirements and as per camp occupancy requirements as follows:
   .1 Flush toilets as required.
   .2 Urinals as required.
   .3 Wash basin of stainless steel, porcelain, with one mirror over each basin as required.
   .4 Individual shower units with non-slip flooring together with adjacent dressing cubicles as required.

.2 Maintain separate ablution and latrine facilities for female/male populations.

.3 Maintain separate ablution and latrine facilities for Departmental Representative and Departmental Representative's support staff.

.4 Clean ablution and latrine facilities daily. Supply adequate amounts of paper towels, toilet tissue, and individual drinking cups in washrooms.

.5 Supply and provide the supplies required to operate hand washing stations as required by regulation.

1.12 FOOD QUALITY AND SCHEDULE

.1 Groceries to be of top quality. Eggs and dairy products to be grade "A". Canned fruit and vegetables to be choice or fancy.

.2 Beef to be Canada Grade "A", pork to be Grade "I", turkey, chicken or other fowl to be "utility" or better.

.3 Provide choices of traditional food. Provide healthy choices in food preparation.

.4 As a minimum, provide three meals a day. Provide casual meals or fourth meals if irregular shifts are worked or irregular travel by personnel is required.

.5 Main courses to be served at meals are classified as follows:
   .1 First Line: Beef steak, roast beef, roast pork, veal cutlets, baked ham, ham steak, chicken, turkey, pork chops, roast lamb, roast veal.
   .2 Second Line: Fish, short ribs, spare ribs, stews, meat pies, liver, curried dishes, spaghetti and meatballs, sausages, Salisbury steak, Swiss steak, ground beef, corned beef, stir fries.
   .3 Third Line: Hot dogs, omelettes, chili con carne, baked beans, chicken and turkey turnovers, dishes using leftover meats, soup and sandwiches.

.6 Lunch is to include one second line item and a third line item. Do not repeat the same selection more than twice weekly. Provide a vegetarian option upon request.

.7 Supper to include one first line and a choice between a second and third line. Do not repeat the same selection more than twice weekly. Beef steak to be served at least once per week. A vegetarian option to be available on request.

.8 Breakfast to include fruit juice or fruits, coffee, tea, milk, hot and cold cereals, porridge, toast and preserves, peanut butter, hot cakes, eggs, bacon, ham and sausages.

.9 Provide box lunches for all camp occupants who will not be in camp facilities for noon meal.

.10 Contractor will be given 12 hours notice to serve fourth and/or casual meals to Work forces of other Contractors and Departmental Representative.
.11 Provide "Mug Up" nightly at 2100 hours consisting of tea, coffee, hot chocolate, fruit juice and any left over pastries at cook's discretion. Make coffee available at coffee breaks.

.12 Provide beverages and snacks at all times. A variety of snacks should be available, including snacks that are appropriate for diabetics or persons with blood sugar concerns. Snacks may consist of fresh fruit or vegetables, granola bars, cheese and crackers, bannock, or other suitable items.

.13 Make available daily apples and oranges; serve other types of fresh fruit at least once per week. Fresh salads are to be provided daily.

.14 Provide whole milk each day; powdered milk is not acceptable for drinking, but may be used for cooking.

.15 Schedule food re-supply flights, as necessary to maintain variety in the menu and that fresh produce, milk and juice is continually available.

1.13 SERVICE FACILITIES

.1 Install, hook-up, test and make necessary repairs to sewage, water supply, heating, and electrical services.

.2 Situate power plant in camp facilities area to minimize noise, and prevent exhaust fumes from blowing through camp facilities during prevailing winds.

.3 Ground all buildings and electrical equipment with an approved grounding system.

1.14 RECREATION

.1 Provide an area for recreation for all camp occupants.

.2 Area to be of a size suitable for accommodating at least 50% of camp occupants, and to be suitably furnished with lounge, and stacking chairs.

.3 Provide a TV and DVD player for use by camp occupants. Alternatively, provide a satellite system.

.4 Provide a minimum of 20 DVD Movies and rotate these movies every two weeks or provide a TV with satellite link.

.5 Provide an assortment of books (soft cover) and magazines for reading.

1.15 CAMP FACILITIES RULES

.1 Camp facilities of this size and nature in a remote location require that certain basic rules be established for mutual benefit of all camp occupants.

.2 Prepare a set of camp facilities rules, for approval by Departmental Representative, prior to commencing operations.

.3 In order to protect all residents, the following activities are strictly prohibited and could result in dismissal and removal from site:

.1 Tampering with smoke or fire detectors/alarms, any other safety equipment or electrical
.2 Possession and consumption or use of alcohol or illegal drugs.
.3 Possession or use of firearms, ammunition or other lethal weapons.
.4 Fighting, physical violence, stealing, vandalism or destruction of property.
.5 Harassment in any form.
.6 The employee or visitor's departure from the site for any of these reasons will be on the first available scheduled transportation. Should this person wish to leave immediately the costs will be the responsibility of the employee.

.4 Make all camp residents familiar with all emergency procedures, exits, signals and alarms. Keep accesses to fire equipment clear at all times, and immediately report any damaged fire or safety apparatus to your supervisor.
.5 Use of vehicles or equipment only when trained and authorized to do so.
.6 Use, adjust and repair equipment or machinery only when authorized by the supervisor.
.7 Vehicle/Equipment checks must be completed and the logbook updated at the beginning of every shift or when starting any vehicle of piece of equipment. Seat belts must be worn at all times in vehicles and equipment.
.8 Keep living areas as clean as possible.
.9 Have warm emergency clothing available at all times during the wet or cold weather.
.10 Keep clothing or other flammable goods away from baseboard heaters.
.11 Ensure that personal items and clothing are marked for easy identification. Provide space for workers to hang wet clothing to dry prior to next shift.
.12 Employees must store/remove all personal effects and belongings when going off rotation or permanently off site.
.13 No loose clothing, dangling neckwear, bracelets, rings or similar articles are to be worn where there is a risk of coming into contact with moving machinery or electrical energized equipment.
.14 Keep workplace and equipment neat and orderly. Complete an inspection of your Work place tools and equipment prior to starting Work. Correct any hazards immediately.
.15 Provide a copy of camp facilities rules to all camp occupants prior to or upon arrival in camp.
.16 Enforce camp facilities rules.
.17 Provide smoking rules and/or designated areas in accordance with Federal, Territorial, and local regulations and guidelines.

1.16 CONTROLLED ACCESS TRAILER

.1 Provide a suitably sized trailer to house the decontamination rooms for entire construction crew, Departmental Representative, inspectors and up to five visitors to the site.

.1 The trailer is to have two access doorways where construction workers and field personnel can enter from the construction side, change out their PPE and field clothes, and wash up prior to
entering the camp facilities or clean side of the trailer.

.2 Provide a washer and dryer, to be incorporated into the decontamination side of the trailer.

.3 Provide the necessary utilities and connections to operate the decontamination trailer.

.4 Provide a designated area for all construction equipment, located in such a manner as to minimize the potential for contaminated material (PCBs, asbestos, soil, and the like) to enter the camp facilities.

1.17 EQUIPMENT, TOOLS AND MATERIALS

.1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with Work activities.

1.18 SANITARY FACILITIES

.1 Washroom facilities are to be provided at, or in close proximity to, the respective camp facilities and Work areas.

.2 Washroom facilities provided to have running hot and cold water for workers not able to return to the camp facilities for lunch.

1.19 SECURITY

.1 Restrict access to camp facilities. Only persons employed on Project to be allowed normal access. Unauthorized persons will be permitted on site only with approval of Departmental Representative and/or Contractor.

1.20 ACCESS TO WORK

.1 Be responsible for the transport of personnel and equipment to the various Work areas on the site.

1.21 TRANSPORTATION

.1 Provide return air transportation services for Departmental Representative and Departmental Representative's Authorized Personnel from Yellowknife to the Bullmoose Area Mine Sites.

.2 It is anticipated that air transport of Departmental Representative's Authorized Personnel will be Scheduled to coincide with the transport of Contractor's workforce to and from the site. Provide air transportation for Departmental Representative's personnel at a minimum frequency of one return trip per week and two additional trips per month scheduled according to Departmental Representative's request.

.3 Departmental Representative will advise Contractor of Departmental Representative's and Departmental Representative's personnel air transportation requirements one week in advance of trip departure.

.4 Use of Ruth and Bullmoose airstrips to be in accordance with Transport Canada Aircraft Load Ratings (ALR) as determined through geotechnical investigation, and as applicable to applied loads on aircraft
landing and takeoff.

1.22  REFUSE/GARBAGE MANAGEMENT

.1  Store refuse and waste in wildlife-proof containers prior to incineration or off-site disposal.

.2  Burnable refuse/waste may be incinerated by following burn schedule, and ensuring that it meets air quality guidelines.

1.23  SUBMITTALS

.1  All submittals in accordance with Section 01 33 00 – Submittal Procedures.

1.24  MEASUREMENT FOR PAYMENT

.1  All costs for the supply, operation and maintenance of all camp facilities (main and satellite) and equipment, including but not limited to water treatment and sewage treatment, inspection of camp facilities and electrical facilities by officials, on-site mobile communication equipment, as well as the provision of catering, rooms, and laundry and janitorial services for the camp facilities are to be included in the lump sum payment under Item 01 54 00-1, as indicated in the Basis of Payment Schedule.

.2  The provision of room and board and associated services for Departmental Representative and Authorized Personnel will be measured for payment by the person-day for each day that personnel reside overnight at the camp facilities. Departmental Representative's room and board will be paid under Item 01 54 00-2 in the Basis of Payment Schedule.

.3  Provision of casual meals to visiting representatives of Canada and Departmental Representative's authorized personnel will be measured for payment by the number of meals served. Casual meals will be paid under Item 01 54 00-3 in the Basis of Payment Schedule.

.4  The provision of air transportation from Yellowknife to the Bullmoose Area Mine Sites of Departmental Representative's Authorized Personnel will be measured for payment by the number of person return trips and will be paid under Item 01 54 00-4 in the Basis of Payment Schedule.

.5  All costs for the supply, installation and operation of satellite and/or long distance communication links for Departmental Representative and authorized personnel in the lump sum price for Communication links, Item 01 54 00-5, as indicated in the Basis of Payment Schedule.

.6  Include all direct costs for provision of consumable office supplies for Departmental Representative in the Provisional Cost Sum for Consumable Office Supplies, Item 01 54 00-6 in the Basis of Payment Schedule.

.7  Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 – Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1  NOT USED
.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION
PART 1 - GENERAL

1.1 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

1.2 FENCING

.1 Provide fencing as indicated on Drawings. Protect from damage by equipment and construction procedures.

1.3 GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, and roofs.

.2 Provide as required by Authority Having Jurisdiction.

1.4 ACCESS TO SITE

.1 Provide and maintain access roads, airstrips, as may be required for access to Work.

1.5 FIRE Routes

.1 Maintain access to Sites including overhead clearances for use by emergency response vehicles.

1.6 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

1.7 MEASUREMENT FOR PAYMENT

.1 All costs for the supply and installation of the fencing around the Bullmoose Portal Seep wetland are to be included in the lump sum payment under Item 01 56 00-1, as indicated in the Basis of Payment Schedule.

.2 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 – Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 NOT USE

.1 Not used.
PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION
PART 1 - GENERAL

1.1 GENERAL

.1 Use new material and like new equipment acceptable to Departmental Representative unless otherwise specified.

.2 No later than twenty (20) days after contract award, submit the following information for materials and equipment proposed for supply:

   .1 name and address of manufacturer,
   .2 trade name, model and catalogue number,
   .3 performance, descriptive and test data,
   .4 manufacturer’s installation or application instructions,
   .5 evidence of arrangements to procure.

.3 Provide material and equipment of specified design and quality, performing to published ratings and for which replacement parts are readily available.

.4 Use products of one manufacturer for material and equipment of same type or classification unless otherwise specified.

.5 Provide material and equipment of specified design and quality, performing to published ratings, and for which replacement parts are readily available.

1.2 SUBMITTALS

.1 All submittals in accordance with Section 01 33 00 - Submittal Procedures

1.3 REFERENCE STANDARDS

.1 If there is question as to whether any product or system is in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.

.2 Cost for such testing will be borne by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.

.3 Conform to latest date of issue of referenced standards in effect except where specific date or issue is specifically noted.

1.4 QUALITY

.1 Products, materials, and articles (referred to as products throughout specifications) incorporated in Work to be new, not damaged or defective, and of best quality (compatible with specifications) for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.3 Should any dispute arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
.4 Unless otherwise indicated in specifications, maintain uniformity of manufacturer for any particular or like item throughout Work.

1.5 AVAILABILITY

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

.2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.6 STORAGE, HANDLING AND PROTECTION

.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Store sheet materials and lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.

.7 Store and mix paints, solvents and other liquids in heated and ventilated room. Refer to WHMIS MSDS for proper storage of all products used on site. Dispose oily rags and other combustible debris daily. Take every precaution necessary to prevent spontaneous combustion.

.8 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

.9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.7 TRANSPORTATION

.1 Pay costs of transportation of products required in performance of Work.

1.8 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions.
.2  Notify Departmental Representative in writing, of conflicts between specifications and manufacturer’s instructions, so that Departmental Representative may establish course of action.

.3  Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

1.9  QUALITY OF WORK

.1  Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.

.2  Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.

.3  Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.10  COORDINATION

.1  Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.

.2  Be responsible for coordination and placement of openings, sleeves and accessories.

1.11  MEASUREMENT FOR PAYMENT

.1  Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1  NOT USED

.1  Not used.

PART 3 - EXECUTION

3.1  NOT USED

.1  Not used.

END OF SECTION
PART 1 - GENERAL

1.1 QUALIFICATIONS OF SURVEYOR

.1 Qualified registered surveyor, licensed to practice in the Northwest Territories, acceptable to Departmental Representative.

.2 Surveyor cannot be an employee of Contractor.

1.2 REFERENCES

.1 Departmental Representative's identification of property limits and existing survey control point, where applicable.

1.3 SURVEY REFERENCE POINTS

.1 Locate, establish, confirm, and protect control points prior to starting site Work. Preserve permanent reference points during construction.

.2 Make no changes or relocations without prior written notice to Departmental Representative.

.3 Report to Departmental Representative when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

.4 Require surveyor to replace control points in accordance with original survey control.

1.4 SURVEY REQUIREMENTS

.1 Establish two permanent bench marks on each of the seven mine sites, referenced to established bench marks by survey control points. Record locations, with horizontal and vertical data in Project Record Documents.

.2 Establish lines and levels, locate and lay out, by instrumentation.

.3 Prepare a topographic map of Work sites prior to demolition or excavation Work as directed by Departmental Representative to provide a baseline survey for quantity measurements.

.4 Stake location of landfills and landfarm in the field, and prepare a record drawing showing final location and contours of the landfills.

.5 Prepare drawings showing areas where repairs were undertaken.

.6 Layout area to be cleared at the landfill and landfarm sites, measure area(s) cleared, provide a drawing showing area cleared and calculations.

.7 Maintain surveys for quantity calculations.

.8 Survey locations of mine openings and provide drawings to Departmental Representative prior to start of design of seals. Survey mine openings following completion of seals, and provide drawings showing all appropriate details.

.9 Survey locations of all environmental samples and geotechnical work as directed by Departmental...
Representative. Provide drawings showing all appropriate details to Departmental Representative as required.

1.5 SURVEY EQUIPMENT

.1 Maintain at site, for duration of the construction period, a complete set of survey equipment for occasional use by the Departmental Representative. Shared use of Contractor’s survey equipment is acceptable.

.2 Equipment to include:
   .1 Surveying Total Station with data recording capability, tripod, spare battery, battery charger, downloading hardware and software and all associated ancillary items cables, hardlock, etc.). Preference to be for equipment that operates in both English and French.
   .2 Automatic level with tripod.
   .3 Single prism with 5 metre collapsible range pole.
   .4 Triple prism with tripod.
   .5 50 metre cloth tape (steel reinforced)
   .6 5 metre collapsible level rod.
   .7 Magnetic pin finder (high frequency).
   .8 One 1.2 m carpenter’s level.
   .9 Provision of Real Time Kinematic GPS in place of above listed equipment is also acceptable.

.3 Calibrate all equipment prior to each construction season. Submit to the Departmental Representative documentation certifying the calibration of the equipment thirty (30) days prior to construction commencement.

1.6 SURVEY MARKERS

.1 Provide all survey markers and other items required to complete Work as specified, including, but not limited to:
   .1 Pointed stakes (minimum 1.2 m in length, 12 mm thick, 38 mm wide)
   .2 Pointed hubs (minimum 0.5 m in length, 20 mm thick, 38 mm wide)
   .3 Nails (100 mm long), spikes (250 mm long), pins (1 m long), etc.
   .4 Fluorescent paint, flagging, etc.
   .5 Felt markers, chalk, wax pens, etc.

.2 Maintain supply of survey markers for Departmental Representative’s use.

1.7 RECORDS

.1 Maintain a complete, accurate log of control and survey Work as it progresses.

1.8 SUBMITTALS

.1 Submit name and address of Surveyor to Departmental Representative thirty (30) days prior to construction commencement.

.2 Upon request of Departmental Representative, submit documentation to verify accuracy of field engineering Work. Maintain accuracy of 0.01 m vertically and 0.1 m horizontally. Submit data in UTM NAD83 Datum.

.3 Submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conform and do not conform with Contract Documents.
.4 Submit all drawings electronically in accordance with PWGSC protocols for AutoCAD drawings and by hard copy. Hard copy drawings must be signed by a professional engineer registered in the Territories.

.5 Submit survey data back-up for quantities claimed on Progress Claims.

.6 Submit raw survey data in electronic form containing, at a minimum:
   .1 Date of survey.
   .2 Name of survey (e.g., Landfill – finished grade).
   .3 Point numbers, Northing and Easting, elevation and description

.7 Submit the record survey data file as the latest as constructed information.

.8 At completion of all Work, a minimum of seven (7) days prior to requested final inspection, submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conform and do not conform with Contract Documents.

1.9 MEASUREMENT FOR PAYMENT

.1 Work identified in this section will be paid for in the lump sum price under Item 01 71 01-1 Survey in the Basis of Payment Schedule. Tendered price to include all labour, equipment, materials, meals, accommodation, flights, and any other costs necessary to undertake Work required.

.2 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 – Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 NOT USED

   .1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

   .1 Not used.

END OF SECTION
PART 1 - GENERAL

1.1 CLOSEOUT PROCEDURES

.1 Notify Departmental Representative when Work is considered ready for Substantial Completion.

.2 Accompany Departmental Representative on preliminary inspection to determine items listed for completion or correction.

.3 Comply with Departmental Representative's instructions for correction of items of Work listed in executed Certificate of Substantial Completion.

.4 Notify Departmental Representative of instructions for completion of items of Work determined in Departmental Representative's final inspection.

1.2 INSPECTION AND DECLARATION

.1 Contractor's Inspection: Contractor and all Sub-Contractors to conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
   .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
   .2 Request Departmental Representative's Inspection.

.2 Departmental Representative's Inspection: Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor to correct Work accordingly.

.3 Completion: submit written certificate that following have been performed:
   .1 Work has been completed and inspected for compliance with Contract Documents.
   .2 Defects have been corrected and deficiencies have been completed.
   .3 Work is complete and ready for Final Inspection.

.4 Final Inspection: when items noted above are completed, request final inspection of Work by Departmental Representative and Contractor. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request reinspection.

.5 Post-Demobilization Inspection: once demobilization is completed, Departmental Representative will request a Post-Demobilization inspection of Work by Departmental Representative and Contractor. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request reinspection.

1.3 MEASUREMENT FOR PAYMENT

.1 All direct costs for the Post-Demobilization Site Visit are to be included in the lump sum price for Post-Demobilization Site Visit, Item 01 77 00-1, as indicated in Basis of Payment Schedule.

.2 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 – Construction Progress Schedules – Bar (GANTT) Chart.
PART 2 - PRODUCTS

2.1 NOT USED

   .1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

   .1 Not used.

END OF SECTION
PART 1 - GENERAL

1.1 FORMAT

.1 Organize all closeout data in the form of an instructional manual, called Project Record Documents.

.2 Binders: vinyl, hard covered, 3 ‘D’ ring, loose leaf 219 x 279 mm with spine and face pockets.

.3 When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.

.4 Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of Project and identify subject matter of contents.

.5 Arrange content by systems, under Section numbers and sequence of Table of Contents.

.6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

.7 Text: Manufacturer's printed data, or typewritten data.

.8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

.9 Provide 1:1 scaled CAD files in dxf or dwg format on CD, in the correct UTM coordinate system. The assumed projection and datum will be inserted as a text block in the model space.

1.2 CONTENTS – EACH VOLUME

.1 Table of Contents:
   .1 Title of Project.
   .2 Date of submission; names.
   .3 Addresses, and telephone numbers of Contractor with name of responsible parties.
   .4 Schedule of products and systems, indexed to content of volume.
   .5 Summary of Health and Safety issues, Environmental issues and performance indicators.

.2 For each product or system:
   .1 List names, addresses and telephone numbers of Sub-Contractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Include As-Built drawings as specified in this Section.

.5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified.
1.3 **FINAL SURVEY**

1. Submit final site survey certificate in accordance with Section 01 71 01 – Survey Requirements, certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

1.4 **AS-BUILTS**

1. In addition to requirements in General Conditions, maintain at the site for Departmental Representative one record copy of:
   .1 Contract Drawings.
   .2 Specifications.
   .3 Addenda.
   .4 Task Authorizations.
   .5 Change Orders and other modifications to the Contract.
   .6 Reviewed shop drawings and product data.
   .7 Field test records.
   .8 Inspection certificates.
   .9 Manufacturer’s certificates.

2. Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.

3. Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.


5. Keep record documents and samples available for inspection by Departmental Representative.

1.5 **RECORDING ACTUAL SITE CONDITIONS**

1. Record information on set of black line opaque drawings provided by Departmental Representative.

2. Provide felt tip marking pens, maintaining separate colours for each major system, for recording information, as required.

3. Record information concurrently with construction progress. Do not conceal Work until required information is recorded.

4. Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:
   .1 Field changes of dimension and detail.
   .2 Changes made by change orders.
   .3 Details not on original Contract Drawings.

5. References to related shop drawings and modifications.
   .1 Field changes of dimension and detail.
   .2 Changes made by Task Authorization, Change Order or Field Order.

6. Specifications: legibly mark each item to record actual construction, including:
   .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
Changes made by Task Authorization, Addenda and change orders.

Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

**1.6 RECORD DRAWINGS**

1. Departmental Representative will provide to Contractor, two sets of white prints and the CAD electronic files (.dwg or compatible) for record drawing purposes.

2. Maintain Project record drawings and record accurately deviations from Contract documents on one set of prints.

3. Record changes in red.

4. At completion of Project and prior to final inspection, neatly transfer record notations to second set of drawings or final CAD electronic drawing (.dwg or compatible) and submit both sets to Departmental Representative. Forward information on completed areas at the end of each construction season.

**1.7 OTHER RECORDS**

1. Prior to completion of Project, submit the following to the Departmental Representative:
   1. Copies of all documents and permits obtained by the Contractor.
   2. Results of all testing carried out by the Contractor.
   3. Any other pertinent information.
   4. Copies of all shipping documents identifying the shipper, the receiver and all carriers involved in the transport of materials.
   5. Information as required by the Land Use Permit.
   6. Information as required by the Water License.
   7. Information as required by the Quarry Permit.
   8. Information as required by all other applicable regulatory bodies and AHJ.
   10. Copies of all waste manifests.
   11. Copies of all weigh scale tickets.
   12. Documentation as required for hazardous material management.

2. Consolidate the above information in one document and submit two (2) hard copies and one digital copy in Portable Document Format (PDF) to the Departmental Representative.

**1.8 MEASUREMENT FOR PAYMENT**

1. All direct costs for the Project Record Documents are to be included in the lump sum price for Project Record Documents, Item 01 78 00-1, as indicated in Basis of Payment Schedule.

2. Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 – Construction Progress Schedules – Bar (GANTT) Chart.
PART 2 - PRODUCTS

2.1  NOT USED

.1  Not used.

PART 3 - EXECUTION

3.1  NOT USED

.1  Not used.

END OF SECTION
PART 1 - GENERAL

1.1 LOCATION OF WORK

.1 The legacy winter road to the Bullmoose Area Mine Sites originated in Yellowknife, NT, and may be used by the Contractor for the mobilization and demobilization following suitable upgrades as outlined in this Section.

.2 The legacy winter road to the Bullmoose Area Mines Sites is shown on Figure PC-1. A track survey will be completed by the Contractor to confirm the alignment of the historical winter road, and of all new spurs.

.3 The winter road must follow one of the routes identified in the Land Use Permit. Any deviation will require an amendment to the permit and Board or Inspector approval prior to construction.

.4 Two mine site locations require access enhancement for float planes in the form of floating docks: Chipp Mine and Storm Mine.

1.2 SUBMITTALS

.1 Submit to the Departmental Representative, via e-mail attachment, a report summarizing the track survey results for the historic winter road and all planned road spurs.

.2 Submit to the Departmental Representative, via fax or e-mail attachment, the following information at the commencement of work and every Monday morning thereafter during the construction and operation of the winter road:
   .1 Proposed start and end dates for construction of all winter road segments.
   .2 Progress in winter road construction, indicating location and distance under construction, and distance and location completed.
   .3 Completion date of initial construction.
   .4 Estimated winter road carrying capacity during construction, and date when required winter road capacity requirements have been met.
   .5 Profile the ice thickness and quality as often as necessary during construction to confirm that minimum weight limits are reached and during maintenance to confirm that those weight limits are maintained (at least 2 profiling missions are expected over the winter road construction and maintenance season). Fax/e-mail profiling results to the Departmental Representative as soon as they are available.
   .6 During the operating/maintenance phase, report dates when inspections were carried out.
   .7 Summarize maintenance activities undertaken and nature of maintenance carried out, on a weekly basis.
   .8 Report date of closures due to reduced winter road weight capacity, adverse weather condition (including storms or thaw).
   .9 In the event that progress of project work impacts the schedule, indicate measures to be taken to bring project back on schedule, and inform Departmental Representative in writing.
   .10 Report date of final closure, and date when decommissioning is complete.
   .11 Schedule assessment: In the event that progress of project work is likely behind schedule, indicate measures to be taken to bring project back on schedule, and inform the Departmental Representative in writing.

.3 When the Departmental Representative is on site, submit required information directly to the
Departmental Representative.

.4 The centerline and width of the winter road will be established based on available data through a qualified 3rd party professional survey and ice profiling firm retained by the contractor.

.5 Provide information as stipulated in the appended AANDC Winter Road Rules document (see Appendix C).

.6 A description of the work related to the construction and operation of the winter road is to be included in the following plans: Site Specific Health and Safety Plan; Mobilization and Demobilization Plan; Waste management, as well as any other relevant submittals as outlined in Section 01 33 00 - Submittals.

.7 Copies of all required documentation is to be kept at the camp established for the winter road construction. The Departmental Representative is to have access to these documents upon request.

1.3 REFERENCES

.1 The Land Use Permit states requirements for minimal packed snow or ice thickness on the road; equipment requirements; control or prevention of flooding, erosion and subsidence of land; stream crossings; debris and brush removal; petroleum storage, and any other items deemed necessary for protection of the environment during the construction and maintenance of the winter road.

.2 The Land Use Permit specifies the "spring break-up" date, beyond which date the Permittee will not conduct any activity associated with the land-use operation unless otherwise authorized by a Land Use Inspector.

.3 The Land Use Permit specifies the route and alignment of the road.

.4 Complete all work in accordance with all applicable Federal and Territorial legislation, and international conventions including but not limited to requirements specified in Section 01 41 00 - Regulatory Requirements.

.5 Guidelines for the methods and procedures for winter road construction are contained in the following publications:

   .1 Department of Transportation Ice Road Construction Guide, GNWT (2015)
   .5 Best Practice for Building and Working Safely on Ice Covers in Alberta, Government of Alberta (October 2009)

.6 All winter road segments reside within the jurisdiction of WSCC Mine Safety.

.7 Under NWTMHSA, operators have to be “qualified” (trained, experience, and knowledgeable)
1.4 CATASTROPHIC INCIDENT PLAN

.1 Due to the nature of the work, incidents have occurred where equipment has broken through the ice, with, or without, loss of life. The contractor will prepare a plan to address catastrophic incidences of this nature. The plan should include as a minimum the following:

.1 Work area inspection and safety verification prior and during progress of active work.
.2 Action to be taken by the first person at the scene of a catastrophic incident, who should be the partner, if the crew is working in close proximity to each other.
.3 Rescue, if equipment is only partially submerged and operator did not jump free.
.4 Rescue, if equipment is submerged and operator did not jump free.
.5 Communications. List persons to be contacted and method of contact.
.6 Medivac procedures.
.7 Methods to contain any fuel/oil spills resulting from the incident.
.8 Planned method to extract equipment.
.9 Reporting.

.2 Submit to Departmental Representative the Catastrophic Incident Plan in accordance with requirements of Section 01 33 00 - Submittal Procedures prior to commencement of work.

1.5 QUALIFICATIONS

.1 Be thoroughly familiar with and knowledgeable about existing site conditions, scope of work and requirements of the Specification.

.2 Winter road builders must possess a minimum of five (5) years of experience in major ice road construction.

.3 Submit written proof of satisfactory experience of winter road builders to Departmental Representative prior to the start of ice road construction.

.4 Third party ice profilers to be pre-qualified to perform the work.

.5 Submit written proof of third party ice profilers’ qualifications to Departmental Representative prior to the start of ice road construction

1.6 SCHEDULE

.1 Provide the winter road schedule to the AHJ and the Departmental Representative for review.

.2 Winter road will not be used unless directed or authorized by the Land Use Inspector or Departmental Representative.

1.7 MEASUREMENT FOR PAYMENT

.1 Payment of all costs for the winter road track survey will be on distance surveyed as outlined under Item 01 80 00-1 of the Basis of Payment schedule.

.2 Payment of all costs for the upgrade of the legacy winter road will be on lump sum basis as outlined under Item 01 80 00-2 of the Basis of Payment schedule.
Payment of all costs for the construction of new winter road spurs for all seasons of operation will be on a per km basis per spur as follows: Davidson Lake to Ruth Mine Site 01 80 00-3, Davidson Lake to Beaulieu Mine Site 01 80 00-4, Davidson Lake to Spectrum Mine Site 01 80 00-5, Davidson Lake to Joon Mine Site 01 80 00-6, as outlined under Items 01 80 00-3 to 01 80 00-6 of the Basis of Payment schedule.

Payment of all costs for the maintenance of all winter roads will be measured for each day. The road maintenance will be paid under Item 01 80 00-7, as indicated in the Basis of Payment Schedule.

Payment of all costs for the installation, maintenance, seasonal withdrawal/winterization, reinstatement, and final removal of floating docks at Chipp and Storm Mine sites will be paid under Items 01 80 00-8 to 01 80 00-9, as indicated in the Basis of Payment Schedule.

Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 – Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 CONSTRUCTION

The road will be a minimum 10 m wide on portages and a minimum 30 m wide on the lakes.

All winter roads will be designed in accordance with the "Guidelines for Safe Ice Construction 2015, DOT" to withstand the loading specified within the Contractors Mobilization and winter Road plans.

The road will be designed to withstand vehicle traffic at a speed of 40 km/hr.

Notwithstanding requirements specified in guidelines and Land Use Permit, the following conditions must be met:

No new ground disturbances (cut/fill) are anticipated while constructing the winter road for this project.

The winter road will be constructed and maintained with a minimum of 10 cm packed snow at all times of its use. If this cannot be met with existing site conditions, additional water will be placed to create an ice surface to protect underlying ground surface, vegetation, etc.

Only clean water and/or snow will be used in the construction of ice bridges.

Any ice bridges created will not hinder the flow of water.

No stream banks will be cut.

Approach grades on all lake and stream crossings will be minimized.

All ice bridges and snow fills will be removed prior to break-up.

A Spill Contingency Plan will be in place and spill kits available during construction and maintenance periods.

Floating docks will be designed to support the on- and off-loading and mooring of float planes up to Twin Otter.
3.2 MAINTENANCE

.1 Maintenance of the road will be on an as needed basis, yet will be continuous for the period of operation.

.2 Maintenance will include winter road repair work to maintain minimum weight limits, dragging, clearing and compacting snow after storms.

.3 Maintenance will include leveling areas (wash boarding) where a vehicle traffic speed of 40 Km/hr cannot be maintained.

.4 The road will be re-opened for traffic within 24 hours of a road closure due to weather.

.5 Maintenance will include rebuilding sections of portages where the required compacted snow or ice thickness is less than the thickness specified in the Land Use Permit or where road bases have been damaged through the over-use of chains, spin outs or ditching.

.6 All south-facing slopes will require additional base strengthening including dragging, compaction, flooding and grading to improve the operational life of road

.7 Maintenance of floating docks will include maintaining buoyancy sufficient to accommodate personnel and cargo loads.

3.3 SIGNAGE

.1 Speed signs will be posted at either end of the road. Alternatively, the Contractor may incorporate speed limits in the signboards at the beginning and end of the road. Speed signs to be posted at all the portages.

.2 Post speed and warning signs at any locations where visibility is reduced and/or where curvature warrants a reduction in speed at each turn and hills.

.3 Maintain existing direction, speed and warning signs along route.

.4 Kilometre Signs: With kilometre “0” being at the junction of the start of the winter road at Hamilton Bay Barge Landing, place a kilometre sign every 2 kilometres up to the Copper Pass Mine. Signs need not be elaborate, but lettering should be a minimum 150 mm. The material selection and posts will be capable of withstanding arctic winter storms. Signs will be driven into the snow along the route, with lettering clearly visible to vehicles travelling in either direction.

3.4 TESTING

.1 Thickness of winter road to be tested/evaluated as often as necessary until minimum design load of 40,000 Kg Gross Vehicle Weight is obtained along the entire winter road covered by the contract.

.2 Once minimum weight limit is achieved, then testing can be reduced to monitoring of weak locations and occasional testing during maintenance of road.

.3 Test results are to be submitted to the Departmental Representative as they become available.

.4 Profile the ice thickness and quality as often as necessary during construction to confirm that minimum weight limits are reached and during maintenance to confirm that those weight limits are
maintained (at least 2 profiling missions are expected over the winter road construction and maintenance season). E-mail profiling results to the Departmental Representative as soon as they are available.

.5 Ice profiling will be completed by an experience third party contractor with a minimum of 5 years of ice profiling experience

3.5 FINAL INSPECTION

.1 This winter road portion of this contract will be deemed to have been completed when a final inspection has been undertaken by the Departmental Representative, Contractor, Land Use Inspector, and all deficiencies have been corrected.

3.6 DECOMMISSIONING

.1 Prior to closure of the winter road, remove signs on lakes and rivers and covers.

.2 Prior to closure of the winter road, cover signs at either end of the road with 1200 mm x 2400 mm “Road Closed” signs and remove all equipment and other materials that may have been left along the road.

.3 Clean-out all stream crossings in accordance with Land Use Permit.

.4 Correct any deficiencies that the Land Use Inspector a may have noted in their final inspections.

.5 Prior to site closure, remove floating docks and transport off-site.

END OF SECTION
PART 1 - GENERAL

1.1 SUPPLEMENTAL INFORMATION

.1 This section covers the requirements for the construction of seals for the mine openings (i.e., shafts and vents) at the Bullmoose Area Mine Sites that need proper closure to comply with Territorial regulatory requirements. A brief description of each mine opening is provided in the table below with more information in the Appendices.

<table>
<thead>
<tr>
<th>Site</th>
<th>Mine Opening</th>
<th>Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ruth</td>
<td>Two shafts in Mill Area (AECs 2 and 25)</td>
<td>RM2-1</td>
</tr>
<tr>
<td>Bullmoose</td>
<td>Recap three shafts/vents in mill/warehouse area (AEC 12 – Cominco Shaft and 204S Vent and AEC 2 – Alimak Vent Raise) and three shafts/vents in the maintenance area (AEC 6 – Manway/Vent Raise, AEC 7 - #1 Vent and AEC 8 – Fault Failure)</td>
<td>BM2-1</td>
</tr>
<tr>
<td>Beaulieu</td>
<td>Recap main shaft in mill area (adjacent to AEC 1)</td>
<td>BE2</td>
</tr>
<tr>
<td>Spectrum</td>
<td>Shafts in mill area (AEC 3)</td>
<td>SL2</td>
</tr>
<tr>
<td>Chipp</td>
<td>One shaft in mill area (AEC 2)</td>
<td>CL2</td>
</tr>
</tbody>
</table>

.2 Retain the services of a Level 2 Mine Superintendent, as required under Territorial regulatory requirements, during the Work related to the closure of the mine openings.

.3 For the purposes of this work a qualified person is a Professional Engineer licensed to practice in the Northwest Territories and has expertise in this field of work.

.4 The information presented regarding the mine openings is based upon site conditions as described herein.

.5 Photographs of known mine openings are included in Appendix D.

1.2 ENVIRONMENTAL PROTECTION

.1 Ensure Work is done in accordance with Section 01 35 43 – Environmental Protection, the Land Use Permit, and all other applicable permits and licences.

1.3 WORK DESCRIPTION

.1 Construct the engineered cap for the indicated mine shaft or vent opening to the specifications outlined in this Section. Work includes, but is not limited to:

.1.1 Provision of all labour, equipment and materials required to complete the construction and/or replacement of the engineered cap including all necessary earthworks (including the relocation of low potential acid generating waste rock into the respective mine shafts), demolition, formwork, shoring and bracing required to complete the work and comply with applicable regulation.

.1.2 Restoration and grading of all areas affected by work as indicated.

.2 Place waste rock backfill for the indicated surface trenches to the specifications outlined in this Section.
and in Section 31 22 15 Grading. The Work is to include, but is not limited to:

.1 Transport and placement of waste rock backfill at the surface exploration trench as indicated.
.2 Restoration and grading of all areas affected by work as indicated.
.3 Compaction of waste rock is to conform to the specifications outlined in Section 31 22 15 – Grading.

1.4 REFERENCES

.1 Canadian Standards Association (CSA)
   .1 CSA A23.3-14 (R2014), Design of Concrete Structures
   .2 CSA S269.1-1975 (R2008), Falsework for Construction Purposes
   .3 CAN/CSA-S269.3-M92 (R2013), Concrete Formwork
   .4 CAN/CSA-G3018-09. Carbon Steel Bars for Concrete Reinforcement
   .5 CAN/CSA-A23.1-09/A23.2-09 (R2014) - Concrete materials and methods of concrete construction/Test methods and standard practices for concrete
   .6 CAN/CSA-A3000-13, Cementitious materials compendium
   .7 CAN/CSA-G40.20-13/G40.21-13 - General requirements for rolled or welded structural quality steel / Structural quality steel
   .8 ASTM A240 / A240M - 14 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications

.2 Council of Forest Industries of British Columbia (COFI)

.3 Northwest Territories Mine Health & Safety Act

.4 American Concrete Institute (ACI)
   .1 ACI 315R-04, Manual of Engineering and Placing Drawings for Reinforced Concrete Structure.

.5 American National Standards Institute/American Concrete Institute (ANSI/ACI)
   .1 ANSI/ACI 315-99, Details and Detailing of Concrete Reinforcement

.6 American Society for Testing and Materials (ASTM)
   .1 ASTM A775/A775M-07b (2014), Standard Specification for Epoxy-Coated Reinforcing Steel Bars
   .2 ASTM C309-11, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete

.7 Canadian General Standards Board (CGSB)
   .1 CAN/CGB-19.24-M90, Multicomponent, Chemical-Curing Sealing Compound

.8 Ontario Regulation 240/00, Amended to O. Reg. 307/12
   .1 Mine Development and Closure Under Part VII of the Act

1.5 DESIGN REQUIREMENTS

.1 Design, engineer, and construct: formwork and shoring and bracing formwork for the engineered cap over the mine shaft to conform to design and code requirements; resultant concrete to conform to required shape, line and dimensions, as indicated.

   .1 The design and construction of mine seals is to conform to the design standards as set out in
a. S.N.W.T. 2010, c.16)

.2 The use of foam plugs to seal mine openings may be considered however can only be installed upon
written direction by the Departmental Representative which is contingent upon the GNWT Mine’s
Inspector written approval of the engineered design.

1.6 SUBMITTALS

.1 Submit in accordance with Section 01 33 00 – Submittal Procedures:

.1 Product Data: Provide data on joint devices, attachment accessories, and admixtures.

1.7 QUALITY CONTROL

.1 Unless otherwise specified, the Contractor will be responsible for Construction Quality Control (CQC).
Contractor will engage and pay for the services of qualified third party, a Professional Engineer
licensed to practice in the Northwest Territories, to perform CQC for monitoring and documenting the
quality of the concrete formwork in accordance with the Specifications.

.2 The Departmental Representative will be responsible for Construction Quality Assurance (CQA). The
Departmental Representative will be responsible for observing and documenting periodic verification,
checking, or testing for confirming that the quality of the cast-in-place concrete is in accordance with
the Specifications.

.3 Unless otherwise specified, complete CQC inspection, sampling, testing or any other action, as
considered necessary to ensure that the Work has been completed in accordance with the Drawings
and Specifications. Notwithstanding the results of the Contractor’s CQC program, compliance of the
Work with the Drawings and Specifications will be defined by the results of the Departmental
Representative’s Construction Quality Assurance (CQA) program.

.4 Any work that does not satisfy the requirements of the Drawings and Specifications, must be corrected
in accordance with the requirements of the Specification or as directed by the Departmental
Representative at the sole expense of the Contractor.

.5 Acquire cement and aggregate from same source for all work.

1.8 DELIVERY, STORAGE AND HANDLING

1 Store materials off ground in ventilated and protected manner to prevent deterioration from moisture.

1.9 MEASUREMENT OF PAYMENT

.1 Include all direct costs for the following work items in the lump sum price for the closure of each mine
opening. Costs related to the proper closure of the Mine Openings (shafts and vents) will be included
in Item 01 81 00-1 - Seal Mine Opening as indicated in the Basis of Payment Schedule. This work will
include, but is not limited to, the following:

.1 Preparation of proposed seal designs and final designs in response to any WSCC comments
after their review.

.2 Inspections.

.3 Preparing surfaces.

.4 Provision of temporary safety fencing.

.5 All labour, equipment and materials required for the construction of engineered cap for the
mine shafts.

.6 Relocation of low potential acid generating waste rock and other waste rock as required to facilitate the construction of the concrete caps and to backfill the openings.

.7 Dewater openings prior to placement of backfill.

.8 The above work items will not be measured for payment.

.2 Except as indicated above, work described in this Section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Pricing Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 SEAL MATERIALS

.1 Formwork materials:

.1 Form ties: use removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm diameter in concrete surface.

.2 Form release agent: non-toxic, biodegradable, and low VOC.

.3 Form stripping agent: colourless mineral oil, non-toxic, biodegradable, and low VOC, free of kerosene, with viscosity between 15 and 24 mm²/s (70 and 110s Saybolt Universal) at 40°C, flashpoint minimum 150°C, open cup.

.4 Falsework materials: to CSA S269.1-1975 (R2008)

.2 Concrete Reinforcement:

.1 Substitute different size bars only if permitted in writing by the Departmental Representative.

.2 Reinforcing steel: billet steel, grade 400, deformed bars to CAN/CSA-G30.18-09, unless indicated otherwise.

.3 Chairs, bolsters, bar supports, spacers: to CAN/CSA-A23.1-09/A23.2-09 (R2014).

.4 Plain round bars: to G40.20-13/G40.21-13

.3 Cast-In-Place Concrete:

.1 Portland cement: to CAN/CSA-A3000-13, Type GU.

.2 Reinforcing bars: to CAN/CSA-G30.18, Grade 400.

.3 Other concrete materials: to CAN/CSA-A23.1-09/A23.2-09 (R2014).

.4 Accessories:

.1 Bonding Agent: Polymer resin emulsion and two-component modified epoxy resin.

2.2 MIXES

.1 Proportion concrete in accordance with CAN/CSA-A23.1-09/A23.2-09 (R2014).

.2 Minimum compressive strength at 30 MPa as indicated.

.3 Class of exposure: C-1 to CAN/CSA-A23.1-09/A23.2-09 (R2014), Table 11.

.4 Nominal maximum size of coarse aggregate: to CAN/CSA-A23.1-09/A23.2-09 (R2014).

.5 Slump: to CAN/CSA-A23.1-09/A23.2-09 (R2014).

.6 Air content: concrete to contain purposely entrained air in accordance with CAN/CSA-A23.1-09/A23.2-09 (R2014), Table 10.
2.3 STAINLESS STEEL PIPE AND PLATE

.1 Stainless steel pipe and plate must be manufactured from ASTM-A240 annealed and pickled sheets and plates in accordance with ASTM A778 in type 304L stainless steel. Pipe must be 150 mm in diameter and manufactured to nominal pipe sizes as listed in ANSI B36.19. Plate dimensions are indicated.

PART 3 - EXECUTION

3.1 DEMOLITION OF MINE OPENING FACILITIES

.1 Demolish and remove debris (includes existing caps) from the area over the mine shafts or vents, in accordance with Sections 02 41 16 - Structure Demolition and 02 41 23 - Debris Removal and as indicated.

.2 Expose sound bedrock at each mine shaft or vent to allow for inspection by the Contractor’s Engineer and the Departmental Representative

3.2 EXAMINATION

.1 Verify lines, levels and centers before proceeding with formwork. Confirm as indicated.

.2 Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

3.3 ERECTION OF FORMWORK

.1 Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of CAN/CSA-A23.1-09/A23.2-09 (R2014).

.2 Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

.3 Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.

.4 Align joints and make watertight. Keep form joints to a minimum.

.5 Obtain approval before framing openings in structural members that are not indicated on Drawings.

.6 Provide fillet and chamfer strips on external corners of walls.

3.4 APPLICATION OF FORM RELEASE AGENT

.1 Apply form release agent on formwork in accordance with the Manufacturer’s recommendations.

.2 Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

3.5 INSERTS, EMBEDDED PARTS AND OPENINGS
.1 Provide formed openings where required for items to be embedded in or passing through concrete work.

.2 Locate and set in place items that will be cast directly into concrete. Coordinate location equipment anchors with manufacturers.

.3 Install accessories in accordance with the manufacturer’s instructions, straight, level, and plumb. Ensure items are not disturbed during concrete placement.

.4 Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection.

.5 Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.6 FORM

.1 Forms are to remain in place for a minimum of seven (7) days and removed prior to the placement of backfill around and over the engineered cap.

3.7 REINFORCEMENT PLACEMENT

.1 Place reinforcing steel as indicated on reviewed placing drawings and in accordance with CAN/CSA-A23.1-09/A23.2-09 (R2014).

.2 Use plain round bars as slip dowels in concrete. Paint portion of dowel intended to move within hardened concrete with one coat of asphalt paint. When paint is dry, apply a thick even film of mineral lubricating grease.

.3 Ensure cover to reinforcement is maintained during concrete pour.

3.8 PREPARATION

.1 Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer’s instructions.

.2 In locations where new concrete is dowelled into existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

.3 Remove hardened concrete and foreign materials from the inner surfaces of conveying equipment.

.4 Complete formwork and dirt and water removed; position reinforcement and all embedded fixtures.

.5 Ensure that all work is ready to receive concrete.

3.9 PLACING CONCRETE

.1 Notify, the Departmental Representative a minimum of one (1) working day prior to commencement of operations.

.2 Use set retarding admixtures during hot weather only when approved by the Contractor’s Engineer and reviewed with the Departmental Representative.
.3 Ensure that reinforcement, inserts, embedded parts, formed joint fillers, joint devices and other appurtenances are not disturbed during concrete placement and that cover requirements are attained.

.4 Thoroughly dampen soils at bottom of forms. Remove standing water in bottom of forms and below slab areas prior to placing concrete.

.5 All reinforcement must be continuous across joints of structural slabs. The surface of concrete at cold joints, if they occur, must be thoroughly cleaned and all laitance removed prior to placing adjoining concrete. Obtain bond by use of the specified bonding agent applied in accordance with manufacturer's instructions.

.6 Place concrete as per CAN/CSA-A23.1-09/A23.2-09 (R2014).

.7 If slump is measured below the value specified, water may be added only if neither the maximum water/cement ratio nor the maximum slump is exceeded.

.8 No water is to be added to the mix following 45 minutes after initial batching.

3.10 CONCRETE FINISHING

.1 Provide smooth formed concrete without secondary finishing.

3.11 CURING AND PROTECTION

.1 Cure and protect concrete in accordance with CAN/CSA-A23.1-09/A23.2-09 (R2014) and ASTM C309.

   .1 Do not use curing compounds where bond is required by subsequent topping or coating.

.2 Immediately after placement, protect concrete from premature drying, excessively hot temperatures, and mechanical damage.

.3 Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

3.12 DEFECTIVE CONCRETE

.1 Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

.2 Repair or replace defective concrete as instructed by the Departmental Representative.

.3 Do not patch, fill, touch-up, repair, or replace exposed concrete except upon written direction of the Departmental Representative for each individual area.

3.13 QUALITY CONTROL

.1 Quality control activities to be in accordance with Section 01 45 00 Quality Control.

.2 Concrete testing: to CAN/CSA-A23.1-09/A23.2-09 (R2014) by testing laboratory designated and paid for by Departmental Representative.
.3 Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.

.4 Submit proposed mix design to the Departmental Representative for review ten (10) working days prior to commencement of Work.

.5 The Departmental Representative may perform tests of cement and aggregates to ensure conformance with specified requirements.

3.14 SITE GRADING AND RESTORATION

.1 Upon completion of work, remove debris and leave work sites clean to a condition satisfactory to the Departmental Representative.

.2 Do not begin grading of mine opening areas until approval to do so is given in writing by the Departmental Representative.

.3 Grade mine opening areas and restore all areas affected by work in accordance with Section 31 22 15 - Grading.

END OF SECTION
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Unit</th>
<th>Estimated Quantity</th>
<th>Unit Price</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOPC-1</td>
<td>Balance of Project Costs includes any variable, indirect costs for Indirect costs including all costs not directly attributable to the pay items including profit, supervision, overhead, administration, CGL Insurance, WCB, allowance for equipment repairs, attendance at meetings, all indirect costs associated with specific unit price, etc.</td>
<td>lump sum</td>
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<td>01 11 00-1</td>
<td>Worker Orientation Seminar</td>
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<td>01 11 00-2</td>
<td>Pre-Mobilization Site Visit</td>
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<tr>
<td>01 29 83-1</td>
<td>Packaging, handling and off-site transport of Departmental Representative’s samples</td>
<td>kg</td>
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<td>01 29 83-2</td>
<td>Contractor’s Testing Requirements, include sampling packaging, handling, off-site transport and testing</td>
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<td>Inter-Season Progress Meetings at location of contractor’s choice</td>
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<td>Community Meetings</td>
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<td>Treated Groundwater and Contact Water</td>
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<td>Site Specific Health and Safety Plan</td>
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<td>01 35 32-2</td>
<td>Wildlife Monitor c/w ATV</td>
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<td>01 35 43-1</td>
<td>Environmental Protection Supplies</td>
<td>lump sum</td>
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<td>01 52 00-1</td>
<td>Start-up of Facilities</td>
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<td>01 52 00-2</td>
<td>Winterizing of Facilities</td>
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<td>Transportation of Contractor’s Personnel</td>
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<td>01 54 00-1</td>
<td>Supply, Operation and Maintenance of Camp Facilities</td>
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<td>Departmental Representative and Departmental Representative Authorized Personnel Room and Board</td>
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<td>Casual meals for Departmental Representative and Departmental Representative Authorized Personnel</td>
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<td>Departmental Representative and Departmental Representative Authorized Personnel Return Transportation - Yellowknife to Site</td>
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<td>01 54 00-5</td>
<td>Supply, installation and operation of satellite and/or long distance communication links for Departmental Representative Authorized Personnel Communication</td>
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<td>Chain Link Fencing around Bullmoose Portal Seep Wetland</td>
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<td>01 71 01-1</td>
<td>Survey</td>
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<td>Project Record Documents</td>
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<td>02 41 16-2</td>
<td>Demolition and Landfilling of Metal Tanks located at Spectrum Mine</td>
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<td>Monitoring Well Drilling</td>
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<td>Monitoring Well Installation</td>
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<td>02 51 00-4</td>
<td>Survey Control Installation</td>
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<td>Excavation, Handling, Transport and Placement in Bullmoose Landfarm of Hydrocarbon Contaminated Soil: Bullmoose</td>
<td>m$^3$</td>
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<td>Excavation, Handling, Transport and Placement in Bullmoose Landfarm of Hydrocarbon Contaminated Soil: Beaulieu</td>
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<td>Excavation, Handling, Transport and Placement in Bullmoose Landfarm of Hydrocarbon Contaminated Soil: Spectrum</td>
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<td>Excavation, Handling, Transport and Placement in Bullmoose Landfarm of Hydrocarbon Contaminated Soil: Joon</td>
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<td>02 55 13-2-1</td>
<td>Excavation, Handling, Transport and Bullmoose Landfill Disposal of Metal Contaminated Tailings and Sediment: Bullmoose</td>
<td>m$^3$</td>
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<td>Excavation, Handling, Transport and Ruth Landfill Disposal of Metal Contaminated Tailings and Sediment: Beaulieu</td>
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<td>Excavation, Handling, Transport and Bullmoose Landfill Disposal of Metal Contaminated Tailings and Sediment: Spectrum</td>
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<td>Excavation, Handling, Transport and Ruth Landfill Disposal of Co-mingled Hydrocarbon and Metal Contaminated Soil, Sediment and Tailings: Ruth</td>
<td>m$^3$</td>
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<td>Excavation, Handling, Transport and Bullmoose Landfill Disposal of Co-mingled Hydrocarbon and Metal Contaminated Soil, Sediment and Tailings: Bullmoose Creek Sediment</td>
<td>m$^3$</td>
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<td>Hydrocarbon Contaminated Soil Treatment</td>
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<td>Processing Organic Content</td>
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<td>Containerization, Transport and Off-site Disposal of Known Hazardous Materials</td>
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<td>Supply of Air/Land Transport Containers for Known Hazardous Solid Waste</td>
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<td>Supply and Placement of Type 1 and Select Type 1 Granular Fill</td>
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<td>Supply and Placement of Type 2 Granular Fill</td>
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<td>Revegetation of Waste Rock Soil Cover Areas</td>
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<td>Decommissioning and Reclamation of the Landfarm Area</td>
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<td>Clean Overburden</td>
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<td>Backfilling</td>
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<td>8422 + 2334</td>
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<td>Trench Backfill</td>
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<td>Airstrip Improvements</td>
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<td>31 32 19 01-1</td>
<td>Geotextiles</td>
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<td>31 32 19 02-1</td>
<td>Geomembranes</td>
<td>m²</td>
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### PART 1 – GENERAL

#### 1.1 DESCRIPTION

.1 Methods and procedures for demolition, removal and disposal of buildings and building debris, concrete pads and tanks at the Site as indicated in Drawings. An inventory of all non-hazardous and hazardous materials is provided as Appendix A to the specifications. A summary of the structures, concrete pads and tanks is provided in the table below (by AEC/APEC number where applicable).

<table>
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<tr>
<th>Site</th>
<th>Structures Requiring Demolition</th>
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<tr>
<td>Ruth</td>
<td>All structures burned in 2014 forest fires</td>
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<tr>
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<td>Area 1:</td>
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<tr>
<td></td>
<td>1. Mill Building</td>
<td>RM3-1</td>
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<td></td>
<td>2.&amp;3. Headframe/Water Tower/Conveyor Gallery</td>
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</tr>
<tr>
<td></td>
<td>5. Blacksmith/Assay Building</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Warehouse</td>
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</tr>
<tr>
<td></td>
<td>8. Bunkhouse</td>
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<td></td>
<td>9. Cookhouse Platform - Old Wooden Floor</td>
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<td></td>
<td>17. Hoist Room</td>
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</tr>
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<td>18. Cap House</td>
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<td>Area 3:</td>
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<tr>
<td></td>
<td>12. Old Camp Area (12 structures)</td>
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<td>Area 5:</td>
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<td>22. Manager's House, Pumphouse and Former Explosives Magazine</td>
<td>RM3-5</td>
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<td>Spectrum Lake</td>
<td>Structures partially burned in 2014 forest fires</td>
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<td>2. Wood Structure</td>
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<td>7. Building</td>
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<td>9. Dock</td>
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<td>18. Mill</td>
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<td>23. Cabins(2)</td>
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<tr>
<td></td>
<td>26. Cabins (2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tank ( 28.&amp;29. Metal Tanks</td>
<td></td>
</tr>
<tr>
<td>Chipp Lake</td>
<td>Structures assumed burned in 2014 forest fires</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Cabin</td>
<td>CL3</td>
</tr>
<tr>
<td></td>
<td>4. Dock</td>
<td></td>
</tr>
<tr>
<td>Storm Mine</td>
<td>Structures assumed burned in 2014 forest fires</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Cabin</td>
<td>SM3-1 and SM3-2</td>
</tr>
<tr>
<td></td>
<td>4. Dock</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Cabin and Outhouse</td>
<td></td>
</tr>
<tr>
<td>Joon Mine</td>
<td>2A. Wooden Structure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2B. Chute</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4A. Main Building, South Building</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4B. Garage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6A. Dock</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7A. Wooden Foundation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7E Wooden Structure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7L. Wooden Foundation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7K Wooden Structure</td>
<td></td>
</tr>
</tbody>
</table>

.2 Methods and procedures for demolition, removal and disposal of leachable-lead painted/containing
material as indicated in Drawings. A summary of the leachable-lead painted/containing material associated with structures is provided in the table below (by AEC/APEC number where applicable).

<table>
<thead>
<tr>
<th>Site</th>
<th>Leachable-lead Painted/Containing Material</th>
<th>Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ruth</td>
<td>Area 1: 1. Mill Building 5. Blacksmith/Assay Building</td>
<td>RM3-1</td>
</tr>
<tr>
<td></td>
<td>Area 5: 22. Manager’s House</td>
<td>RM3-5</td>
</tr>
</tbody>
</table>

.3 Methods and procedures for demolition, removal and disposal of asbestos containing materials (ACMs) as indicated on Drawings. A summary of the ACMs associated with structures is provided in the table below (by AEC/APEC number where applicable).

<table>
<thead>
<tr>
<th>Site</th>
<th>ACM Item</th>
<th>Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ruth</td>
<td>Area 1: 7. Cook House</td>
<td>RM3-1</td>
</tr>
<tr>
<td></td>
<td>Area 5: 22. Manager’s House</td>
<td>RM3-5</td>
</tr>
</tbody>
</table>

.4 Methods and procedures for demolition, removal and disposal of Polychlorinated biphenyl (PCB) containing materials as indicated on Drawings. A summary of the PCBs associated with structures is provided in the table below (by AEC/APEC number where applicable).

<table>
<thead>
<tr>
<th>Site</th>
<th>PCB Item</th>
<th>Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ruth</td>
<td>Area 1: 1. Mill Building – transformer</td>
<td>RM3-1</td>
</tr>
<tr>
<td></td>
<td>Area 5: 22. Manager’s House – transformer</td>
<td>RM3-5</td>
</tr>
</tbody>
</table>

1.2 RELATED SECTIONS

.1 Section 01 31 18 – Construction Progress Schedules - Bar (GANTT) Chart.
.2 Section 01 33 00 - Submittal Procedures.
.3 Section 01 35 15 – Special Project Procedures for Contaminated Sites.
.4 Section 01 35 32 – Site Specific Health and Safety Plan.
.5 Section 01 56 00 - Temporary Barriers and Enclosures.
.6 Section 01 35 43 - Environmental Procedures.
.7 Section 02 41 23 – Debris and Miscellaneous Removals.
.8 Section 02 81 01 – Hazardous Materials
.9 Section 02 82 00.01 – Asbestos Abatement Minimum Precautions.
.10 Section 02 82 00.02 – Asbestos Abatement Intermediate Precautions.
.11 Section 02 82 00.03 – Asbestos Abatement Maximum Precautions.
.12 Section 02 83 10 – Lead Based Paint Abatement Minimum Precautions.

.13 Section 02 83 11 – Lead Based Paint Abatement Intermediate Precautions.

.14 Section 02 83 12 – Lead Based Paint Abatement Maximum Precautions.

.15 Section 02 84 00 – Polychlorinated Biphenyl Remediation.

.16 Section 31 22 15 – Site Grading

1.3 REFERENCES

.1 Canada Labour Code (R.S.C., 1985, c.L-2)
   .1 Canada Occupational Health and Safety Regulations (SOR/86-304).


.3 Department of Justice Canada (Jus).
   .1 Canadian Environmental Protection Act (CEPA), 1999 (S.C. 1999, c.33)
      .2 Federal Mobile PCB Treatment and Destruction Regulations (SOR/90-5).
      .3 Interprovincial Movement of Hazardous Waste Regulations (SOR/2002-301).
      .7 On-Road Vehicle and Engine Emission Regulations (SOR/2003-2).
      .8 PCB Regulations (SOR/2008-273).
      .9 PCB Waste Export Regulations (SOR/97-109).
      .10 Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (SOR/2008-197).
      .11 Ozone-Depleting Substances Regulations (SOR/99-7).

.2 Transportation of Dangerous Goods Act (TDGA), 1992 (SC 1992, c.34)
   .1 Transportation of Dangerous Goods Regulations (SOR/2001-286).

.3 Hazardous Products Act (R.S.C., 1985, c. H-3)
   .1 Controlled Products Regulations (SOR/88-66).
   .2 Workplace Hazardous Materials Information System.

.4 Canadian Council of Ministers of the Environment (CCME).

.5 Canadian Standards Association
   .1 CSA Standard Z94.4-93 (R1997) – Selection, Use and Care of Respirators.

.6 Canadian Standards Association International

.7 Underwriters' Laboratories of Canada (ULC).
.2 ULC-S660-08, Standard for Non-metallic Underground Piping for Flammable and Combustible Liquids.

.8 National Institute for Occupational Health and Safety (NIOSH)
   .1 Occupational Safety and Health Guidance Manual for Hazardous Materials Site Activities: NIOSH Publications No. 85 115

.9 Department of Environment and Natural Resources, Government of the Northwest Territories
   .3 Guideline for Ozone Depleting Substances and Halocarbon Alternatives (2007).
   .11 Spill Contingency Planning and Reporting Regulations (1998).


1.4 DEFINITIONS

.1 Hazardous Material: Items or debris no longer used for their original purpose; now hazardous and intended for recycling, treatment or disposal. Also material that is designated “hazardous” under Territorial or Federal legislation; or as a “dangerous good” under the TDGA. This may include dangerous substances, dangerous goods, hazardous commodities and hazardous products, may include but not limited to: poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other material that can endanger human health or well-being or environment if handled improperly. Hazardous material at the sites includes asbestos, organic liquids, leachable lead painted material, pressurized cylinders and other hazardous waste (creosote treated wood, mercury, PCBs and ODSs).

.2 Waste Management Coordinator (WMC): contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.
.3 Hazardous Materials Specialist: Contractor representative responsible for supervising all hazardous waste activities as well as coordinating submittal and reporting requirements.

.4 Intermediate Container: Containers, approved by Transport Canada, used for transportation of hazardous materials.

.5 Air/ground shipping container: the container into which the intermediate containers are placed for purposes of shipping to a disposal facilities.

.6 Contractor’s Designated Hazardous Waste Facility: A Licensed Hazardous Waste Disposal Facility designated by the Contractor for the disposal of all hazardous materials specified under the provisions of this contract. The facility must be pre-approved by the Departmental Representative prior to beginning work. Contractor must provide documentation from the Designated Hazardous Waste Disposal Facility indicating full responsibility for all hazardous materials accepted from the sites.

.7 Leachable-lead Painted Material: Material that is coated with lead based paint that has been analyzed and determined to contain leachable lead concentrations in excess of 5 ppm.

.8 Lead-containing Paint: Material that is coated with lead based paint that has been analyzed and determined to contain total lead concentrations in excess of 600 ppm.

.9 Non-hazardous Waste: Materials that are not designated as hazardous under the Territorial or Federal legislation. Materials that do not meet the definition of hazardous materials as defined in Section 02 81 01 - Hazardous Materials.

.10 Physical hazard: poses a slip, trip or fall risk to personnel and wildlife, risk to damage to vehicles (for example all-terrain vehicle, snowmobile, etc.).

.11 Temporary Storage Area(s): A designated area used for the consolidation and storage of containerized hazardous materials as specified in Section 01 52 00 – Construction Facilities and Section 02 81 01 – Hazardous Materials.

.12 Unpainted Wooden Materials: Wooden debris that is not painted, chemically treated or contaminated in any way and is suitable for on-site incineration. Unpainted pressboard or plywood is considered unpainted wooden material.

1.5 ADMINISTRATIVE REQUIREMENTS

.1 Pre-Installation Meetings:
.1 Convene pre-installation meeting prior to beginning the work of this Section with the Contractor’s Representative and Departmental Representative in accordance with Section 01 31 19 – Project Meetings to:
.1 Verify project requirements.
.2 Verify existing site conditions adjacent to demolition work.
.3 Co-ordination with other construction sub-trades as required.

.2 Hold project meetings every week.
.3 Ensure key personnel, site supervisor and subcontractor representatives attend.
.4 WMC must provide written report on status of waste diversion activity at each meeting.
.5 Departmental Representative will provide written notification of change to meeting schedule established upon contract award 24 hours prior to scheduled meeting.

.2 Scheduling:
.1 Employ necessary means to meet project times without compromising specified minimum rates of material diversion.

.1 In the event of an unforeseen delay, notify Departmental Representative in writing.

1.6 INSTRUCTION AND TRAINING

.1 Before commencing work, provide to Departmental Representative satisfactory proof that every worker has had instruction and training in potential health hazards of handling hazardous materials and in the use of applicable respirators and protective clothing. This training can be performed as part of a program to comply with the requirements of OSHA Hazard Communication Standard 29 CFR 1910.1200.

1.7 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 The WMC is responsible for fulfillment of reporting requirements.

.3 Prior to beginning of Work on site submit detailed Waste Reduction Workplan in accordance with Section 01 35 15 – Special Project Procedures for Contaminated Sites and indicate:

.1 Descriptions of and anticipated quantities in percentages of materials to be landfilled or disposed off-site.

.2 Schedule of selective demolition.

.3 Number and location of waste containers.

.4 Name and address of haulers, waste facilities and waste receiving organizations.

.4 Submit copies of certified weigh bills, bills of lading and receipts from authorized disposal sites and reuse and recycling facilities for material removed from site on a weekly basis upon request of Departmental Representative.

.1 Written authorization from Departmental Representative is required to deviate from haulers, facilities and receiving organizations listed in Waste Reduction Workplan.

.5 Where required by Authorities Having Jurisdiction, submit for approval drawings, diagrams or details showing sequence of demolition work and supporting structures.

.6 Submit drawings stamped and signed by qualified professional engineer registered in Northwest Territories, Canada.

.7 Do not commence demolition work, including asbestos abatement removal, until the Contractor has demonstrated to the Departmental Representative that all required permits for the work have been obtained.

1.8 QUALITY ASSURANCE

.1 Regulatory Requirements: Ensure Work is performed in compliance with CEPA, TDGA, and applicable Territorial and Municipal regulations.

1.9 WASTE MANAGEMENT AND DISPOSAL

.1 Not in use.

1.10 SITE CONDITIONS
.1 Environmental Protection

1. Ensure Work is done in accordance with Section 01 35 43 - Environmental Procedures.
2. Ensure that demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
3. Fires and burning of waste or materials (other than unpainted wood) is not permitted on site.
4. Do not bury camp generated materials unless directed by the Departmental Representative to dispose of in the on-site engineered landfills at either Bullmoose or Ruth mine site.
5. Do not dispose of waste or volatile materials including but not limited to: mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses.
6. Ensure proper disposal procedures are maintained throughout project.

2. Do not pump water containing suspended materials into watercourses or onto adjacent land.
3. Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with authorities having jurisdiction, The Guideline for Industrial Waste Discharges in the Northwest Territories (GNWT, 2004) and as directed by Departmental Representative.
4. Prevent damage and minimize stripping of natural terrain, features and vegetation.
5. Prevent extraneous materials from contaminating air beyond application area, by providing temporary enclosures during demolition work.
6. Cover or wet down dry materials and waste to prevent blowing dust and debris. Provide dust control for all existing and temporary roads.
7. Take precautions to support structures as necessary prior to personnel entering and, if safety of building demolished or adjacent structures or services appear to be endangered, cease operations and notify the Departmental Representative.
8. Provide safe passage for persons around area of demolition.
9. Do not proceed with demolition work when weather conditions constitute a hazard to the workers and site. Prevailing weather conditions and weather forecasts are to be considered.
10. All personnel engaged in demolition activities are to wear and use protective clothing and equipment required for such work.
11. When working with PCB-containing materials, leachable-lead painted material, asbestos, and other hazardous materials, workers are to wear protective clothing and equipment acceptable to Labour Canada or the Territorial department responsible for labour as suitable for exposure in the work area and as detailed in Section 02 81 01 – Hazardous Materials. Follow NIOSH guidelines in providing protection for on-site personnel including contract employees, subcontractors, Departmental Representative, Departmental Representative’s staff, and other authorized personnel.

1.11 FIRES

.1 Comply with all regulatory requirements and obtain a Burn Permit, if required.

.2 Burning of any painted and/or chemically treated materials is prohibited unless authorized in writing by Departmental Representative.

.3 Where fires or burning is allowed, prevent staining or smoke damage to structures, materials or vegetation which are to be preserved. Restore, clean and return to new condition stained or damaged materials, structures, or vegetation.

.4 Provide supervision, attendance and fire protection measured in accordance with Section 01 35 32 – Site Specific Health and Safety Plan for Contaminated Sites.
.5 No in-situ / standing structure burning is permitted due to the forest fire risk.

1.12 EXISTING CONDITIONS

.1 If material resembling asbestos or other designated substance listed as hazardous but not identified on the Drawings is encountered in the course of demolition, stop work, take preventative measures, and notify the Departmental Representative immediately. Proceed only after receipt of written instructions have been received by the Departmental Representative.

.2 Structures to be demolished to be based on their condition on date that tender is accepted.

.3 The information presented in the Drawings, provide brief descriptions for structure and facilities to be demolished. These tables and drawings indicate only the major construction details and building systems as assessed and are not to be construed as exact for final demolition requirements. Be responsible for all work described in this Section, which includes the complete demolition of all facilities and structures designated for demolition.

The information presented in the Drawings indicates types and quantities of hazardous materials that have been previously identified, and must be removed and disposed of in accordance with these Specifications. Should potentially hazardous material, other than that already identified, be encountered during the course of demolition work, stop work immediately, and notify the Departmental Representative. Do not proceed until written instructions have been received from the Departmental Representative.

.2 Not all painted surfaces of facilities and structures to be demolished have been sampled and tested for leachable-lead or asbestos. Further testing by the Departmental Representative at the beginning of the first construction season may identify further asbestos or leachable-lead based paint.

1.13 SCHEDULING

.1 Employ necessary means to meet project time lines without compromising specified minimum rates of material diversion.

.1 In event of unforeseen delay notify Departmental Representative in writing.

1.14 QUALIFICATIONS

.1 Contractor and Contractor’s workers to be thoroughly familiar with and knowledgeable about existing site conditions, scope of work, and requirements of the Specification.

.2 Only Contractor’s workers able to provide a history of satisfactory experience in the area of hazardous materials management and can satisfy the Territorial and Federal requirements will be permitted to supervise and conduct the work of this Section.

.3 All activities involving the handling of hazardous materials are to be directly supervised by Contractor’s personnel who have successfully completed a 40 hour training course for Hazardous Waste Activities in compliance with OSHA 29 CFR 1910.120 or other accepted equivalent training courses such as the Canadian Hazardous Waste Workers Program.


.5 Contractor’s personnel, who have been trained as described in this Section, are to instruct and direct all workers with respect to the waste management procedures, labour and safety practices to be
followed in carrying out the work.

.6 Provide all workers with protection appropriate to the potential type and level of exposure. Establish specific safety protocols prior to commencing clean-up activities.

.7 Provide suitable personal protective clothing and equipment as required during the course of the work. Supply sufficient quantities and various sizes of protection equipment to fit all site personnel including the Departmental Representative, Departmental Representative’s staff, and site visitors.

.8 Trained and certified personnel are required to complete all Transportation of Dangerous Goods Act (TDGA) documentation and recording requirements.

1.15 MEASUREMENT FOR PAYMENT

.1 Include all direct costs in lump sum price per Site as follows: Item 02 41 16-1-1 Structure Demolition: Ruth; Item 02 41 16-1-2 Structure Demolition: Spectrum; Item 02 41 16-1-3 Structure Demolition: Chipp; Item 02 41 16-1-4 Structure Demolition: Storm; and Item 02 41 16-1-5 Structure Demolition: Joon, and as indicated in the Basis of Payment Schedule. Work indicated under lump sum items includes, but is not limited to:

.1 Removal, handling, segregation, hauling and incineration of unpainted wood materials at each site to include, but not limited to:

.1 Obtain necessary burn permits required from Authority Having Jurisdiction.

.2 Collection, sorting and on-site transport of all untreated wood (both unburned and partially burned) to the burning location.

.3 Provide an ash collection system which is capable of containing ash until it is sampled. A water-tight metal tray with sides of at least 300 mm high is acceptable. A tray salvaged from the materials on site is acceptable. Provide means to protect the ash from wind and water until it is sampled as described in Section 02 41 23 – Debris and Miscellaneous Removals. Wood ash and partially burned remains from structures subject to burning from forest fires in 2014 forms part of ash collection.

.2 Demolition, removal, handling, segregation, hauling and disposal of non-hazardous materials to the on-site non-hazardous landfill located at either the Bullmoose or Ruth mine sites as outlined in Appendix A.

.3 Separation, abatement, handling, segregation, containerization and transport of structural materials containing leachable-lead paint to the Temporary Storage Area located at each Site. Disposal of remaining substrate materials in the on-site non-hazardous landfills at the Ruth or Bullmoose mine site.

.4 Removal, segregation, packaging (double bagging), transport, and off-site disposal of ACMs as listed in Appendix E.

.5 Separation, removal, handling, and segregation of all other hazardous materials, including, but not limited to, miscellaneous solid hazardous waste (batteries, creosote treated wood, etc.) and miscellaneous hazardous liquid waste (organic liquid wastes, ODSs, mercury, PCBs, etc.).

.6 Transport of all hazardous materials designated for off-site disposal to the Temporary Storage Area(s) until materials are removed from the sites.

.7 Demolition, removal, transport, and disposal of pipelines at Ruth and Bullmoose in accordance with Section 02 81 01 – Hazardous Materials.

.8 Removal of concrete pads where required to bring to grade and disposal in the on-site non-hazardous landfills at Bullmoose or Ruth mine sites.

.9 The demolition, removal and containerization, as required, including supply of containers, of sewage and sewage sludge from sewage lines to be demolished.
.2 Include all direct costs in lump sum price for Item 02 41 16-2 Demolition and Landfilling of the metal tanks located at Spectrum Mine as indicated in the Basis for Payment Schedule. Work indicated under lump sum item includes, but is not limited to:
   .1 Removal, cleaning, demolition, transport and disposal of the metal tanks in the non-hazardous landfill at Bullmoose Mine.

.3 Construction of the Temporary Storage Area(s) will not be included for payment under this section, but is to be provided as indicated in Section 01 52 00 – Construction Facilities.

.4 The supply of Hazardous Waste Containers for containerization of hazardous waste derived from Structure Demolition will not be included for payment under this section, but is to be provided as indicated in Section 02 81 01 - Hazardous Materials.

.5 Transport and disposal of containerized hazardous material deemed to require off-site disposal to the Contractors Designated Hazardous Waste Disposal Facilities will not be included for payment under this section, but is to be provided as indicated in Section 02 81 01 – Hazardous Materials.

.6 The following work items will be incidental to the work described in this Section, and will not be measured separately:
   .1 Collection and sorting of all debris, as required.
   .2 Cutting, crushing and placement of debris material in the landfills at Bullmoose and Ruth for disposal as specified in Section 31 22 15 – Grading.
   .3 Supply and placement of borrow material, as required by Departmental Representative, to back fill areas excavated to facilitate demolition requirements.
   .4 General site grading of areas disturbed by demolition operations as specified in Section 31 22 15 – Grading.
   .5 Labour, materials, and equipment required to remove existing buried or partially buried materials, including non-concrete building foundations/posts.
   .6 Labour, materials, and equipment required to remove burned/partially burned structural materials.

.7 Re-grading of concrete foundation pads will not be included for payment under this section, but will be paid for as indicated in Section 31 22 15 – Grading.

.8 Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis for Payment Schedule. Indicate the cost of this work as a separate line item in the cost breakdown specified in Section 01 32 18 – Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Polyethylene sheeting:
   .1 6 mil (0.15 mm) minimum thickness for leachable-lead paint particles.

.2 Hazardous Waste Material Containers: Containers for storage and transport of hazardous demolition waste to be as described in Section 02 81 01 – Hazardous Materials.

.3 Appropriate personal protective equipment for asbestos and leachable-lead paint abatement, in accordance with Sections 02 82 00.01/.02/.03 - Asbestos Abatement Minimum/Intermediate/Maximum Precautions, 02 83 10/11/12 – Lead-Based Paint Abatement Minimum/Intermediate/Maximum Precautions, and Section 02 84 00 – Polychlorinated Biphenyl Remediation.
.4 Appropriate materials and decontamination areas as described in Sections 02 82 00.01/.02/.03 - Asbestos Abatement Minimum/Intermediate/Maximum Precautions, 02 83 10/11/12 – Lead-Based Paint Abatement Minimum/Intermediate/Maximum Precautions, and Section 02 84 00 – Polychlorinated Biphenyl Remediation.

PART 3 - EXECUTION

3.1 PROTECTION

.1 Complete work in accordance with Section 01 35 43 – Environmental Procedures and all other applicable standards.

3.2 SAFETY AND PERSONNEL PROTECTION

.1 Unless otherwise specified, carry out demolition work in accordance with Section 01 11 00 – Summary of Work and Section 01 35 32 – Site Specific Health and Safety for Contaminated Sites.

.2 Some areas designated for demolition under this contract involve materials which contain leachable-lead amended paints, as well as other contaminants which are considered hazardous to human health.

.3 During the removal of leachable-lead amended paint materials, follow the Personnel Protection Requirements specified for the abatement/removal of these paints in Section 02 83 10/11/12 – Lead-Based Paint Abatement Minimum/Intermediate/Maximum Precautions.

.4 During the removal of ACMs, follow the Personnel Protection Requirements and decontamination requirements specified for the abatement/removal of asbestos in Sections 02 82 00.01/.02/.03 - Asbestos Abatement Minimum/Intermediate/Maximum Precautions.

.5 When working with leachable-lead painted materials, PCBs, asbestos, and other contaminants, workers are to wear protective clothing and equipment acceptable to Labour Canada or Territorial Labour Department as suitable for exposure in the work area. Follow National Institute for Occupational Safety and Health (NIOSH) guidelines in providing protection for on-site personnel including contract employees, subcontractors, Departmental Representatives, Departmental Representative’s staff, and other authorized personnel. Refer to Sections 02 82 00.01/.02/.03 - Asbestos Abatement Minimum/Intermediate/Maximum Precautions, 02 83 10/11/12 – Lead-Based Paint Abatement Minimum/Intermediate/Maximum Precautions, and Section 02 84 00 – Polychlorinated Biphenyl Remediation for details.

3.3 PREPARATION

.1 Temporary Erosion and Sedimentation Control:

.1 Provide temporary erosion and sedimentation control measures as needed to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent areas and waterways, according to: requirements of Authorities having jurisdiction.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during demolition.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal after completion of demolition work.

.2 Locate, disconnect and dig-up underground service lines entering and adjacent to buildings to be demolished.
.3 Disconnect and cap mechanical services.
   .1 Fuel supply lines: remove in accordance with Authority Having Jurisdiction as directed by the Departmental Representative.
   .2 Sewer and water lines: remove entirely in accordance with Authority Having Jurisdiction as directed by Departmental Representative.
   .3 Other underground services: remove and dispose of as directed by Departmental Representative.

.4 Septic Tanks:
   .1 Pump out buried septic tanks, leave in place. Fill with sand so it does not present a physical hazard.
   .2 Break 5 cm holes, one hole per 10 m² in the base of the septic tank to prevent the accumulation of water.
   .3 Removal in accordance with CCME, Code of Practice PN1055.

.5 Remove rodent and vermin as required by Departmental Representative.

3.4 REMOVAL OF HAZARDOUS MATERIALS

.1 Remove contaminated, hazardous or dangerous materials from the structures.

.2 Remove leachable-lead paint materials from structures:
   .1 Prior to dismantling structures, remove all paint from substrate and place in appropriate bags. The use of heat to remove paint is not permitted. Place bags of removed paint materials in the Hazardous Waste Containers specified in Section 02 81 01 - Hazardous Waste Material. Remove paint in accordance with Section 02 83 10/11/12 – Lead-Based Paint Abatement Minimum/Intermediate/Maximum Precautions.
   .2 During the structure dismantling operations, contain paint particles and dust by the use of polyethylene sheets or other measures to seal facilities. Use drop sheets, as required, to collect paint particles that become removed from surfaces during dismantling operations. Establish a control area around these activities to provide protection to personnel from airborne paint particles. Construct a control area to prevent the escape of paint chips. Follow required precautions and protective measures as described in Section 02 83 10/11/12 – Lead-Based Paint Abatement Minimum/Intermediate/Maximum Precautions.
   .3 The use of heat (e.g. cutting torches) to cut or dismantle facilities containing paint materials is not permitted unless the paint has been removed from the areas to be cut such that excessive heating of the remaining paint does not occur. Notify Departmental Representative prior to torching activities.
   .4 Following abatement, dispose of un-painted substrate materials in the on-site non-hazardous landfill at Ruth or Bullmoose mine sites in accordance with Section 02 83.10, 02 86 10.11, and 02 83 10.12 (Lead-Based Paint Abatement Minimum, Intermediate, and Maximum Precautions).

.3 Remove ACMs from structures, store and protect.
   .1 Follow appropriate work procedures in accordance with Sections 02 82 00.01, 02 82 00.02 and 02 82 00.03 (Asbestos Abatement – Minimum, Intermediate and Maximum Precautions).
   .3 Asbestos waste will be double bagged in approved 6 mil yellow asbestos disposal bags and sealed with duct tape. The bags must have a warning label stating that it contains asbestos waste. The exterior of the bags must be cleaned with a damp cloth or HEPA vacuum prior to removing from work area.
.4 Conduct the required inspections and air monitoring during and post abatement. Ensure asbestos removal, prior to any demolition being carried out.
.5 Dispose of the materials at the Contractor’s Designated Hazardous Waste Facility.

3.5 DEMOLITION

.1 Blasting operations are not permitted during demolition.

.2 Remove and collect all leachable-lead painted materials from structures prior to demolition. Containerize all paint in accordance with Section 02 81 01 – Hazardous Materials and Sections 02 83 10/11/12 – Lead-Based Paint Abatement Minimum/Intermediate/Maximum Precautions. Dispose of remaining substrate materials in the on-site non-hazardous landfills at either Bullmoose or Ruth mine sites.

.3 Where cutting is required, collect all cuttings and sawdust associated with demolition of structures in accordance with Section 02 81 01 – Hazardous Materials. Conduct cutting operations such that toxins from paint or other building materials are not released to the atmosphere.

.4 Remove existing equipment, services, and finishes from building. Remove any visible electrical cables and wiring.

.5 Remove the unpainted, non-hazardous wood materials, store and burn on-site.
   .1 Comply with all regulatory requirements, burning procedures and obtain Burn Permit, if required.
   .2 Provide supervision, attendance and fire protection measures in accordance with Section 01 35 32 – Site Specific Health and Safety Plan.
   .3 Conduct a controlled burn within an approved container, under appropriate emissions controls, ideally where there is little vegetation, and at a time of year when moisture conditions are higher and there is a low likelihood of causing a forest fire.
   .4 Provide an ash collection system capable of containing ash until it is sampled. A water-tight metal tray with sides of at least 300 millimetres high is acceptable. A tray from materials on-site is acceptable. Provide means to protect the ash from wind and water until it is sampled.
   .5 Fire suppression equipment will be readily available and air monitoring will be conducted in accordance with the applicable guidelines.
   .6 A leachate extraction test is to be carried out by Departmental Representative on the solid residual material resulting from the burning process. The leachate toxicity of the material will be determined in accordance with CEPA regulations. Residual materials found to be non-hazardous must be packaged and transported to the non-hazardous landfill at either Bullmoose or Ruth mine sites. Package leachate toxic material in accordance with CEPA regulations, as required, and dispose of as described in this Section and Section 02 81 01 – Hazardous Materials.
   .7 Conduct the burn in accordance with the applicable regulations.

.6 Remove the non-hazardous materials (as described in Drawings):
   .1 Conduct the separation of non-hazardous materials from buildings and removal from debris areas. If removal of non-hazardous materials may cause the disturbance of hazardous materials, appropriate PPE must be implemented.
   .2 Clean drums, tanks and piping and remove residual fluids/fuels according to Section 02 81 01 - Hazardous Materials.
   .3 Cut up the tanks; crush the metal materials and drums.
   .4 Dispose of materials following compaction in the non-hazardous landfills at either Bullmoose or Ruth mine sites.
   .7 Purge harmful and flammable vapours from fuel storage tank in accordance with applicable standards
prior to cutting tanks. Upon request, submit the lower explosive limit (LEL) results of volatile organic compound (VOC) testing to Departmental Representative.

.8 Cut structural steel in accordance with applicable standards. Remove lower structural framing and other heavy or large objects in a safe manner.

.9 Compact non-hazardous materials to minimize space required during transport and/or disposal at the on-site non-hazardous landfill at Bullmoose or Ruth mine sites.

.10 Vent non-ventilated gas cylinders associated with the structures in a remote and safe area acceptable to Departmental Representative. Dispose of vented gas cylinders in the on-site non-hazardous landfills at either Bullmoose or Ruth mine sites.

.11 Remove concrete foundations at each of the Sites and dispose of at the Bullmoose or Ruth landfills. For any concrete foundations designated by the Departmental Representative to be left in place, and where it does not pose a physical hazard and is on or above grade, the area will be re-graded with the placement of additional granular fill to match the surrounding topography in accordance with Section 31 22 15 – Grading. Structure foundations (not including concrete) are to be included in the demolition of all structures.

.12 At the end of each day's work, leave Work in safe and stable condition minimizing or controlling identified hazards.

.13 Demolish to minimize dusting. Keep materials wetted as directed by Departmental Representative.

.14 There is no special requirement for disposal of mould impacted building material (if encountered), as such, they can be disposed of in the on-site non-hazardous landfills at either Bullmoose or Ruth mine sites.

.15 Remove the liquid organic content, store and protect.

.1 Secure all organic content in drums, ASTs, tanks, and fuel lines. This can include, but is not limited to: tightening of all valves, unions, junctions, installation of secondary containment, or transferring of fluids into empty drums.

.2 Fuel suitable for heating fuel is available to the Contractor to be used on site. Laboratory analysis of tank contents and drums is provided in previous reports.

.3 Fuel not utilized by the Contractor or not suitable for heating is to be transferred into drums.

.4 Incineration on site following approved procedures for all liquid organic content that cannot be used on site or removed off site by authorized personnel.

.5 Conduct air quality monitoring while this process is occurring, for predetermined parameters according to Government of Northwest Territories Used Oil and Waste Fuel Regulations (2004) and other applicable guidelines.

.16 Remove the creosote treated wood located at Bullmoose mine site, store and protect.

.1 Conduct the separation of creosote treated wood from buildings and removal from debris areas.

.2 Wrap the wood securely in 6-mil polyethylene sheets.

.3 Haul materials to the Bullmoose non-hazardous landfill, compact and cover.

.17 Use natural lighting to do Work where possible.

.1 Shut off lighting except those required for security purposes at end of each day.

.18 At end of each day's work, leave work in safe condition so that no part is in danger of falling.
.19 Demolish, containerize and transport to the on-site Temporary Storage Area all non-hazardous building components, building contents, and tanks identified for demolition.

.20 Apply appropriate labelling and placards to the containers to be shipped off site in the Temporary Storage Area as required by TDGA.

3.6 STOCKPILING

.1 Establish a Temporary Storage Area(s) for the storage of containerized hazardous materials designated for off-site disposal generated during demolition operations on site as described in Section 02 81 01 – Hazardous Materials.

.2 Label stockpiles, indicating material type and quantity.
.3 Designate appropriate security resources/measures to prevent vandalism, damage and theft.

.4 Stockpile materials designated for off-site disposal in location which facilitates removal from site, and which does not impede hauling procedures.

.5 Stockpile materials in a neat and orderly fashion in the location and as directed by Departmental Representative for disposal at the non-hazardous landfills at Bullmoose or Ruth mine sites. Stockpile materials in accordance with applicable fire and safety regulations. Separate from general waste stream each of following materials:
  .1 Wood waste.
  .2 Other non-hazardous waste.
  .3 Creosote soaked wood.

.6 Supply separate, clearly marked areas for categories of waste material, crush as appropriate.

3.7 REMOVAL FROM SITES

.1 Remove stockpiled material as directed by Departmental Representative, when it interferes with operations of project construction.

.2 Remove stockpiles of non-hazardous materials once the landfill construction at Bullmoose and/or Ruth mine sites is completed.

.3 Remove stockpiles waste materials for off-site disposal option once packaging and collection of the materials is complete.

3.8 SITE GRADING AND RESTORATION

.1 Upon completion of demolition work, remove debris and leave work sites clean to a condition satisfactory to Departmental Representative.

.2 Grade building sites and restore all areas affected by demolition work in accordance with Section 31 22 15 - Grading.

.3 Reshape or backfill with in accordance with Section 31 22 15 – Grading, areas excavated to facilitate demolition requirements.

END OF SECTION
PART 1 - GENERAL

1.1 DESCRIPTION

.1 This Section specifies the requirements for the collection, dismantling, sorting, handling, transport, compaction, incineration and/or disposal of scattered debris throughout and adjacent to each of the Sites. An inventory of all non-hazardous and hazardous materials is provided as Appendix A to the specifications.

.2 The limits of known scattered debris and material amounts are provided in the Drawings. A summary of the debris areas is provided in the table below (by AEC/APEC where applicable).

<table>
<thead>
<tr>
<th>Site</th>
<th>Debris Areas</th>
<th>Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ruth</td>
<td>Area 1:&lt;br&gt; 1. Mill Building – yellow and orange/brown sand piles, battery, mercury amalgam barrel, drum east of former building&lt;br&gt; 5. Blacksmith/Assay Building- orange powder and soil, oxygen cylinder, white powder&lt;br&gt; 7. 3 batteries&lt;br&gt; 17. Hoist Room – battery&lt;br&gt; Dump 2&lt;br&gt; Dump 3&lt;br&gt; 9. Dump 6&lt;br&gt; Dump 7</td>
<td>RM3-1</td>
</tr>
<tr>
<td></td>
<td>Area 2:&lt;br&gt; Dump Site 1&lt;br&gt; Large Can Dump</td>
<td>RM3-2</td>
</tr>
<tr>
<td></td>
<td>Area 3:&lt;br&gt; 12. Old Camp Area - 5 dumps, 2 batteries, metal and battery debris</td>
<td>RM3-3</td>
</tr>
<tr>
<td></td>
<td>Area 4:&lt;br&gt; 13. Empty Drums</td>
<td>RM3-4</td>
</tr>
<tr>
<td>Bullmoose</td>
<td>Area 1:&lt;br&gt; 1.&amp;2. Misc. Debris Collected and Piled Southwest of Former Mill&lt;br&gt; 3. Former Tank Farm Metal Culvert&lt;br&gt; Mill Area – Old Gaskets&lt;br&gt; Former Tank Farm – Creosote Treated Wood</td>
<td>BM3-1</td>
</tr>
<tr>
<td></td>
<td>Area 2:&lt;br&gt; 5. Misc. Metal</td>
<td>BM3-2</td>
</tr>
<tr>
<td></td>
<td>Area 3:&lt;br&gt; 4. Fuel Storage Area South Metal Debris</td>
<td>BM3-3</td>
</tr>
<tr>
<td></td>
<td>Area 4:&lt;br&gt; 6. Former Maintenance Shop Scattered Debris&lt;br&gt; Old Camp Metal Debris and Wood</td>
<td>BM3-4</td>
</tr>
<tr>
<td></td>
<td>Area 5:&lt;br&gt; 24. New Camp Scattered Debris</td>
<td>BM3-5</td>
</tr>
<tr>
<td></td>
<td>Area 6:&lt;br&gt; 15. Airstrip Metal Debris (Drums)</td>
<td>BM3-6</td>
</tr>
</tbody>
</table>
### Beaulieu

**Area 1:**
- 1.,4B.,14.,&18. Concrete
- 5. Roofing Material
- 17.&21. Drums

**Area 2&3:**
- 22. Snow Cat
- 23. Wood Debris
- 23. Metal Debris

### Spectrum Lake

**2. Wood Debris**
- 2.,8.,16.,&29. Metal Debris
- 12.,20.,&21. Dumps
- 24. Skidoo & Plow
- 26. Compressor & Truck
- 27. Generator & Vehicle

### Chipp Lake

**3. Cabin - Wood, Metal, Plastic Debris & Roofing Material**
- 4.,&5. Dock - Wood, Metal, Plastic Debris
- 4.,&5. Drums
- 5. Textiles, Cement

### Storm Mine

**2.,3.4.&West of 4. Wood Debris**
- 2.,3.,&4. Metal Debris
- 2. Plastic Debris

### Joon Mine

**2A,2B,&2F Wood Debris**
- 1A,2A,2B2C,2F3A,3C,&3D Metal Debris
- 2A,&3B Drums

### Related Sections

1. **Section 01 32 18** – Construction Progress Schedules - Bar (GANTT) Chart.
2. **Section 01 33 00** - Submittal Procedures.
3. **Section 01 35 15** – Special Project Procedures for Contaminated Sites.
4. **Section 01 35 32** – Site Specific Health and Safety Plan.
5. **Section 01 35 43** – Environmental Procedures.
6. **Section 02 41 16** – Structure Demolition.
7. **Section 02 61 00.01** – Soil Remediation.
8. **Section 02 81 01** – Hazardous Materials
9. **Section 02 82 00.01** - Asbestos Abatement Minimum Precautions.
10. **Section 02 82 00.02** - Asbestos Abatement Intermediate Precautions.
11. **Section 02 82 00.03** - Asbestos Abatement Maximum Precautions.
12. **Section 02 83 10** – Lead-Based Paint Abatement Minimum Precautions.
.13 Section 02 83 11 - Lead-Based Paint Abatement Intermediate Precautions.

.14 Section 02 83 12 - Lead-Based Paint Abatement Maximum Precautions.

.15 Section 02 84 00 - Polychlorinated Biphenyl Remediation.

1.3 REFERENCES

.1 Canada Labour Code (R.S.C., 1985, c.L-2)

.2 Department of Justice Canada (Jus).
.2.1 Canadian Environmental Protection Act (CEPA), 1999 (S.C. 1999, c.33)
.2.1.1 Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2005-149).
.2.2 Federal Mobile PCB Treatment and Destruction Regulations (SOR/90-5).
.2.3 Interprovincial Movement of Hazardous Waste Regulations (SOR/2002-301).
.2.4 Marine Spark-Ignition Engine, Vessel and off-Road Recreational Vehicle Regulations (SOR/2011-10).
.2.5 Off-Road Compression-Ignition Engine Emission Regulations (SOR/2005-32).
.2.7 On-Road Vehicle and Engine Emission Regulations (SOR/2003-2).
.2.8 PCB Regulations (SOR/2008-273).
.2.9 PCB Waste Export Regulations (SOR/97-109).
.2.10 Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (SOR/2008-197).
.2.11 Ozone-Depleting Substances Regulations (SOR/99-7).

.2 Transportation of Dangerous Goods Act (TDGA), 1992 (SC 1992, c.34)
.2.1 Transportation of Dangerous Goods Regulations (SOR/2001-286).

.3 Hazardous Products Act (R.S.C., 1985, c. H-3)
.3.1 Controlled Products Regulations (SOR/88-66).
.3.2 Workplace Hazardous Materials Information System.

.3 Canadian Standards Association
.3.1 CSA Standard Z94.4-93 (R1997) – Selection, Use and Care of Respirators.

.4 Underwriters’ Laboratories of Canada (ULC).
.4.2 ULC-S660-08, Standard for Non-metallic Underground Piping for Flammable and Combustible Liquids.

.5 National Institute for Occupational Health and Safety (NIOSH)
.5.1 Occupational Safety and Health Guidance Manual for Hazardous Materials Site Activities: NIOSH Publications No. 85 115

.6 Department of Environment and Natural Resources, Government of the Northwest Territories
.6.3 Guideline for Ozone Depleting Substances and Halocarbon Alternatives (2007).
1.4 DEFINITIONS

1. Known debris: Scattered or accumulated visible debris on existing ground surface, including open storage areas, partially buried debris within 0.5 metres of the existing ground, or debris located within the upper 1 m of water and consisting of hazardous and/or non-hazardous material, and that:
   .1 has been identified on the Drawings as debris to be removed; or
   .2 is located approx. within 50 metres of any access road or water course on the site.
   .3 is located within a water body, within 10 m of the shoreline.

2. Unknown debris: Scattered debris on the existing ground surface, partially buried debris and/or debris that may be exposed during site remediation consisting of hazardous and/or non-hazardous material other than the Known Debris described above.

3. Hazardous materials: Items or debris no longer used for their original purpose; now hazardous and intended for recycling, treatment or disposal. Also material that is designated as “hazardous” under Territorial or Federal Legislation; or as a “dangerous good” under the TDGA. This may include dangerous substances, dangerous goods, hazardous commodities and hazardous products, include but not limited to poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or materials that endanger human health or environment if handled improperly including but not limited to lead, PCBs, asbestos, and batteries.

4. Untreated wooden debris: Wooden debris that is not painted or chemically treated in any way and is suitable for on-site burning/incineration. Unpainted pressboard or plywood would be considered untreated wooden debris.

5. Non-hazardous materials: Materials that are not designated as hazardous under Territorial or Federal
Legislation and can be disposed of in the non-hazardous landfills located at Bullmoose or Ruth mine sites. Material and which do not meet the definition of hazardous materials as defined in Section 02 81 01 – Hazardous Materials.

.6 Physical hazard: Poses a slip, trip or fall risk to personnel and wildlife, risk to damage any vehicle (for example ATV, snowmobile, etc.).

.7 Hazardous Materials Specialist: Contractor representative responsible for supervising all hazardous waste activities as well as coordinating required submittal and reporting requirements.

1.5 MEASUREMENT FOR PAYMENT

.1 Include all direct costs by Site for the collection, sorting, stockpiling, dismantling or size reduction, on-site transport of known debris and miscellaneous removals in the lump sum prices for: Item 02 41 23-1-1 Debris and Miscellaneous Removals: Ruth; Item 02 41 23-1-2 Debris and Miscellaneous Removals: Bullmoose; Item 02 41 23-1-3 Debris and Miscellaneous Removals: Beaulieu; Item 02 41 23-1-4 Debris and Miscellaneous Removals: Spectrum; Item 02 41 23-1-5 Debris and Miscellaneous Removals: Chip; Item 02 41 23-1-6 Debris and Miscellaneous Removals: Storm; and Item 02 41 23-1-7 Debris and Miscellaneous Removals: Joon, in the Basis of Payment Schedule.

.2 An inventory of the known debris and miscellaneous materials at each site is provided as Appendix A to the specifications and are provided in tables on the Drawings.

.3 The scope of work for payment Items 02 41 23-1-1 to 02 42 32-1-7 in the Basis of Payment Schedule is to include, but is not limited to:

.1 Collection, sorting, dismantling, stockpiling, temporary storage, and on-site transportation of all known hazardous and non-hazardous debris from each Site as per the regulations listed in this Specification or other related Sections.

.2 Off-site transportation and disposal of the non-hazardous debris to the non-hazardous landfills at either Bullmoose or Ruth mine sites, as specified in other related Sections.

.3 Landfilling and incinerating all known non-hazardous debris as appropriate.

.4 Incineration of untreated wood is to include, but not limited to:

.1 Obtain necessary burn permits required from Authority Having Jurisdiction.

.2 Collection, sorting and on-site transport of all untreated wood to the burning location at each site.

.3 Provide an ash collection system which is capable of containing ash until it is sampled. A water-tight metal tray with sides of at least 300 mm high is acceptable. A tray salvaged from materials on-site is acceptable. Provide means to protect the ash from wind and water until it is sampled.

.5 All costs for the removal, processing, and disposal of liquids from within known waste vessels, including drums, to be disposed of are not included for payment under this Section, but under Section 02 81 01 Hazardous Materials.

.6 Abatement of leachable-lead painted debris materials. Painted sections to be separated from non-painted sections where feasible. Transport of non-painted sections to the non-hazardous landfill at the non-hazardous landfills located at either Bullmoose or Ruth mine sites. Leachable-lead painted sections to be transported to staging area to be cleaned and crushed prior to transport off-site for disposal as the designated disposal facility.

.7 Abatement of ACM containing materials. Transport of remaining substrate to the non-hazardous landfill at the non-hazardous landfills located at either Bullmoose or Ruth mine sites.

.8 The collection and disposal of vehicles and other machinery will not be measured separately. Payment will be included under Items 02 41 23 –1-1 to 02 42 32-1-7, as indicated in the Basis
of Payment Schedule.

.9 The packaging/containerization of all hazardous waste collected or derived from Debris and Miscellaneous Removals will not be measured separately. Payment will be included under Items 02 41 23-1-1 to 02 42 32-1-7, as indicated in the Basis of Payment Schedule. Specification of containerization requirements are included as part of Section 02 81 01 – Hazardous Materials.

.10 The supply of Hazardous Waste Containers for containerization of hazardous waste for off-site disposal derived from Debris Removal will not be included for payment under this Section, but is to be provided as indicated in 02 81 01 – Hazardous Materials.

.11 The placement of items identified for preservation by the Heritage Society off to one side out of the path of remediation activities, as directed by the Departmental Representative.

.4 The off-site transport and disposal of all hazardous materials to the Contractor’s Designated Hazardous Waste Disposal Facility from Debris and Miscellaneous Removals will not be included for payment under this Section, but is to be provided as indicated in Section 02 81 01 – Hazardous Materials.

.5 Collection, transport and off-site disposal of liquids from within vehicles or other machinery will be included as part of Section 02 81 01 – Hazardous Materials.

.6 Placement and regarding of granular fill material in areas where Debris and Miscellaneous Removals have occurred will not be included for payment under this Section, but will be paid as indicated in Section 31 22 15 – Grading.

.7 The following work items will be incidental to the work described in this Section, and will not be measured separately:

.1 Collection and sorting, as required of all debris.
.2 Cutting, crushing and placement of non-hazardous debris into the Temporary Storage Area(s), before transport to the non-hazardous landfills at Bullmoose or Ruth mine sites for disposal.
.3 Reshaping or regrading areas associated with the removal of debris as specified in Section 31 22 15 – Grading.
.4 Labour, materials and equipment required to remove existing buried or partially buried materials, or visible foreign materials along the shoreline or in the waterbodies adjacent to the sites, as shown on the Drawings.

.8 All costs for the collection and disposal of unknown non-hazardous surface debris will not be considered for payment under Section 02 41 23-1, but will be negotiated with Departmental Representative.

.9 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 - Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Hazardous Waste Containers for hazardous materials to be in accordance with Section 02 81 01 – Hazardous Materials.

.2 Appropriate personal protective equipment for hazardous materials in accordance with other related Sections.
.3 Appropriate materials and decontamination areas as described in Sections 02 82 00.01/.02/.03 - Asbestos Abatement Minimum/Intermediate/Maximum Precautions.

PART 3 - EXECUTION

3.1 PROTECTION PROCEDURES

.1 When excavating in the vicinity of a drainage course or a body of water, erect silt fences and/or floating silt curtains to prevent the release of sediment or deleterious materials into the water.

.2 Environmental protection measures, including containment of ash from burning of untreated wood, are to be in accordance with the requirements specified in Section 01 35 43 - Environmental Procedures.

.3 Remove oil, antifreeze, fuel and brake fluid from vehicles and equipment to be shipped and disposed of off-site in accordance with the applicable regulations and guidelines.

.4 Conduct removal of debris known to contain hazardous materials in accordance with Sections 02 82 00.01/.02/.03 - Asbestos Abatement Minimum/Intermediate/Maximum Precautions, 02 83 10/11/12 – Lead-Based Paint Abatement Minimum/Intermediate/Maximum Precautions, and Section 02 84 00 – Polychlorinated Biphenyl Remediation for details.

.5 Conduct drum processing and disposal activities in accordance with Section 02 81 01 – Hazardous Materials.

3.2 REMOVAL AND SORTING

.1 Examine the site in order to assess the material type and nature of the debris.

.2 Remove concrete pads in place on the site, as defined in Section 02 41 16 – Structure Demolition. Leave concrete pads in place if directed by the Department Representative, and where they do not pose a physical hazard.

.3 Contractor’s Hazardous Materials Specialist to continually monitor the operation to identify potentially hazardous materials.

.4 Immediately suspend the operation if suspected hazardous material or debris is encountered and report to the Departmental Representative.

.5 Remove, segregate, store and haul non-hazardous materials and hazardous materials that are not being shipped off-site, to the non-hazardous landfills at Bullmoose or Ruth mine sites as described in Section 02 41 16 – Structure Demolition.

.6 Completely remove partially buried debris unless otherwise indicated by Departmental Representative.

.7 Store all suspicious material in a secured area and in secured containers, if the nature of the material or debris cannot be confirmed, notify Departmental Representative about the findings. Testing for classification of hazardous products will be carried out and paid for by Departmental Representative.

.8 Vent compressed gas cylinders until empty and dispose of in the non-hazardous landfills at either Bullmoose or Ruth mine sites.

.9 Place items identified for preservation by the Heritage Society off to one side out of the path of
remediation activities, as directed by the Departmental Representative.

.10 Clean all empty drums and those drums full of aqueous liquid waste, in accordance with the requirements of Section 02 81 01 - Hazardous Materials. Crush the clean, empty drums without leachable lead paint in a manner to reduce the total original drum volume by a minimum of 75 percent prior to disposal at the non-hazardous landfill at Bullmoose or Ruth mine sites. Crush the clean, empty drums with leachable lead paint in accordance with the requirements of Section 02 81 01 – Hazardous Materials.

.11 Advise Departmental Representative of any stained soils encountered during debris removal operations. If authorized by Departmental Representative, excavate stained and contaminated soil areas identified during debris removal operations, in accordance with the requirements of Section 02 61 00.01 – Soil Remediation. Testing for classification and confirmatory testing will be carried out and paid for by Departmental Representative.

3.3 ON-SITE BURNING OF UNTREATED WOODEN DEBRIS

.1 Remove the unpainted, non-hazardous wood materials, store and burn on-site.
   .1 Comply with all regulatory requirements, burning procedures and obtain Burn Permit, if required.
   .2 Provide supervision, attendance and fire protection measures in accordance with Section 01 35 32 – Site Specific Health and Safety Plan.
   .3 Conduct a controlled burn within an approved container, under appropriate emissions controls, ideally where there is little vegetation, and at a time of year when moisture conditions are higher and there is a low likelihood of causing a forest fire.
   .4 Provide an ash collection system capable of containing ash until it is sampled. A water-tight metal tray with sides of at least 300 millimetres high is acceptable. A tray from materials on-site is acceptable. Provide means to protect the ash from wind and water until it is sampled.
   .5 Fire suppression equipment will be readily available and air monitoring will be conducted in accordance to the applicable guidelines.
   .6 A leachate extraction test is to be carried out by Departmental Representative on the solid residual material resulting from the burning process. The leachate toxicity of the material will be determined in accordance with CEPA regulations. Residual materials found to be non-hazardous must be packaged and transported to the non-hazardous Landfill at either Bullmoose or Ruth mine sites. Package leachate toxic material in accordance with CEPA regulations, as required, and dispose of as described in this Section and Section 02 81 01 – Hazardous Materials.
   .7 Conduct the burn in accordance with the applicable regulations.

3.4 OFF-SITE DISPOSAL FACILITIES

.1 Provide off-site transport of containerized hazardous debris to Contractor’s Designated Hazardous Waste Disposal Facility as per the requirements of Section 02 81 01 - Hazardous Materials.

END OF SECTION
PART 1 - GENERAL

1.1 DESCRIPTION

.1 This Section specifies the requirements for the supply and installation of:
   .1 Monitoring wells at the Bullmoose and Ruth Landfills (3 wells at each landfill).
   .2 Monitoring wells at the Bullmoose Landfarm (3 wells).
   .3 Survey control monuments as required.
   .4 Self-powered, weather, water flow and level logging station at the Bullmoose Creek Portal Area.

.2 All instrumentation is to be installed under the supervision of the Departmental Representative.

.3 Complete the installation of the survey control monuments prior to the start of construction activities.

.4 Complete the installation of the monitoring wells at the Landfills and Landfarm prior to placement of any waste/soil in the facilities.

.5 Complete the installation of the logging station at the Bullmoose Creek Portal Area as per the Contractor's approved Project Schedule.

1.2 MEASUREMENT FOR PAYMENT

.1 Include all costs as a cost per metre of well installed for the drilling of boreholes and permanent survey control, in Item 02 51 00-1 Monitoring Well Drilling in the Basis of Payment Schedule. Cost to include but is not limited to:
   .1 Transport to site equipment required to complete the work.
   .2 All drilling supplies and temporary borehole casings.

.2 Include all costs as a cost per well for the supply and installation of monitoring wells in Item 02 51 00-2 Monitoring Well Installation in the Basis of Payment Schedule. Cost to include, but is not limited to:
   .1 Well supplies, bentonite, permanent well casings, barricades and all other supplies required for 9 functional water wells.

.3 Include all costs for the supply and installation of logging station, including all accessories, as a lump sum in Item 02 51 00-3 Logging Station Installation in the Basis of Payment Schedule. Cost to include, but is not limited to:
   .1 Logger, cables, and software required for functional logging station.

.4 Include all costs for the supply and installation of permanent survey control monuments, including all accessories, in Item 02 51 00-4 Survey Control Installation in the Basis of Payment Schedule. Include all costs as costs per number of complete installation as specified herein.

.5 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 - Construction Progress Schedules – Bar (GANTT) Chart.
PART 2 - PRODUCTS

2.1 DRILLING EQUIPMENT

.1 Equipment capable of accessing required locations for installation.

.2 Equipment capable of drilling 125 mm diameter holes.

.3 Equipment capable of drilling into frozen and unfrozen soils, including through coarse fragments, ice and saturated soils.

2.2 MONITORING WELLS

.1 50 mm, nominal diameter, Schedule 10 #304 stainless steel pipe with watertight end caps (top and bottom).

.2 50 mm (nominal diameter), Schedule 10 #304 stainless steel screen, 1.0 m maximum section length with flush threads both ends. Screen slot size to be 0.5 mm.

.3 All pipe and screen to remain in protection wrapping until installation.

.4 Filter sock, complete with stainless steel band clamps as cover over monitoring well screen.

2.3 MONITORING WELL PROTECTIVE CASING

.1 150 mm diameter galvanized, Schedule 40 steel pipe, threaded as required,

.2 Threaded, locking steel cap for monitoring wells.

.3 Keyed padlock to be provided by Departmental Representative.

2.4 FILTER SAND

.1 Inert and free of organic material.

.2 #20 - #40 sand.

2.5 BENTONITE SEAL

.1 Bentonite product certified as polymer, granular, and organic free.

2.6 GROUT

.1 Pre-blended, cementitious, ready to use, pile and rock bolt grout, suitable for placement into substrates to -10 °C.

2.7 PAINT

.1 Fluorescent orange that is suitable for environment and substrate.

2.8 SURVEY CONTROLS

.1 25 mm (nominal diameter), steel pipe, threaded or welded as required.
.2 The steel pipe shall have a flange welded to base. Flange size should be not less than the hole diameter less 50 mm.

.3 Grease to be an acceptable “food grade” product.

2.9 DATA LOGGERS

.1 Departmental Representative to provide data loggers and instrumentation for the Bullmoose Creek and Wetland areas.

PART 3 - EXECUTION

3.1 INSTALLATION OF MONITORING WELLS

.1 Provide the Departmental Representative a minimum of 10 days notice prior to the drilling program to all scheduling of inspection services. The Departmental Representative will be in attendance for the duration of the drilling program.

.2 Layout monitoring wells at locations as indicated on Drawings and confirm the final drilling locations with the Departmental Representatives prior to drilling.

.3 Install monitoring well at locations and to the depths as indicated on the Drawings or as directed by Departmental Representative.

.4 Use a suitable drill rig to drill 125 mm diameter holes for the monitoring well.

.5 Make available on site, temporary hole casing material and install as required to prevent sloughing of drill hole.

.6 Grout the pipe in place at the depth indicated using grout according to manufacturer’s recommendations. Place grout in hole so as not to contaminate the upper portion of the hole, or the slotted section of the pipe.

.7 Record the depth of the top of the grout.

.8 Backfill remainder of the hole with clean filter sand to a depth of 150 mm above the screen portion of the pipe. Gradually remove hole casing material during backfilling operations.

.9 Place granular bentonite around the pipe to fill the annulus from ground surface to a depth of 150 mm. Mound ground surface material to a height of approximately 150 mm around the perimeter of the well to promote hydration of the bentonite pellets.

.10 Measure stick up of pipe from ground surface.

.11 Place protective casing and lockable cap over pipe. Paint metal casing, cap and marker posts (if required) with fluorescent orange paint.

.12 Survey location and top of casing elevation of all monitoring wells.

3.2 INSTALLATION OF PERMANENT SURVEY CONTROL MONUMENTS

.1 Install one permanent survey control monument per mine site at locations directed by the Departmental Representative, to a minimum depth of 5 metres.
.2 If bedrock is encountered, depth may be reduced at the discretion of the Departmental Representative, to maintain 2 metres embedment.

.3 Make available on site hole casing material. Install hole casing in the drill hole as required to prevent sloughing.

.4 Apply “food-grade” grease to the 25 mm steel pipe before installation.

.5 Grout the control monument in the hole for the lower 2 m only. Use Sika Grout Arctic 100 or Set-45 Grout according to the manufacturers recommendations. Grout must be suitable for placement into substrates to -10 ºC. Fill the remaining void with sand.

.6 Control monument must be flush with ground surface upon completion. Ensure positive drainage away from survey monument.

.7 Following set-up of the grout, tie-in survey control monuments to the site survey coordinate system. Survey horizontal accuracy to 0.1 cm and vertical accuracy to 1 cm. Mark with a drill hole or punch the top of the 25 mm steel pipe. Provide coordinates and elevation data at this mark to the Departmental Representative for each monument installed.

.8 Construct visible markers around the survey control monuments to prevent damage and facilitate identification. Immediately replace or repair, at contractors cost, any monuments damaged by the Contractor.

3.3 INSTALLATION OF DATA LOGGER

.1 Contractor to assist the Departmental Representative with the installation of instrumentation at the Bullmoose Creek and Wetland as required.

3.4 PROTECTION OF MONITORING WELLS

.1 Provide clearly visible barricades to protect the monitoring wells. Immediately replace, at contractors cost, any barricades or wells damaged by the Contractor.

.2 Provide access to the monitoring wells, and facilitate sampling by the Departmental Representative.

END OF SECTION
PART 1 - GENERAL

1.1 DESCRIPTION

.1 This Section specifies the requirements for the excavation, transport and disposal of contaminated soil, sediments and/or tailings at the sites; including:
   .1 Petroleum hydrocarbon contaminated soil.
   .2 Metal contaminated soil, sediment and tailings.
   .3 Co-mingled hydrocarbon and metal contaminated soil, sediment and tailings.

1.2 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures.
.2 Section 01 35 15 – Special Project Procedures for Contaminated Sites.
.3 Section 01 35 32 – Site Specific Health and Safety Plan.
.4 Section 01 35 43 – Environmental Procedures.
.5 Section 01 78 00 – Closeout Submittals.
.6 Section 02 61 00 – Soil Remediation.
.7 Section 31 05 16 – Aggregate Materials.
.8 Section 31 23 33.01 – Excavating, Trenching, and Backfilling.
.9 Section 31 22 15- Grading.

1.3 DEFINITIONS

.1 Petroleum hydrocarbon contaminated soil is defined as soil, tailings and/or sediment exceeding the Site Specific Criteria for petroleum hydrocarbons. Refer to the Site Specific Criteria provided in the Remedial Action Plan (Stantec, 2015).

.2 Metals contaminated soil is defined as soil, tailings and/or sediment exceeding the Site Specific Criteria for metals. Refer to the Site Specific Criteria provided in the Remedial Action Plan (Stantec, 2014).

.3 Co-mingled hydrocarbon and metal contaminated soil is defined as soil, tailings and/or sediment exceeding the Site Specific Criteria for both petroleum hydrocarbons and metals. Refer to the Site Specific Criteria provided in the Remedial Action Plan (Stantec, 2014).

.4 Clean Soil: Soil that has been sampled, analyzed and determined to have contaminant concentrations below the CCME guidelines or the site specific remedial targets outlined in the Remedial Action Plan (Stantec, 2014).

.5 Petroleum Hydrocarbons (PHCs): Hydrocarbon products described by laboratory analysis as lubricating oil and grease, fuel oil, diesel and/or gasoline.

.6 PHC Fractions F1 to F4: Breakdown of PHCs into four fractions on the basis of number of carbon
atoms, as defined in the Canada-Wide Standards for PHCs in Soil (Updated 2008).

.7 Free Product: The presence of a layer of separated phase liquid PHC product.

.8 Hazardous Contaminated Soil Containers: A container, of the appropriate type and size necessary to contain the Hazardous Material placed in it, as required by the TDGA.

.9 Site Specific Target Levels: Remedial targets outlined in the Remedial Action Plan (Stantec, 2014).

1.4 REFERENCES

.1 Applicable environmental and health and safety laws and regulations for the Northwest Territories and Canada.


.4 Department of Justice (Jus)
   .1 Transportation of Dangerous Goods Act (TDGA), 1992 (SC1992, c.34)
   .1 Transportation of Dangerous Goods Regulations (SOR/2001-286).

.5 Stantec Consulting Ltd. Bullmoose Area Mine Sites NWT, Updated Remedial Action Plan. 2014.

.6 Guideline for Industrial Waste Discharges in the NWT (GIWD), April, 2004


.8 Canadian Standards Association (CSA).
   .1 Signs and Symbols for the Workplace [CAN-Z321-96 (R2006)].

.9 National Institute for Occupational Safety and Health (NIOSH).


1.5 QUALIFICATIONS

.1 Be thoroughly familiar with and knowledgeable about existing site conditions, scope of work and requirements of the Specification.

.2 Only Contractor’s personnel capable of demonstrating a history of satisfactory experience in the area of hazardous waste management and who can satisfy Federal and Territorial requirements will be
permitted to carry out the work of this Section. Contractor’s Superintendent responsible for the work of this Section is to have appropriate level of experience in the area of hazardous waste management.


.4 All activities involving the handling of hazardous materials, including Hazardous Contaminated Soil, are to be directly supervised by Contractor's personnel who have successfully completed a 40 hour training course for Hazardous Waste Activities in compliance with OSHA 29 CFR 1910.120 or other accepted equivalent training courses such as the Canadian Hazardous Waste Workers Program.

.5 Contractor's personnel trained as described in this Section are to instruct and direct all workers with respect to the waste management procedures and labour and safety practices to be followed in carrying out the work.

.6 Provide workers, Department Representative and Department Representative’s staff when required with protection appropriate to the potential type and level of exposure. Establish specific safety protocols in the Site Specific Health and Safety Plan.

.7 Provide suitable safety clothing and equipment as required during the course of the work.

.8 Trained and certified personnel are required to complete all Transportation of Dangerous Goods Act (TDGA) and Interprovincial Movement of Hazardous Waste Regulation (IMHWR) documentation and recording requirements.

1.6 SITE CONDITIONS

.1 Suspend operations whenever climatic conditions are unsatisfactory for excavating or backfilling to conform with this Specification.

.2 After occurrence of heavy rains, do not operate equipment in designated areas until the material has dried sufficiently to prevent excessive rutting.

.3 The Contractor is advised that the ground in low-lying areas is often saturated. Dewater saturated ground and ponded areas as required, complying with this Section.

.4 Prior to commencing excavation work, remove debris, snow, ice and standing water from areas to be excavated and backfilled.

.5 During excavation of contaminated soil, maintain a stable excavation and dewater as required or as directed by the Department Representative.

1.7 ENVIRONMENTAL PROTECTION

.1 Environmental protection measures are to be in accordance with the requirements specified in Section 01 35 43 - Environmental Procedures.

.2 Protect natural and man-made features required to remain undisturbed including but not limited to benchmarks, existing buildings, surface and underground service and utility lines not designated for demolition, and instrumentation excavations.
.3 The release of all water resulting from the dewatering of ponded contaminated soil areas and the
decontamination of equipment is to conform to the Wastewater Discharge Criteria outlined in Section
01 35 43 - Environmental Procedures and Section 01 35 15 - Special Project Procedures for
Contaminated Sites.

1.8 PERSONNEL PROTECTION

.1 Some areas designated for cleanup under this contract involve soils and hazardous materials which
contain PCBs, inorganic elements, PHCs, and other contaminants which are considered hazardous
to human health.

.2 Materials containing polychlorinated biphenyls (PCBs) at concentrations equal to or in excess of 50
ppm are considered to be hazardous substances. Storage, handling and disposal of PCBs are
regulated under the Canadian Environmental Protection Act and the Federal Transportation of
Dangerous Goods Act. Comply with all applicable regulations.

.3 When working with inorganic elements, PCB containing materials, PHCs, and other contaminants,
workers are to wear protective clothing and equipment acceptable to Labour Canada or Territorial
Labour Department as suitable for exposure in the work area. Follow National Institute for
Occupational Safety and Health (NIOSH) guidelines in providing protection for on-site personnel
including contract employees and Subcontractors, Department Representative and other authorized
site personnel. Provide details of protective clothing and equipment required for each work area in
the Site Specific Health and Safety Plan as required by Section 01 35 32 – Site Specific Health and
Safety Plan.

.4 Supply sufficient quantities of designated protection equipment to fit all site personnel including
Department Representative and authorized visitors. Educate workers as to risks, and train in safe
work practices.

1.9 WASTE MANAGEMENT AND DISPOSAL

.1 Divert wastes as indicated in Drawings as per the tables provided below (by AEC/APEC number
where applicable):

<table>
<thead>
<tr>
<th>Site</th>
<th>Location</th>
<th>Volume</th>
<th>Disposal Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bullmoose</td>
<td>Area 1: 1.,2.,3.</td>
<td>1674 m³</td>
<td>Bullmoose PHC Landfarm</td>
</tr>
<tr>
<td></td>
<td>Area 2: 5.,18.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Area 3: 4.,11.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Area 4: 6.,7.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Area 5: 9.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beaulieu</td>
<td>Area 1: 2A.,4A.,10.</td>
<td>55 m³</td>
<td></td>
</tr>
<tr>
<td>Spectrum</td>
<td>10.</td>
<td>1 m³</td>
<td></td>
</tr>
<tr>
<td>Joon</td>
<td>Area 1: 3B.</td>
<td>1 m³</td>
<td></td>
</tr>
</tbody>
</table>
.2 Metal Contaminated Tailings and Sediment

<table>
<thead>
<tr>
<th>Site</th>
<th>Location</th>
<th>Volume</th>
<th>Disposal Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sediment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bullmoose</td>
<td>Area 5: 9. (Sewage Lagoon)</td>
<td>500 m³</td>
<td>Bullmoose Landfill</td>
</tr>
<tr>
<td>Tailings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bullmoose</td>
<td>Area 7: Beta Lake Impoundment</td>
<td>1,271 m³</td>
<td>Bullmoose Landfill</td>
</tr>
<tr>
<td>Beaulieu</td>
<td>5.</td>
<td>2,262 m³</td>
<td>Ruth Landfill</td>
</tr>
<tr>
<td>Spectrum</td>
<td>1.</td>
<td>1,388 m³</td>
<td>Bullmoose Landfill</td>
</tr>
</tbody>
</table>

.3 Co-mingled Hydrocarbon and Metal Contaminated Soil, Sediment and Tailings

<table>
<thead>
<tr>
<th>Site &amp; Tailings</th>
<th>Location</th>
<th>Volume</th>
<th>Disposal Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil &amp; Tailings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ruth</td>
<td>Areas 1, 2 &amp; 5: 1.-9., 17., 20.-22., &amp; 25.</td>
<td>7,664 m³</td>
<td>Ruth Landfill</td>
</tr>
<tr>
<td>Bullmoose</td>
<td>Area 2: 5. Area 4: 7., 8. &amp; 14.</td>
<td>935 m³</td>
<td>Bullmoose Landfill</td>
</tr>
<tr>
<td>Beaulieu</td>
<td>Various</td>
<td>373 m³</td>
<td>Ruth Landfill</td>
</tr>
<tr>
<td>Spectrum</td>
<td>Various</td>
<td>48 m³</td>
<td>Bullmoose Landfill</td>
</tr>
<tr>
<td>Joon</td>
<td>Various</td>
<td>20 m³</td>
<td>Ruth Landfill</td>
</tr>
<tr>
<td>Sediment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bullmoose</td>
<td>Bullmoose Creek</td>
<td>63 m³</td>
<td>Bullmoose Landfill</td>
</tr>
</tbody>
</table>

.4 Disposal within the Bullmoose or Ruth non-hazardous waste landfills requires conformance with Schedules III and IV of the GIWD (confirmation that material leachate quality test results meet guidelines).

1.10 EXISTING CONDITIONS

.1 Review the Remedial Action Plan documents prepared, summarizing the extent of contaminated soil.

.2 Existing buildings and surface features:

.1 Conduct, with Departmental Representative, condition survey of the natural ecosystem which may be affected by the Work.

.2 As much as possible, protect the natural ecosystem from damage while Work is in progress. In event of damage, immediately make repair as directed by Departmental Representative.

1.11 SUBMITTALS
.1None

1.12 MEASUREMENT OF PAYMENT

.1 The excavation of PHC Contaminated Soil from site areas will be measured for payment by site by the cubic metre of contaminated soil as determined from survey method identified in Section 31 22 13 - Grading. Remediation of PHC Contaminated Soil will be paid under Item 02 55 13-1: Bullmoose; Item 02 55 13-1-2: Beaulieu; Item 02 55 13-1-3: Spectrum; and Item 02 55 13-1-4: Joon, in the Basis of Payment Schedule. The scope of work includes:
   .1 Excavation of PHC Contaminated Soil as indicated on the Drawings.
   .2 Removal, sorting, segregation, transport and disposal of all non-hazardous debris from excavated soils to the non-hazardous waste landfills at the Bullmoose or Ruth mine sites. Payment for segregated non-hazardous material is to be included in Section 02 41 23 – Debris and Miscellaneous Removals, and payment for segregated hazardous materials is to be included in Section 02 61 33 – Hazardous Materials.
   .3 Handling and transport of PHC Contaminated Soil to the Landfarm at the Bullmoose mine site and placement within the landfarm in accordance with Section 31 22 13 – Grading and Section 02 61 00.01 – Soil Remediation.
   .4 Optional screening-out of rocks as material not requiring remediation (applies to material of cobble size [64mm] or larger) – this fraction will not be deducted from the volume of material measured for payment.
   .5 The supply, placement and compaction of granular fill to replace the excavated PHC contaminated soil to original grade, and re-shaping of the area.

.2 The excavation of metal contaminated soil, tailings and sediment from areas at Ruth, Bullmoose, Beaulieu and Spectrum mine sites will be measured for payment by site by the cubic metre of excavated metal contaminated soil, tailings and sediment as determined from survey method identified in Section 31 22 13 - Grading. Remediation of metal contaminated soil, tailings and sediment will be paid under: Item 02 55 13-2-1: Bullmoose; Item 02 55 13-2-2: Beaulieu; and Item 02 55 13-2-3: Spectrum, in the Basis of Payment Schedule. The scope of work includes:
   .1 Excavation of metal contaminated soil, tailings and sediment from all site areas as indicated on the drawings.
   .2 Removal, sorting, segregation and transport of all debris from excavated areas (if needed). Disposal of non-hazardous debris in non-hazardous landfills at either Bullmoose or Ruth mine sites is included in this Section. Payment for segregated non-hazardous material is to be included in Section 02 41 23 – Debris and Miscellaneous Removals, and payment for segregated hazardous materials is to be included in Section 02 61 33 – Hazardous Materials.
   .3 Optional screening-out of rocks as material not requiring remediation (applies to material of cobble size [64mm] or larger) – this fraction will not be deducted from the volume of material measured for payment.
   .4 Handling and transport of metal contaminated soil, tailings and sediment to the Ruth or Bullmoose non-hazardous landfills.
   .5 The supply, placement and compaction of granular fill to replace the excavated contaminated soil to original grade and re-shaping of the area, in those cases where excavation requires removal of material to below the pre-tailings original grade – to be determined in concert with the Departmental Representative.

.3 The excavation of co-mingled hydrocarbon and metal impacted soil, sediment and tailings from site areas will be measured for payment by site by the cubic metre of contaminated soil as determined from survey method identified in Section 31 22 15 - Grading. Remediation of co-mingled hydrocarbon
and metal impacted soil, sediment and tailings excavation will be paid under: Item 02 55 13-3-1: Ruth; Item 02 55 13-3-2: Bullmoose; Item 02 55 13-3-3: Beaulieu; Item 02 55 13-3-4: Spectrum; Item 02 55 13-3-5: Joon; and Item 02 55 13-3-6: Bullmoose Creek Sediment, in the Basis of Payment Schedule. The scope of work includes:

.1 Excavation of co-mingled hydrocarbon and metal impacted soil, sediment and tailings as indicated on the Drawings.

.2 Removal, sorting, segregation and transport of all debris from excavated soil. Disposal of non-hazardous debris in non-hazardous landfills at either Bullmoose or Ruth mine sites is included in this Section. Payment for segregated non-hazardous material is to be included in Section 02 41 23 – Debris and Miscellaneous Removals, and payment for segregated hazardous materials is to be included in Section 02 61 33 – Hazardous Materials.

.3 Optional screening-out of rocks as material not requiring remediation (applies to material of cobble size [64mm] or larger) – this fraction will not be deducted from the volume of material measured for payment.

.4 Handling and on-site transport of co-mingled hydrocarbon and metal impacted soil, sediment and tailings to the non-hazardous landfill at either Bullmoose or Ruth mine sites and placement within the landfill cell in accordance with Section 31 22 15 - Grading.

.5 The supply, placement and compaction of granular fill to replace the excavated contaminated soil to original grade, and reshaping of the area.

.4 The treatment and disposal of PHC contaminated soil resulting from landfarm activities at Bullmoose mine site will not be included for payment under this section, but will be provided as indicated in Section 02 61 00 – Hydrocarbon Soil Treatment.

.5 The excavation of any unknown Hazardous Contaminated Soil identified at the site, including the supply and transport to the site of containers for Hazardous Contaminated Soil, including leakproof/hydrocarbon resistant liners as required, will not be included for payment under this section, but will be provided as indicated in Section 02 61 33 – Hazardous Material.

.6 No extra payment will be made for soil removed from beyond the specified limits of excavation, unless such removal has been specifically directed by the Departmental Representative. The volume of contaminated soil excavation beyond the specified limits that have been approved by Departmental Representative will be determined by survey.

.7 All costs associated with the cleanup or treatment of contamination of areas within or surrounding the contaminated soil handling areas due to the migration of contaminants from those areas as a result of Contractor’s actions or inactions are the responsibility of Contractor. These costs are to include all costs of investigation to determine the extent of contamination migration, as well as soil excavation and treatment costs.

.8 The following activities are considered incidental to the work identified by Items 02 55 13-1 through 02 55 13-3 in the Basis of Payment Schedule and will not be measured separately:

.1 Site access road construction, maintenance and rehabilitation including construction of watercourse/drainage course crossings to facilitate site remediation activities as required for construction including placement of granular material and installation and removal of culverts.

.2 Installation of monitoring equipment as required to confirm and/or calibrate process requirements, as applicable.

.3 Testing for the disposal of wastewater or other process effluents, as applicable.

.4 Any necessary excavation to facilitate testing of contaminated soils.

.5 Equipment decontamination including preparation and operation of the equipment decontamination area.
.6 Provision of all necessary safety equipment and clothing, as specified in Section 01 35 32-Site Specific Health and Safety Plan.
.7 Any requirements of permits.
.8 Loading, hauling, backfilling and compacting select granular fill materials at the excavation limits. Contractor is advised that areas susceptible to erosion will require Type 1 granular fill as surface materials.
.9 Grading of backfilled excavations to prevent ponding and blending in with the surrounding terrain, as directed by Departmental Representative.
.10 Excavation of contaminated soils within permafrost-affected zones.
.11 Water for moisture conditioning, compaction, and dust control.
.12 Surveying and calculation of granular material quantities for progress payment purposes.
.13 Re-shaping and re-grading of borrow areas and Contractors laydown areas including the supply, placement and compaction of granular material.
.14 Draining of wet areas prior to re-grading operations.
.15 Provision of liners beneath contaminated soil stockpiles in accordance with Section 01 35 15 – Special Project Procedures for Contaminated Sites.
.16 Optional screening-out of rocks as material not requiring remediation (applies to material of cobble size [64mm] or larger) – this fraction will not be deducted from the volume of material measured for payment.

.9 Costs for the dewatering of excavations will not be measured for payment. Include all costs for collection of wastewater from contaminated soil areas and associated storage, treatment and discharge in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule.

.10 Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in Basis of Payment Schedule. Indicate the cost of this work as a separate line item in the cost breakdown specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Fill:
  .1 If required, use fill from borrow sources outlined in Section 31 05 16 – Aggregate Materials.

.2 Environmental Protection Supplies: as per Section 01 35 43 - Environmental Procedures.

2.2 EQUIPMENT

.1 Leave equipment and machinery running only while in use, except where extreme temperatures prohibit shutting down.

.2 Free Product Recovery System:
  .1 In the event of free product, an oil water separator to remove contaminated water for treatment shall be used. The Departmental Representative shall be contacted immediately in the event of free product. All efforts shall be performed to reduce the spread of contamination.
  .1 Free Product (if required) will be disposed off-site in accordance with the appropriate Federal and Territorial regulations.

.3 Trucks:
.1 Cleaned meticulously between loads of contaminated materials and clean fill.
.2 Cleaned meticulously at end of work day.
.3 Cover truck bodies with tarpaulins during transportation.
.4 Use watertight truck bodies for transporting contaminated soil.

PART 3 - EXECUTION

3.1 EXCAVATION OF CONTAMINATED SOIL, STOCKPILING, AND BACKFILLING

.1 Contractor to initiate and complete topographic survey in advance of excavation operations for initial cross sections to be taken.

.2 Remove all surface debris prior to excavation. Remove all debris from excavated soil, sort, and containerize appropriately.

.3 Layout and excavate areas of contaminated soil to the limits as indicated. All layouts are to be field verified by Department Representative prior to excavation.

.4 Prior to excavation of impacted areas, remove all surface snow/ice and direct surface water run-off around the excavation.

.5 Suppress dust generated during excavation operations with a water spray. Prevent surface water from entering the excavated area.

.6 If required, stockpile contaminated soil in areas designated by Departmental Representative in accordance with Section 01 35 15 – Special Procedures for Contaminated Sites including the use of liners below all stockpiled soil. Cover impacted materials from precipitation to reduce leachate pending transportation to disposal area. Place stockpiles of contaminated soil at a distance from the excavation equal to the depth of the excavation. Stockpile height not to exceed 2 meters.

.7 Dewater ponded contaminated soil areas, as required. Maintain soil excavations free of standing water during soil removal, and confirmatory sampling activities. Comply with the requirements of the Waste Water Discharge Criteria indicated in Section 01 35 15 - Special Project Procedures for Contaminated Sites and Section 01 35 43 - Environmental Procedures.

.8 Minimize damage to permafrost during the excavation. Provide permafrost protection measures while excavation remains open.

.9 When excavating in the vicinity of a drainage course or a body of water, erect silt fences, floating silt curtains and/or containment berms to prevent the release of sediment and deleterious materials into the water in accordance with the requirements of Section 01 35 43 – Environmental Procedures for Work in or Adjacent to Waterways.

.10 Decontaminate the equipment used for the excavation of Contaminated Soil in accordance with Section 01 35 15 - Special Project Procedures for Contaminated Sites before commencing contaminated soil excavation at another location.

.11 The Department Representative will collect confirmatory soil samples after reaching the contaminated soil excavation limits indicated on Drawings. No further excavation of the soil will proceed until the results of confirmatory samples are assessed by the Departmental Representative.

.12 Do not operate equipment in contaminated soil areas that have been excavated until Department
Representative has confirmed, based on the results of confirmatory testing, that no further excavation of contaminated soil in the area is required.

.13 Areas to be backfilled are to be free from debris, snow, ice, water and frozen ground. Do not use backfill material which is frozen or contains ice, snow or debris.

.14 As directed by the Departmental Representative, supply Granular Fill to backfill excavation areas as specified in Section 31 22 15 – Grading.

.15 Screening-out of cobble and larger material (64+ mm) prior to transport is acceptable, as long as material is reasonably free of smaller soil particles.

.16 Maintain excavation side slopes at a safe angle. Slope all excavation sides where excavation depths are greater than 1.0m

### 3.2 EROSION, SEDIMENT AND DRAINAGE CONTROLS

.1 Prior to commencement of the work, install temporary erosion, sediment and drainage controls to prevent siltation and disruption of water bodies in accordance with this Section and Section 01 35 15 - Special Project Procedures for Contaminated Sites and Section 01 35 43 - Environmental Procedures.

.2 Erosion, sediment and drainage controls are to be maintained during all stages of work.

.3 At the completion of contaminated soil excavation, remove the erosion, sediment and drainage controls, as directed by Departmental Representative. Dispose of all non-granular erosion, sediment and drainage control materials off-site.

### 3.3 EQUIPMENT DECONTAMINATION

.1 Decontaminate equipment that comes into contact with the contaminated soils by steam cleaning or other means acceptable to the Departmental Representative in a separate area capable of containing the waste generated by cleaning operations. Decontaminate as outlined in Section 01 35 15 – Special Project Procedures for Contaminated Sites.

.2 Collect and dispose any contaminated soil that leaks, spills or otherwise leaves the equipment during transport from the area of work to the decontamination area.

.3 Remove and dispose of material that becomes contaminated as a result of Contractor’s operation at no additional cost.

.4 Dispose of liquid waste in accordance with the Waste Water Discharge Criteria outline in Section 01 35 15 – Special Project Procedures for Contaminated Sites.

.5 Treat any waste soil resulting from the decontamination procedure as hydrocarbon contaminated soil or metal contaminated soil depending on the source of the material and handle it accordingly.

END OF SECTION
PART 1 - GENERAL

1.1 DESCRIPTION

.1 This Section specifies the requirements for the treatment of Petroleum Hydrocarbon (PHC) Contaminated Soil, including the following:
  .1 Submission of a Detailed Soil Remediation Plan.
  .2 Provision of proprietary equipment, materials, labour, and supplies as required, to support the soil treatment program.
  .3 Handling and storage of material, equipment, and supplies required for the soil treatment process.
  .4 Treatment of PHC Contaminated Soil to specified treatment criteria by a method chosen by the Contractor and reviewed by the Departmental Representative. A conceptual Landfarm Design is provided on Drawing BM 6-3.
  .5 Design and implementation of a contaminated soil sampling and laboratory testing program to monitor, calibrate, and verify the contaminated soil treatment process.
  .6 Decommissioning and deconstruction of the Soil Treatment Cell following completion of soil treatment operations.

.2 This Section specifies the requirements for excavation, treatment and disposal of contaminated soils, sediment and tailings including the following:

<table>
<thead>
<tr>
<th>Site</th>
<th>Location</th>
<th>Volume</th>
<th>Disposal Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bullmoose</td>
<td>Various</td>
<td>1,674 m³</td>
<td>Bullmoose PHC</td>
</tr>
<tr>
<td>Beaulieu</td>
<td>Various</td>
<td>55 m³</td>
<td>treatment facility</td>
</tr>
<tr>
<td>Spectrum</td>
<td>Various</td>
<td>1 m³</td>
<td></td>
</tr>
<tr>
<td>Joon</td>
<td>Trenches and</td>
<td>1 m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strike Lake</td>
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</tbody>
</table>

.3 Contractor is to immediately notify Department Representative if Contractor believes that the proposed treatment system will not yield suitable results within the time frame specified due to the nature of the contaminant, soil conditions, or site conditions.

1.2 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures.
.2 Section 01 35 15 – Special Project Procedures for Contaminated Sites.
.3 Section 01 35 32 – Site Specific Health and Safety Plan.
.4 Section 01 35 43 – Environmental Procedures.
.5 Section 01 78 00 – Closeout Submittals.
.6 Section 02 55 13 – Contaminated Soil.
.7 Section 31 05 16 – Aggregate Materials.
.8 Section 31 22 15 – Grading.
.9 Section 31 23 33.01 – Excavating, Trenching, and Backfilling.

.10 Section 31 32 19.01 – Geotextile.

.11 Section 31 32 19.02 – Geomembranes.

1.3 DEFINITIONS

.1 Hydrocarbon contaminated soil: soil, tailings and/or sediment exceeding the Site Specific Criteria for petroleum hydrocarbons. Refer to the Site Specific Criteria in the Updated Remedial Action Plan, Stantec. 2014.

.2 Treated Soil: Soil, previously classified as hydrocarbon contaminated soil, that has been sampled, analyzed and determined to have concentrations of the above listed contaminants below the Site Specific Criteria.

.3 Landfarm: Treatment facility where hydrocarbon contaminated soil is to be treated to reduce hydrocarbon concentrations to less than the Site Specific Criteria.

.4 Site Specific Criteria: Defined in the Updated Remedial Action Plan, Stantec. 2014.

1.4 QUALIFICATIONS

.1 Contractor is to be thoroughly familiar with and knowledgeable about existing site conditions, scope of work and requirements of the Specification.

.2 Only Contractor’s Soil Remediation Specialist, capable of demonstrating a history of satisfactory experience in the area of hazardous waste management and remediation of hydrocarbon contaminated soil in Arctic environments, will be permitted to carry out the work in this Section.

.3 Guidelines such as those established in NIOSH Publication No. 85-115, or Hazardous Waste Worker Training Manual: Canadian LIUNA-Contractors Training Council, 1992 must be followed at all times.

.4 Handling of hazardous materials is to be directly supervised by Contractor’s personnel who have successfully completed a 40 hour training course for Hazardous Waste Operations and Emergency Response (HAZWOPER) in compliance with OSHA 29 CFR 1910.120 or other approved equivalent training courses such as the Canadian Hazardous Waste Workers Program.

.5 Contractor’s personnel trained as described in this Section are to instruct and direct all workers with respect to the waste management procedures and labour and safety practices to be followed in carrying out the work.

.6 Provide suitable safety clothing and personal protective equipment as required during the course of work.

.7 Trained and certified personnel are required to complete all Transportation of Dangerous Goods Act (TDGA) training, documentation and recording requirements.

1.5 REFERENCES
.1 Applicable environmental and health and safety laws and regulations for the Northwest Territories and Canada.


.3 Stantec Consulting Ltd. Bullmoose Area Mine Sites NWT, Updated Remedial Action Plan (December 2015).


.5 Canadian Standards Association (CSA).
  .1 Signs and Symbols for the Workplace CAN-Z321-96 (R2006).

.6 National Institute for Occupational Safety and Health (NIOSH).


.8 All landfarming activities should adhere to CCME’s Canada-Wide Standards for Petroleum Hydrocarbons (PHCs) in Soil.


1.6 EXISTING CONDITIONS

.1 Review the Drawings and following documents for details regarding the location and extent of hydrocarbon contaminated soil.

1.7 SITE CONDITIONS

.1 During or after occurrence of heavy rains, do not operate equipment in designated areas until the material has dried sufficiently to prevent excessive rutting.

.2 Remove debris, snow, ice, and standing water from areas prior to construction of the Landfarm Facility or placement of soil within the Landfarm.

.3 Suspend operations whenever climatic conditions are unsatisfactory for excavating or grading.

1.8 PROTECTION

.1 Environmental protection measures to be in accordance with Section 01 35 43 – Environmental Procedures.
.2 Decontaminate equipment in accordance with Section 01 35 15 – Special Project Procedures for Contaminated Sites.

.3 The release of all Wastewater shall conform to the Wastewater Discharge Criteria indicated in Section 01 35 15 – Special Project Procedures for Contaminated Sites.

1.9 SIGNS

.1 Signage: Provide and erect signage at access points to the Contaminated Soil Treatment Area and/or stock piling areas. Signage is to be visible from all sides of these areas. The sign is to be posted in English and is to read:

.1 Caution: Contaminated Soil Treatment Area, Trespassing is Prohibited.

.2 Graphic Symbols: All lettering is to conform to CAN-Z321-96, or latest edition thereof. All lettering is to be black, not less than 100mm high, with a 25mm wide stroke on a white background.

1.10 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Detailed Soil Remediation Plan:

.1 Provide Detailed Soil Remediation Plan ninety (90) days prior to construction. Plan to include the following as a minimum:

.1 The chosen soil treatment method.

.2 Confirmation that the chosen treatment methodology is appropriate for use at the designated Landfarm facility as shown on Drawing BM6-3.

.3 The equipment, materials, and supplies required to conduct the treatment, including provisions to deal with equipment breakdown.

.4 Labour and temporary facilities required for the implementation of the treatment program.

.5 The size, shape, and location of the treatment area if not consistent with the proposed design presented on Drawing BM 6-3. Departmental Representative approval required should the proposed design be altered.

.6 Details of the Contractor’s soil sampling and laboratory testing methodology, personnel, and protocols to calibrate, monitor, and verify the effectiveness of the contaminated soil treatment process. Sampling methodology is to meet or exceed requirements of industry best practice and FCSAP Federal Guidelines for Landfarming Petroleum Hydrocarbon Contaminated Soils, 2013.

.7 Schedule of predicted treatment duration.

.8 Details of the handling and storage of material, equipment, and supplies required for the soil treatment process.

.9 Details of the final placement of soils.

.10 Details for the final decommissioning of the treatment area and associated facilities.

.3 Reporting:

.1 Reports of any analytical testing with respect to but not exclusively the soil treatment, shall be presented to the Departmental Representative within one (1) week of receipt.
1.11 QUALITY ASSURANCE

1. Certification:
   1. All analytical work conducted on behalf of the Contractor and/or Departmental Representative must be conducted by a certified, accredited laboratory under Standards Council of Canada (SCC) and Canadian Association for Environmental Analytical Laboratories (CAEAL) for the parameters of concern. QA/QC procedures must be explained in detail.

2. Field Samples:
   1. Contractor is to specify and undertake a soil sampling and laboratory testing program to monitor, calibrate, and verify the contaminated soil treatment process.
   2. The Departmental Representative shall take additional field samples to verify remedial activities. The Departmental Representative shall indicate position of sampling points, sampling method and frequency, number of samples collected, sample preservation and analytical techniques, number of samples analyzed, parameters measured and turnaround time, chain of custody procedures, Quality Control Samples as outlined by Federal or Territorial regulations.

3. The Departmental Representative shall collect groundwater samples from monitoring wells. The Departmental Representative shall indicate position of sampling points, sampling method and frequency, number of samples collected, sample preservation and analytical techniques, number of samples analyzed, parameters measured and turnaround time, chain of custody procedures, Quality Control Samples as outlined by Federal or Territorial regulations.

1.12 MEASUREMENT FOR PAYMENT

1. Include all direct costs in a unit cost for Item 02 61 00.01-1 Hydrocarbon Contaminated Soil Treatment as indicated in the Basis of Payment Schedule. The unit costs include, but are not limited to:
   1. Treatment of PHC Contaminated Soil in the Landfarm at the Bullmoose Mine Site including any addition of nutrients, regular aeration (tilling), and collection and treatment of contact water within the facility.

2. Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in Basis of Payment Schedule. Indicate the cost of this work as a separate line item in the cost breakdown specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 MATERIALS

1. Fill:
   1. If required, use fill from borrow sources outlined in Section 31 05 16 – Aggregate Materials.

2. Geomembrane:
   1. All Geomembrane used for soil, sediment and/or tailings remediation must be in accordance with Section 31 32 19.02 - Geotextile.
PART 3 - EXECUTION

3.1 GENERAL

.1 Handle and store material, equipment, and supplies required for the soil treatment process upon their arrival at the site.

.2 Operate the Landfarm facility in the most efficient manner necessary to complete the treatment in the minimum timeframe possible.

.3 Soil Management:
   .1 Store, transport, and eliminate off-site or treat residues generated by soil treatment process in accordance with applicable federal and/or territory standards, requirements and regulations.
   .2 Do not dilute contaminated soil with less contaminated soil.

.4 Air Management:
   .1 Comply with applicable air regulations.

.5 Groundwater Management:
   .1 Dispose or treat groundwater in accordance with Section 01 35 15 – Special Project Procedures for Contaminated Sites.
   .2 Treat or incinerate residues, including free product (if present) generated by water treatment process in accordance with federal and/or territorial standard, requirements and regulations or store, transport and dispose off-site.

.6 Screening-out of cobble and larger material (64+ mm) prior to transport is acceptable, as long as material is reasonably free of smaller soil particles.

3.2 SOIL REMEDIATION PROCESS REQUIREMENTS

.1 Construct the landfarm as specified on Drawing BM 6-3 or as per Contractor’s approved Detailed Soil Remediation Plan, in accordance with Section 31 22 15 – Grading and in consultation with the Departmental Representatives.

.2 Treat the hydrocarbon contaminated soil as described in the approved Detailed Soil Remediation Plan.

.3 Remove, handle, and transport treated soil to the disposal location(s) approved by the Departmental Representative upon receipt of written authorization from the Departmental Representative to do so.

.4 Dilution of the contaminated soil with clean or treated soil to reduce the overall contaminant concentration will not be accepted as a remediation approach.

3.3 TESTING

.1 Conduct and pay for all testing required to confirm and/or calibrate treatment process requirements and to confirm that contaminated soils have been treated to site specific criteria. This testing is to include a baseline sampling and analysis program in the area of the stockpile and treatment areas to verify existing conditions, as well as a confirmatory testing program.
.2 Duplicates of a minimum of 10 percent of the samples extracted will be collected for Contractor’s confirmatory testing program by the Departmental Representative. Costs for this testing will be the responsibility of the Departmental Representative.

.3 Contaminated soil will be designated as treated soil if the results of the laboratory analytical testing of a composite soil sample obtained from five discrete soil sample locations representative of a 100 cubic metre soil volume indicated concentrations of hydrocarbons less than the applicable site specific criteria.

.4 Notify Departmental Representative when excavations have reached the assumed depths and extents shown on the Drawings so confirmatory soil samples can be collected by the Departmental Representative.

.5 Excavations below the depths and extents shown on Drawings will proceed to depths indicated by the Departmental Representative.

3.4 CONTACT WATER AND FREE PRODUCT

.1 Handle and treat contact water encountered during soil treatment operation in accordance with Section 01 35 15 – Special Project Procedures for Contaminated Sites.

3.5 SOIL DISPOSAL

.1 Dispose of all treated soil in locations greater than 30 m from water bodies and in accordance with AHJ.

.2 Dispose of treated soil by placing and trackpacking in low piles less than 1.5 metres high with sides that have a maximum slope of 1 vertical to 5 horizontal.

3.6 REPORTING

.1 Submit to Departmental Representative on a monthly basis during the soil remediation activities, a Soil Remediation Operation Report which is to include the following information, as applicable to the treatment process:
  .1 volume of contaminated soil excavated.
  .2 schedule of treatment process activities.
  .3 date and application rates of amendments added to the soil.
  .4 results of visual inspection program.
  .5 effluent and contaminated soil test results, including the results of the baseline sampling and analytical program.
  .6 climate data including average daily temperature, dates of precipitation events, and amount of precipitation.

.2 Within thirty (30) days of completion of each season/year of work, submit to Departmental Representative an Interim Soil Remediation Report. This report is to include, but not necessarily be limited to, the following information as applicable to the treatment process:
  .1 nature and volume of treated soil.
  .2 equipment usage.
  .3 fuel and/or power usage.
.4 environmental monitoring and inspection reports.
.5 temperature and precipitation records for the duration of the work season.
.6 results of all testing including sampling procedures, analytical procedures, analytical results, and QA/QC procedures for baseline and confirmatory testing programs.
.7 proposed modifications to the treatment process, as required.
.8 any other information required to meet the water license and land use permit annual report requirements.

END OF SECTION
PART 1 - GENERAL

1.1 DESCRIPTION

.1 The Section specifies the requirements for the collection, containerization and disposal of Hazardous Waste Materials. The general locations of Hazardous Waste Materials are indicated on Drawings.

.2 An Inventory of the known Hazardous Waste Materials is included in Appendix A.

.3 The summary of the program for each of the Waste Materials categories present on site is included in the Updated RAP (Stantec, 2014) and summarized below:

.1 Asbestos: to be removed from buildings/substrate and transferred to staging area where it will be loaded onto trucks for transport via the winter road for off-site disposal.

.2 Organic Liquid in Drums (including diesel, Jet A, Jet B, and heating oil): drum contents to be verified by Departmental Representative prior to drums being placed in overpack drums and hauled to staging area. Overpack drums to be transported via the winter road for treatment and/or off-site disposal depending on drum contents.

.3 Pressurized Cylinders: cylinder contents to be confirmed before cylinders are depressurized and evacuated. Evacuated cylinders are to be disposed at the Ruth or Bullmoose Landfills.

.4 Total/Leachable Lead and PCB Paint on Wood and Equipment: Paint to be left in place and wood/equipment to be transported to the staging area prior to off-site disposal via the winter road.

.5 Lead and PCB-based Paint on Drums: Drums to be transported to staging area to be cleaned and crushed prior to transport off-site for disposal via the winter road.

.6 Other Hazardous Materials: includes approximately 19 m³ of batteries, fluorescent lights, ballasts, transformers, fridges, fire extinguishers, creosote treated wood, cleaners, explosives and powders. Materials to be transported to staging area for sorting prior to off-site disposal via the winter road.

1.2 RELATED REQUIREMENTS

.1 Section 01 32 18 – Construction Project Schedules – Bar (GANTT) Chart.

.2 Section 01 33 00 – Submittal Procedures.

.3 Section 01 35 15 – Special Project Procedures for Contaminated Sites.

.4 Section 01 35 32 – Site Specific Health and Safety Plan.

.5 Section 01 35 43 – Environmental Procedures.

.6 Section 01 52 00 – Construction Facilities.

.7 Section 01 78 00 – Closeout Submittals.

.8 Section 02 41 16 - Structure Demolition.

.9 Section 02 41 23 – Debris and Miscellaneous Removals.

.10 Section 02 61 00.01 - Soil Remediation.

.11 Section 02 82 00.01 - Asbestos Abatement Minimum Precautions
.12 Section 02 82 00.02 - Asbestos Abatement Intermediate Precautions

.13 Section 02 82 00.03 - Asbestos Abatement Maximum Precautions

.14 Section 02 83 10 – Lead-Based Paint Abatement Minimum Precautions

.15 Section 02 83 11 - Lead-Based Paint Abatement Intermediate Precautions

.16 Section 02 83 12 - Lead-Based Paint Abatement Maximum Precautions

.17 Section 02 84 00 - Polychlorinated Biphenyl Remediation

.18 Section 31 22 13 – Rough Grading

1.3 REFERENCES

.1 Canada Labour Code (R.S.C., 1985, c.L-2)
   .1 Canada Occupational Health and Safety Regulations (SOR/86-304).
      .1 Part X – Hazardous Substances.


.3 Department of Justice Canada (Jus).
   .1 Canadian Environmental Protection Act (CEPA), 1999 (S.C. 1999, c.33)
      .2 Federal Mobile PCB Treatment and Destruction Regulations (SOR/90-5),
      .3 Interprovincial Movement of Hazardous Waste Regulations (SOR/2002-301).
      .7 On-Road Vehicle and Engine Emission Regulations (SOR/2003-2).
      .8 PCB Regulations (SOR/2008-273).
      .9 PCB Waste Export Regulations (SOR/97-109).
      .10 Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (SOR/2008-197).
      .11 Ozone-Depleting Substances Regulations (SOR/99-7).

   .1 Transportation of Dangerous Goods Regulations (SOR/2001-286).

.3 Hazardous Products Act (R.S.C., 1985, c. H-3)
   .1 Controlled Products Regulations (SOR/88-66).
   .2 Workplace Hazardous Materials Information System.

.4 Canadian Standards Association
   .1 CSA Standard Z94.4-93 (R1997) – Selection, Use and Care of Respirators.

.5 Department of Environment and Natural Resources, Government of the Northwest Territories.
.3 Guideline for Ozone Depleting Substances and Halocarbon Alternatives (2007).
.11 Spill Contingency Planning and Reporting Regulations (1998).

.6 National Institute for Occupational Safety and Health (NIOSH).


1.4 DEFINITIONS

.1 Dangerous Goods: Product, substance, or organism specifically listed or meeting hazard criteria established in Transportation of Dangerous Goods Regulations.

.2 Hazardous Material: Items or debris no longer used for their original purpose; now hazardous and intended for recycling, treatment or disposal. Also material that is designated “hazardous” under Territorial or Federal legislation; or as a “dangerous good” under the TDGA. This may include dangerous substances, dangerous goods, hazardous commodities and hazardous products, and may include but not limited to: poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other material that can endanger human health or well-being or the environment if handled improperly.

.3 Debris: Visible debris on or within 0.5 metres of the existing ground surface, or material that has been identified on the Drawings as debris, consisting of hazardous and non-hazardous material.

.4 PCB-amended paint (PAP): Material that is coated with PCB-based paint that has been analyzed and determined to contain total PCB concentrations in excess of 50 ppm.

.5 Lead-amended paint materials: Material that is coated with lead-based paint that has been analyzed and determined to contain total lead concentrations in excess of 600 ppm.
.6 Leachable lead amended paint material: Material that is coated with lead based paint that has been analyzed and determined to contain leachable lead concentrations in excess of 5 mg/L.

.7 “Processing” refers to the sampling, testing, packaging, and containerization of hazardous materials.

.8 Hazardous Waste Container: A container, of the appropriate type and size necessary to contain the Hazardous Material placed in it, as required by the TDGA.

.9 Hazardous Material Processing Area: A designated area, accepted by the Departmental Representative, for the consolidation, processing and containerization of hazardous waste materials.

.10 Temporary Storage Area: The designated area, approved by Departmental Representative, for the storage of packaging and/or shipping containers prior to transport off site.

.11 Contaminated Groundwater: Groundwater encountered during contaminated soil or debris excavation that contains free product or does not conform to the wastewater discharge criteria outlined in Section 01 35 15 - Special Project Procedures for Contaminated Sites.

.12 Free Product: Separated phase liquid petroleum hydrocarbon product.

.13 Contractor’s Designated Hazardous Waste Disposal Facility: A Licensed Hazardous Waste Disposal Facility designated by the Contractor for the disposal of all hazardous materials specified under the provisions of this contract. The facility must be pre-approved by the Departmental Representative prior to beginning work. Contractor must provide documentation from the Contractor’s Designated Hazardous Waste Disposal Facility indicating full responsibility for all hazardous materials accepted from the sites.

.14 Known Hazardous Material: Material designated as hazardous in accordance with the definition of hazardous materials in this Section, and which is identified for collection and disposal in the specifications and Drawings.

.15 Unknown Hazardous Material: Material designated as hazardous in accordance with the definition of Hazardous Materials material in this section, and which has not been specifically identified for collection and disposal in specification and Drawings.

.16 Calibrated scale: A scale that has been calibrated using a minimum of three known weights to ensure the scale is outputting the correct measurement. Known weights must be within the range of weights of materials being weighed. Calibration entails placing a known weight on the scale and then the scale is adjusted until it yields a correct corresponding weight measurement.

.17 Leachable Soil: Soil containing contaminants that when subject to Toxicity Characteristic Leaching Procedure (TCLP) analysis, leach contaminants at concentrations in excess of those specified in CEPA regulations or regulations governing methods of disposal (e.g., Guideline for Industrial Waste Discharges in the Northwest Territories (2004)). Handling and disposal are regulated under Federal and Territorial regulations. Contractor to comply with all applicable regulations.

1.5 SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit two copies of WHMIS MSDS in accordance with Section 01 35 32 – Site Specific Health and Safety Plan, 01 35 43 - Environmental Procedures to Departmental Representative.
.3 Provide Hazardous Materials Management Plan to Departmental Representative that identifies hazardous materials, usage, location, personal protective equipment requirements, disposal procedures and arrangements.

.4 Submit qualifications and training certificates for all Contractor’s personnel performing Work as described under this Section prior to commencing Work.

.5 Submit the hazardous materials disposal tracking information including final inventories of containers and disposal details to Departmental Representative prior to transportation off-site.

.6 Submit waste transport manifests, chains of custody, and transportation documentation to the Departmental Representative and the Authority Having Jurisdiction, as required, prior to transportation off-site and in accordance with applicable regulations.

.7 Submit destruction certificates to the Departmental Representative.

.8 In the event of an environmental incident or damage to waste containers, notify the Departmental Representative and applicable Authority Having Jurisdiction.

1.6 QUALIFICATIONS AND PERSONNEL PROTECTION

.1 Contractor’s worker must be thoroughly familiar with and knowledgeable about existing site conditions, scope of work, and requirements of the Specification.

.2 Submit qualifications and training records prior to commencing Work under this Section, for all Contractor’s personnel completing Work as described in this Section.


.4 Only Contractor’s personnel capable of demonstrating a history of satisfactory experience in the area of hazardous waste management and can satisfy Federal and Territorial requirements will be permitted to supervise and direct the Work of this Section.

.5 All activities involving the handling of hazardous materials are to be directly supervised by Contractor’s personnel who have successfully completed a 40-hour training course for Hazardous Waste Activities in compliance with OSHA 29 CFR 1910.120 or other accepted equivalent training courses such as the Canadian Hazardous Waste Workers Program. Contractor’s key personnel responsible for the removal of leachable lead coatings are to demonstrate appropriate level of experience in the lead control, removal and abatement industry.

.6 Contractor’s personnel trained as described in this Section are to instruct and direct all workers with respect to the waste management procedures and labour and safety practices to be followed in carrying out the work.

.7 Provide suitable safety clothing and equipment as required during the course of the Work. Supply sufficient quantities of protection equipment to fit all site personnel including Departmental Representative, Departmental Representative’s staff, and site visitors.

.8 Provide workers with protection appropriate to the potential type and level of exposure. Establish specific safety protocols prior to commencing clean-up activities.
.9 Trained and certified personnel are required to complete all Transportation of Dangerous Goods Act (TDGA) and Interprovincial Movement of Hazardous Waste Regulation (IMHWR) documentation and recording requirements.

1.7 MEASUREMENT FOR PAYMENT

.1 Include all direct costs in unit price for Item 02 81 01-1 Processing Organic Content as indicated in the Basis of Payment Schedule. Work indicated in unit price item includes, but is not limited to:
  .1 Securing the organic liquids in tanks, ASTs, drums and pipeline.
  .2 Transfer of organic liquids into drums, as required.
  .3 Any and all analytical testing of liquid organics required for re-use, incineration, or by the Contractor’s Designated Hazardous Waste Disposal Facility and territorial regulations as applicable.
  .4 All costs associated with storage, transfer and use if used by Contractor on site.
  .5 Preparation, handling, collection, and on-site incineration of drum and tank contents meeting the incineration criteria.
  .6 Treatment and disposal of all rinsate generated during drum and tank cleaning.

.2 Include all direct costs in lump sum price for Item 02 81 01-2 Containerization, transport and Off-Site Disposal of Known Hazardous Materials as indicated in the Basis of Payment Schedule. Work indicated in lump sum item includes, but is not limited to:
  .1 Any and all analytical testing of materials required by the Contractor’s Designated Hazardous Waste Disposal Facility and territorial regulations as applicable.
  .2 Preparation and submission of waste transport manifests to the Departmental Representative to meet all requirements of the TDGA and Regulations and Interprovincial Movement of Hazardous Waste Regulation (IMHWR).
  .3 Development of a Hazardous Materials Processing Area to properly handle, package, containerize, and make ready for transport all hazardous materials.
  .4 Management of a Temporary Storage Area as required prior to and during transport to Contractor’s Designated Hazardous Waste Disposal Facility. The development, operation, and closure of the Temporary Storage Area will be paid for as specified in Section 01 52 00 – Construction Facilities.
  .5 Permitting, transport, and off-loading of the containerized hazardous materials at the Contractor’s Designated Hazardous Waste Disposal Facility.
  .6 Disposal of all known hazardous materials including but not limited to lead paint, PCB/lead paint, other PCB waste, cylinders, organic liquids, mercury, and other hazardous waste as identified in this, and other Sections of this specification.
  .7 Disposal of hazardous materials at the Contractor’s Designated Hazardous Waste Disposal Facility.
  .8 Tracking and submittals of all appropriate documentation to Departmental Representative and Authorities Having Jurisdiction.

.3 Include all direct costs in lump sum price for Item 02 81 01-3 Supply of Transport Containers for Hazardous Liquid Waste and for Item 02 81 01-4 Supply of Air/Land Transport Containers for Known Hazardous Solid Waste as indicated in the Basis of Payment Schedule. Work indicated in lump sum item includes, but is not limited to:
  .1 The supply and transport to site the containers required to transport hazardous materials. This includes packaging, labels, signage, materials required within the transport vessel required for safe and secure transport.
  .2 Containers must be approved for the type of waste to be transported.
  .3 Containerized hazardous waste shall meet all the requirements of the TDG Act and Regulations CEPA Regulations, Interprovincial Movement of Hazardous Waste Regulation and all other applicable Regulations.
.4 Costs incidental to Items 02 81 01-01 to 02 81 01-4 include:
   .1 Signs, barricades required to complete the Work.
   .2 All costs associated with repackaging of container contents resulting from the Contractor failing to properly pack and secure the container and/or its contents.
   .3 Additional costs for analytical testing and / or transport should materials not be acceptable for receipt at the Contractor’s Designated Hazardous Waste Disposal Facility.

.5 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 - Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 MATERIALS
   .1 Description:
      .1 Bring only quantities of hazardous material required to perform Work on the sites.
      .2 MSDS for suggested hazardous materials are to be approved by the Departmental Representative prior to transporting to the sites.
      .3 Upon approval, maintain MSDS in proximity to where materials are being used. Communicate this location to personnel who may have contact with hazardous materials.
   .2 Hazardous Materials Containers:
      .1 Containers must satisfy the requirements of the most recent edition of the TDGA and all applicable regulations, and in particular, the requirements for intermediate bulk containers for marine/air/ground transport of hazardous materials.
      .2 Submit specifications of the containers to Departmental Representative for review a minimum of 45 days prior to mobilization. These details are to include written confirmation from Transport Canada that Contractor’s proposed containers satisfy TDGA regulatory requirements for marine/air/ground transport.
      .3 Containers are to include all necessary liners to satisfy the TDGA requirements for marine/air/ground transport.
      .4 With respect to packaging and containerization requirements of hazardous materials, all requirements of the TDGA and Regulations and CEPA Interprovincial Movement of Hazardous Waste must be met.
      .5 Provide access for Departmental Representative to inspect all Hazardous Waste Material Packaging as directed by Departmental Representative.
   .3 Solvent (Drum Rinse)
      .1 Minimum flash points within the MSDS for solvents must be submitted to Departmental Representative prior to shipment to the sites. The solvent shipped to the sites are to remain the property of Contractor.

PART 3 – EXECUTION

3.1 GENERAL REQUIREMENTS
   .1 Conduct all Work in accordance with all appropriate federal and territorial legislation, and international conventions.
   .2 Individuals shipping and receiving hazardous materials are to be licensed under the TDGA and
Regulations, and appropriate federal and territorial environmental acts and regulations.

.3 Only trained individuals or individuals working under the direct supervision of trained persons are to handle or transport dangerous goods.

.4 Establish Hazardous Materials Processing Area at the sites, where hazardous materials are present, for the storage of potentially hazardous materials for inspection, testing, classification and packaging, as well as for the consolidation, incineration, and packaging of drum liquids, and for the cleaning of drums. Provide measures to mitigate release of contaminants to the environment including, but not limited to liners, silt fences, sorbent materials, ditching and grading, etc.

.5 Establish (a) Temporary Storage Area(s) at the Site(s) in accordance with Contractor’s approved Hazardous Materials Waste Management Plan to provide a secure area for hazardous material storage prior to shipment for disposal as described in this Section.

3.2 PROTECTION

.1 Perform all work in an environmentally acceptable manner. Comply with requirements of Section 01 35 43 – Environmental Procedures and Sections 02 83 10 to 12 Lead Base Paint Abatement and 02 84 00 Polychlorinated Biphenyl Remediation.

.2 Avoid releasing any hazardous materials into the environment during handling and storage.

.3 In the event of a spill, implement the emergency response plan and take appropriate action.

.4 Any wastewater created from the cleaning of fuel tanks, pipelines and drums is to conform to the wastewater discharge criteria in Section 01 35 15 - Special Project Procedures for Contaminated Sites prior to release. Wash water should be treated to meet the discharge criteria, or dispose of any liquid effluent not conforming to the Discharge Criteria as a waste material at Contractor’s own cost, in accordance with the requirements of this Section.

.5 Departmental Representative is to carry out baseline soil sampling and analyses of the Temporary Storage Area and Hazardous Materials Processing Area at each of the sites, where hazardous materials will be stored, prior to commencing work, and confirmatory sampling following the decommissioning of the areas. The Contractor is responsible for any soil impacts resulting from the improper storage and handling of hazardous materials over the duration of site activities. In the event of such impacts, the Contractor is to submit to Departmental Representative a plan for site remediation in accordance with all Federal and Territorial Regulations to be enacted upon immediately following approval by Departmental Representative. All clean-up costs, including but not limited to excavation and disposal, will be borne by Contractor.

.6 Personal Protective Equipment (PPE), as per Section 01 35 32 - Site Specific Health and Safety Plan, is to include clothing, protective suits, respirators, etc. in accordance with NIOSH Guidelines and to comply with anticipated and potential emergency conditions.

.7 Site personnel in the vicinity of the debris removal operations or handling hazardous material are required to wear PPE in accordance with NIOSH guidelines.

.8 Provide a full range of clean-up and protective equipment at the site to contain and clean-up spills, and protect personnel, as detailed in the Spill Contingency Plan and specified in Section 01 35 32 – Site Specific Health and Safety Plan. The clean-up equipment is to include booms (sorbent and containment), sorbents for clean-up, fire extinguishers for A-B-C fires, overpacks for contaminated soils, pumps, hand shovels, picks and containment barriers, such as plastic sheeting. Personal
protective equipment is to include clothing, protective suits, respirators, etc. to comply with potential emergency conditions and in accordance with NIOSH guidelines.

.9 Handle materials containing asbestos or suspected to contain asbestos in accordance with Section 02 82 00.01 – Asbestos Abatement – Minimum Precautions, Section 02 82 00.02 - Asbestos Abatement – Intermediate Precautions and Section 02 82 00.03 – Asbestos Abatement – Maximum Precautions.

.10 Handle materials containing PCB/lead paint or suspected to contain PCB/lead paint in accordance with Section 02 83 10 – Lead Based Paint Abatement-Minimum Precautions, Section 02 83 11 – Lead Based Paint Abatement – Intermediate Precautions and Section 02 83 12 – Lead Based Paint Abatement – Maximum Precautions.

.11 Vent non-ventilated gas cylinders and fire extinguishers in a remote and safe area acceptable to Departmental Representative. Stockpile empty and ventilated gas cylinders and fire extinguishers as non-hazardous waste. Do not explode or vent cylinders known or suspected to contain any ozone depleting substances. Containerize these materials in accordance with TDGA packaging standards.

.12 The contractor is responsible for safely venting, containerizing and disposing of all unknown substances within pressurized cylinders and fire extinguishers that are on site.

3.3 HAZARDOUS MATERIALS PROCESSING AREA

.1 Establish Hazardous Materials Processing Areas at each of the Sites, where hazardous materials are present, for the purpose of:
   .1 Sorting, packaging, sampling, and processing of unknown and known hazardous materials; and,
   .2 Consolidation and Processing of drums and drum contents, including incineration of remaining organic liquids meeting incineration criteria, packaging for off-site shipment, and cleaning of drums.

.2 Establish Hazardous Materials Processing Areas to:
   .1 Be of sufficient size and capacity to accommodate the volume of material and number of drums to be processed at any one time.
   .2 Minimize the handling of hazardous materials.
   .3 Provide for the sampling, testing, and packaging of hazardous materials, drum contents and wash water,
   .4 Isolate hazardous materials, drum contents and wash water from other work operations.
   .5 Provide access for consolidation, packaging, cleaning of drums, and transporting containers to the Temporary Storage Areas.
   .6 Be leak-proof and able to contain all runoff water, spills, and leaks so as not to impact the environment.
   .7 Provide safe working conditions for all personnel working in and around these areas.
   .8 Meet the requirements of Authority Having Jurisdiction.

.3 The Hazardous Materials Processing Areas are to be located as follows:
   .1 At least 30 metres away from any water body or drainage course.
   .2 On stable ground which is not subject to flooding or seasonal saturation and lined with a 30 mil impenetrable geomembrane liner in accordance with Section 31 32 19.02 – Oil Resistant RPE Geomembranes underneath all contents except non-hazardous materials.
   .3 In a previously disturbed area if possible.
   .4 In a location that will not impede other work.

.4 Submit the details of the Hazardous Materials Processing Areas to Departmental Representative at least one (1) week prior to commencing operations.
.5 Do not construct the Hazardous Materials Processing Areas until baseline sampling has been completed by the Departmental Representative at each of the sites.
.1 Immediately clean up any spills, leaks, or other releases of liquid or sediment from this area using proper techniques.
.2 The Departmental Representative will complete confirmatory sampling following the decommissioning of the Hazardous Materials Processing Areas.

3.4 TEMPORARY STORAGE AREA

.1 Develop Temporary Storage Areas at each of the sites for the storage of containerized non-hazardous and hazardous materials, containerized impacted soil and containerized drum/tank/pipeline contents.
.2 Temporary Storage Area must comply with the requirements identified in Section 01 52 00 – Construction Facilities of these Specifications.
.3 The location and size of the Temporary Storage Area must allow for the minimization of handling of materials, isolate materials from other work operations and provide for the collection and removal of materials from each of the sites.
.4 Segregate materials within the Temporary Storage Area as follows:
   .1 Containerized Impacted Soil (as required if waiting for landfill construction or off-site disposal).
   .2 Containerized Hazardous Solid and Liquid Materials.
   .3 Containerized Drum, Tank, and Pipeline Contents.
   .4 Non-hazardous Materials (as required if waiting for landfill construction).
.5 Store materials in their appropriate packaging containers in accordance with the TDGA requirements.
.6 No stacking of containers will be allowed during storage.
.7 In accordance with Section 01 78 00 – Closeout Submittals, submit to Departmental Representative a detailed inventory of the Temporary Storage Area indicating the location and contents of each container and assigned internal tracking numbers (as required) and packaging configuration.
.8 Store and handle flammable and combustible materials in accordance with National Fire Code of Canada requirements.
.9 Flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use will be shipped on site in amounts approved by the Departmental Representative.
.10 Store flammable and combustible liquids in approved safety cans bearing the Underwriters' Laboratory of Canada or Factory Mutual seal of approval.
.11 Storage of quantities of flammable and combustible liquids exceeding a volume (determined by the Departmental Representative) for work purposes requires the written approval of the Departmental Representative.
.12 Transfer of flammable and combustible liquids is prohibited within buildings or where ventilation is not considered adequate.
.13 Transfer flammable and combustible liquids away from open flames or heat-producing devices.
.14 Solvents or cleaning agents must be non-flammable or have flash point above 38 degrees C.
.15 Store flammable and combustible waste liquids for disposal in approved containers located in safe, ventilated area. Keep quantities to minimum.

.16 Observe smoking regulations, smoking is prohibited in areas where hazardous materials are stored, used, or handled and in active work areas.

3.5 REMOVAL AND SORTING OF HAZARDOUS MATERIALS

.1 Continually monitor remediation operations to identify potentially hazardous material.

.2 Immediately suspend operations if suspected hazardous material is identified and obtain visual confirmation of the nature of the material.

.3 Store suspicious material in a secured area or secured container, if the nature of the material or debris cannot be confirmed. Inform Departmental Representative about the findings. The suspicious material needs to be seized until the nature of the material is confirmed by Departmental Representative. Sampling and testing of the material for classification will be conducted and paid for by Departmental Representative.

.4 Remove hazardous materials derived from demolition work from their place of origin in accordance with Section 02 41 16 – Structure Demolition, place in approved containers, and transport containers to the Temporary Storage Area.

.5 Remove asbestos in accordance with Section 02 82 00.01 – Asbestos Abatement – Minimum Precautions or Section 02 82.00 02 – Asbestos Abatement – Intermediate Precautions and Section 02 82 00.03 – Asbestos Abatement – Maximum Precautions.

.6 Handle materials containing PCB/lead paint or suspected to contain PCB/lead paint in accordance with Section 02 83 12 – Lead Based Paint Abatement-Maximum Precautions, Section 02 83 11 – Lead Based Paint Abatement-Intermediate Precautions and Section 02 83 10 – Lead Based Paint Abatement-Minimum Precautions.

.7 Handle materials containing PCBs or suspected to contain PCBs in accordance with Section 02 84 00 – Polychlorinated Biphenyl Remediation.

.8 Advise Departmental Representative of any stained soils encountered during hazardous material removal operations. Excavate stained and impacted soil areas, identified during removal operations upon approval from Departmental Representative and in accordance with the requirements of Section 02 61 00 – Soil Remediation. Testing for confirmation of impacts will be carried out and paid for by Departmental Representative.

.9 Submit specifications of the containers for handling and disposal of hazardous materials to Departmental Representative for review and approval prior to commencement of site remediation activities. Include all required approvals, as well as a description of the type and volume of containers.

3.6 CONTAINERIZATION OF HAZARDOUS PCB-PAINTED MATERIALS AND LEACHABLE LEAD MATERIALS

.1 Place dismantled hazardous PAP material and leachable lead painted materials in the containers described in this section, in a manner to minimize voids within the container. Sort and provide separate containers for the various components coated with PAP and/or leachable lead painted materials as follows:

.1 Segregate and place PAP and/or leachable lead painted materials and/or CEPA PCB soil and/or leachable lead soil into Packaging Containers:
.1 Segregate and place materials into separate Packaging Containers, designated specifically for that type of hazardous waste.

.2 Place into Packaging Containers all material that is sized or that can be easily sized to fit within the lined intermediate containers.

.3 Place the material in the Packaging Containers such that no movement of the material will occur during normal transport conditions.

.4 Place full and sealed Packaging Containers into air/ground shipping containers.

.2 Placement of PAP and leachable lead painted materials into shipping containers.

.1 Prior to loading materials into shipping containers, place a drip tray into the bottom of the container. The drip tray is to extend a distance of at least 400 mm up the sides of the container.

.2 Place all filled Packaging Containers and larger demolition materials that cannot fit within the Packaging Containers neatly into the shipping containers.

.3 Construct a wooden frame at the front and rear of the container to prevent movement of materials within the container and to prevent pressure on the door. Anchor the bracing material to the structural frame of the container.

.4 Distribute the weight of the material evenly over the length of the container. When items of a varying weight are to be packaged into a container or when a container will not be full, arrange the material so that the centre of gravity of the cargo is close to the middle of the container. Do not concentrate heavy loads on small areas of the container floor.

.5 Position materials within the container so that the centre of gravity is below the half-height of the container.

.6 Position materials within the container such that lateral bracing for the load is NOT provided by the sidewalls of the container. Provide and use wood bracing material or strapping to ensure that the material does not move during transport. Anchor the strapping material to the fastening loops built into the frame of the containers. Anchor the bracing material to the structural frame of the container.

.7 Do not leave any gaps between Packaging Containers, larger materials and front or side walls of the air/ground shipping containers that would allow cargo shifting.

.2 Provide a photographic record of the interior of all filled air/ground (as applicable) shipping containers prior to closing. Submit the photographic record to Departmental Representative with the corresponding inventory of each container upon completion of work. Trained and certified Contractor personnel are required to complete all TDGA and Regulations documentation and recording requirements. The Contractor will represent the generator of the waste and will sign all documentation as required.

.3 Clearly mark on all containers the contents in accordance with the requirements of the Department of Justice Canada PCB Regulations (SOR/2008-273) and with the TDG Regulations (SOR/2001-286). The shipping container should be numbered with an internal number for tracking.

.4 The labels must state “ATTENTION — contains 50 mg/kg or more of PCBs / content 50 mg/kg ou plus de BPC” in black lettering on a white background, in a font size of no less than 36 points; measure at least 150 mm by 150 mm or at least 76 mm by 76 mm in the case of capacitors; and in the case of equipment for which an extension is applied for under Section 17, state a unique identification number. They shall affix a label in a readily visible location on any product containing PCBs in a concentration of 50 mg/kg or more and that are stored at the PCB storage site, which states “Date of Commencement of Storage / Date de début de stockage” and the date on which the storage begins.

.5 Store the containers in the Temporary Storage Area at each site in a manner that prevents access to the contents by unauthorized personnel.
.6 Remove bulk contamination (i.e. contaminated dust) from disposable clothing containing PCB or leachable lead materials and place in double polyethylene bags designated as hazardous waste. Upon cleaning of surficial contamination, remove outer clothing before leaving work area and place in doubled polyethylene bags. Place bags in hazardous waste containers specified in this Section.

.7 Decontaminate all equipment that comes into contact with hazardous materials. Place all rags or clothes used during the equipment decontamination in designated polyethylene bags. Place bags in the hazardous waste containers specified in this Section.

.8 All drop cloths used to collect paint particles during dismantling operations must be sprayed or dampened with water prior to their removal from the facility. Place the drop cloths in designated polyethylene bags, and place the bags in the hazardous waste containers specified in this Section.

.9 Label PCB waste containers in accordance with Section 02 84 00 – Polychlorinated Biphenyl Remediation.

.10 Follow procedures for abatement, removal, handling, storage, and disposal of lead-base painted materials in accordance with Section 02 83 10 – Lead-Based Paint Abatement – Minimum Precautions, Section 02 83 11 – Lead Based Paint Abatement-Intermediate Precautions, and Section 02 83 12 – Lead Based Paint Abatement-Maximum Precautions.

3.7 DRUM PROCESSING

.1 Flow diagrams for the methodology for the processing, clean-up and disposal of drums is shown on Figures 1 and 2 at the end of this Section.

.2 Submit for review forty-five (45) days prior to mobilization, a detailed description of the proposed drum processing methodology, including oil/water separation, water treatment, incineration, and containers to be used for the disposal of hydrocarbon absorbent materials and hydrocarbon drum contents. The description must include product/manufacturer information and specifications for each of the products to be used.

.3 Inspection:

.1 All drums must be inspected by Departmental Representative and Contractor. The purpose of the inspection is to identify the process for opening, sampling, testing and handling of the drums. The inspection is to address the following items as a minimum:

.1 Symbols, words, or other marks on the drum that identify its contents, and/or that its contents are hazardous; e.g., radioactive, explosive, corrosive, toxic, flammable.

.2 Symbols, words, or other marks on the drum that indicate it contains discarded laboratory chemicals, reagents, or other potentially dangerous materials in small-volume containers.

.3 Signs of deterioration such as corrosion, rust, or leaks at seams, rims, and V grooves.

.4 Evidence of spills or other contamination on the top and sides of the drum.

.5 Signs that the drum is under pressure such as bulging and swelling.

.4 Test areas around drums that show evidence of holes, rust points, or openings using a VOC instrument prior to movement. If levels exceed 20 percent LEL as measured by the VOC, conduct all handling, storage, and transportation operations in accordance with the appropriate sections of the NIOSH guidelines, National Fire Code of Canada, and the TDGA for flammable and combustible materials.

.5 Drum Opening:

.1 Pressurized drums are extremely hazardous. Open with extreme caution. Use only non-sparking equipment to open drums (i.e. brass or beryllium). Provide all personnel opening

.2 If the bungs of a drum can be readily moved, then open the drum slowly, allowing time for any pressure in the drum to be released before the bungs are fully removed.

.3 If the bungs of a drum cannot be readily moved, or if inspection suggests opening the drum may present a special hazard, vent the drums remotely to relieve any internal pressure that may be present prior to opening. Conduct remote drum venting using a suitable device.

.4 Conduct the remote venting operation at a safe distance from other site operations, and from behind suitable walls or barricades.

.5 All drums are to be clearly numbered on the lid and side of the drum and cross referenced to sample numbers.

.6 Do not transport drums until it has been determined that they are not pressurized, do not leak, and are sufficiently sound for transport.

.6 Sampling and testing of drum contents:

.1 Samples of the contents of the drums for determination of disposal requirements are to be collected by the Departmental Representative. Samples as required for proof of suitability for incineration or as required by the Contractor’s Designated Hazardous Waste Disposal Facility are to be collected by the Contractor.

.2 Combine drum contents that are determined, through field screening, visual observations and labeling to contain the same liquids.

.3 Consolidate drum contents only in the Materials Processing Areas.

.4 Do not consolidate drum contents consisting of black oil.

.5 Collect drums and store at the Materials Processing Areas.

.6 Liquid samples are to be inspected and classified by the Contractor as containing water or organic materials.

.7 Based on the results of the analysis by the Contractor and/or Departmental Representative; treat drum contents in accordance with the requirements detailed in Figure 2 at the end of this section.

.8 The Departmental Representative will perform the necessary QA/QC analysis and review of the results obtained by the Contractor.

.7 Disposal of drum contents:

.1 Dispose of drums containing rust and sediment as empty drums, as described below.

.2 For small volumes agitation with oil-absorbent material to remove any organic material is acceptable.

.3 Collect aqueous contents for disposal in accordance with wastewater discharge criteria, Section 01 35 15 - Special Project Procedures for Contaminated Sites.

.4 Test used oil-absorbent material to determine treatment and disposal requirements.

.5 Dispose of drum contents at the Contractor’s Designated Hazardous Waste Disposal Facility.

.6 Should the Contractor propose incineration as an alternative to off-site disposal, and should such a request be accepted by the Departmental Representative, incinerator is to be a dual chamber, forced air, fuel fired POL incinerator type, and all material to be incinerated must meet the following criteria on site in accordance with site permit requirements and the Environmental Guideline for the Burning and Incineration of Solid Waste (EGBISW):

.1 PCBs < 2 ppm

.2 Chlorine < 1000 ppm

.3 Cadmium < 2 ppm

.4 Chromium < 10 ppm

.5 Lead < 100 ppm

.6 Glycol/Alcohol <2%
Contents and used oil-absorbent material designated for disposal off-site at a licensed disposal facility will be packaged as required in accordance with TDGA regulations. Contents may be combined with compatible materials for shipping purposes in accordance with TDGA regulations, as required.

Leachate extraction tests and total CCME metals analysis are to be carried out by Departmental Representative on the solid residual material resulting from any incineration process. The leachate toxicity of the material will be determined in accordance with CEPA regulations. Dispose of materials found not to be leachate toxic and that meet appropriate metals guidelines, as hydrocarbon contaminated soil as described in Section 02 61 00.01 – Soil Remediation. Package leachate toxic material in accordance with TDGA regulations, and dispose of off-site.

Cleaning and disposal of drums:

1. Steam clean empty drums resulting from the consolidation of drum contents. Clean to remove oil, sludge, wax, tar and other fuel residue adhering to the surface.

2. If residue remains, apply a manual detergent cleaning method. For heavily oil soaked surfaces, a second detergent application may be required. Steam clean drums after detergent application.

3. Only in the event that two detergent applications prove ineffective, use an appropriate solvent rinse for residue removal. Solvent rinsate material is to be tested by Departmental Representative to determine disposal requirements. If the solvent rinsate meets the criteria indicated above, incinerate the material on-site. If the solvent rinsate is in excess of the criteria, package the material in accordance with TDGA regulations, as required, for disposal off site at Contractor’s licensed disposal facilities.

4. Recycling of steam cleaning rinsate is permitted if steam cleaning rinsate is passed through an oil-water separator. Oily waste residue separated by agitation and removed with oil-absorbent material to remove any organic material is permitted.

5. The resulting rinsate is to be tested by Departmental Representative for the wastewater discharge criteria in Section 01 35 15 - Special Project Procedures for Contaminated Sites. If the concentrations of the rinsate is greater than the indicated levels, then package the rinsate in accordance with TDGA regulations, as required, for disposal off site at Contractor’s Designated Hazardous Waste Disposal Facility.

6. Dispose of the used oil-absorbent material and/or oily liquid waste in excess of the concentrations indicated in this section.

7. Crush all empty drums prior to containerization. Crush the drums to reduce the total original drum volume by a minimum of 75 percent. Containerize empty drums with no leachable lead paint as non-hazardous materials in accordance with Section 02 41 23 – Debris and Miscellaneous Removals. Containerize empty drums with leachable lead paint in accordance with Section 02 83 12 – Lead Based Paint Abatement-Maximum Precautions, Section 02 83 11 – Lead Based Paint Abatement-Intermediate Precautions and Section 02 83 10 – Lead Based Paint Abatement-Minimum Precautions.

3.8 CLEANING OF FUEL TANKS/ASTS/PIPELINES

.1 Debris at the sites may consist of fuel tanks, ASTs and pipelines which may contain fuel.

.2 Prior to the demolition and removal of fuel tanks, ASTs and pipelines:

1. Drain and flush all products in connected piping in a manner as to prevent spillage.

2. Remove all residual fuel by passing a “Teflon Pig” through the line.

3. Isolate the line to prevent the passage of vapours using a standard plumber’s line on the end of a tee handle.

4. Excavate and cut the pipe for compaction and disposal as per Section 02 41 23 – Debris and Miscellaneous Removals. Regrade the area in accordance with Section 31 22 13 – Rough
Grading.

.5 Incinerate all liquids contained in the tank. Incinerate in a container to prevent soil or water contamination and ensure an oxygen-rich environment to promote complete combustion. Incineration to occur in accordance with Section 01 35 32 – Site Specific Health and Safety Plan.

.6 Rinse tanks with water to remove any residual product. Filter the wash water through oil-absorbent material or oil/water separator.

.7 Test the used oil-absorbent material to determine disposal requirements. Incinerate oil-absorbent material meeting the following criteria on-site or package for disposal off-site at Contractor’s licensed disposal facilities:

1. PCBs < 2 ppm
2. Chlorine < 1000 ppm
3. Cadmium < 2 ppm
4. Chromium < 10 ppm
5. Lead < 100 ppm
6. Glycol/Alcohol < 2%

.8 Treat if necessary and discharge remaining waste wash water in accordance with the wastewater discharge criteria outlined in Section 01 35 15 - Special Project Procedures for Contaminated Sites.

.9 The oil-absorbent material containing contaminants in excess of the above criteria should be packed in accordance with TDGA regulations, as required, for disposal off site at a licensed disposal facility.

.10 The Contractor is to submit purging and off-gassing safe work procedures for approval by the Departmental Representative prior to commencing off-gassing. The safe work procedures must follow applicable regulations and guidelines.

.11 Degass all tanks in accordance with the approved safe work practices. Use nitrogen for degassing, as required, if ventilation and purging methods fail. Monitor areas surrounding tanks and pipeline for vapour build up during degassing.

.12 Following degassing, check interior explosive vapour concentrations which must be less than 20 percent LEL prior to demolition.

3.9 CLEANING OF SEWAGE LINES AND TANKS

.1 Sewer lines must be rinsed with wash water prior to demolition. Sample and analyze the liquids, including wash water, in accordance with the wastewater discharge criteria outlined in Section 01 35 15 - Special Project Procedures for Contaminated Sites.

.2 Analyze sewage sludge in accordance with the impacted soil criteria described in Section 02 61 00 – Soil Remediation. Dispose of this material in accordance with the requirements of Section 02 61 00.01 – Soil Remediation.

3.10 COLLECTION AND DISPOSAL OF BATTERIES

.1 Collect and containerize all batteries for off-site shipment.

.2 Transfer battery containers to the Temporary Storage Area for storage prior to transportation to final disposal site.

.3 Ship battery containers off-site to Contractor’s Designated Hazardous Waste Disposal Facility.

3.11 PACKAGING, LABELLING AND INVENTORY OF CONTAINERS

.1 Provide a numbering system and maintain an inventory of all containers to be transported and
disposed of off-site.

.2 Package and label each "hazardous material" in accordance with the "Class" and "Packaging Group" as per the TDGA.

.3 Submit to Departmental Representative, a copy of the inventory of the contents of each container.

3.12 CLEANING

.1 Leave Work area clean at end of each day.

.2 Upon completion remove surplus materials, rubbish, tools and equipment.

.3 Waste Management: separate waste materials for transport off-site

.1 Dispose of hazardous waste materials in accordance with applicable federal and territorial acts, regulations, and guidelines.

.2 Recycle hazardous wastes for which there is approved, cost effective recycling process available.

.3 Send hazardous wastes to authorized hazardous waste disposal or treatment facilities.

.4 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.

.5 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.

.6 Dispose of hazardous wastes in timely fashion in accordance with applicable territorial regulations.

.7 Minimize generation of hazardous waste to maximum extent practicable. Take necessary precautions to avoid mixing clean and contaminated wastes.

.8 Identify and evaluate recycling and reclamation options as alternatives to land disposal, such as:

.1 Hazardous wastes recycled in manner constituting disposal.

.2 Hazardous waste burned for energy recovery.

.3 Lead-acid battery recycling.

.4 Hazardous wastes with economically recoverable precious metals.

END OF SECTION
PART 1 - GENERAL

1.1 DESCRIPTION

.1 Comply with requirements of this Section when performing following work:
   .1 Removing non-friable asbestos-containing materials as listed in Appendix A. If the material is
      removed without being broken, cut, drilled, abraded, ground, sanded or vibrated. If removal is
      to incorporate any of these methods, then work procedures are to be upgraded as approved by
      the Departmental Representative.

.2 This section shall apply to the following building materials and locations:
   .1 Asbestos Furnace Gaskets (containing Chrysotile Asbestos)
   .1 Bullmoose Mine Site – Mill Area (Drawing BM3-1).

1.2 RELATED SECTIONS

.1 Section 01 31 18 – Construction Progress Schedules - Bar (GANTT) Chart.

.2 Section 01 33 00 - Submittal Procedures.

.3 Section 01 35 15 – Special Project Procedures for Contaminated Sites.

.4 Section 01 35 32 – Site Specific Health and Safety Plan.

.5 Section 01 35 43 - Environmental Procedures.

.6 Section 02 41 16 – Structure Demolition.

.7 Section 02 41 23 – Debris and Miscellaneous Removal.

.8 Section 02 81 01 – Hazardous Materials.

.9 Section 02 82 00.02 – Asbestos Abatement Intermediate Precautions.

.10 Section 02 82 00.03 – Asbestos Abatement Maximum Precautions.

1.3 REFERENCES

.1 Canada Labour Code (R.S.C., 1985, c.L-2)
   .1 Canada Occupational Health and Safety Regulations (SOR/86-304).
   .1 Part X – Hazardous Substances.

.2 Department of Justice Canada (Jus)
   .1 Canadian Environmental Protection Act (CEPA), 1999 (S.C. 1999, c.33).

.2 Transportation of Dangerous Goods Act (TDGA), 1992 (SC1992, c.34)
   .1 Transportation of Dangerous Goods Regulations (SOR/2001-286).

.3 Hazardous Products Act (R.S.C., 1985, c. H-3)
   .1 Controlled Products Regulations (SOR/88-66).
   .2 Workplace Hazardous Materials Information System.
.3 Canadian General Standards Board (CGSB)
  .2 CSA Standard Z94.4-93 (R1997) – Selection, Use and Care of Respirators.

.4 Department of Environment and Natural Resources, Government of the Northwest Territories

.5 Workers Safety & Compensation Commission.
  .1 Code of Practice on Asbestos Abatement (2012).


1.4 DEFINITIONS

.1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.

.2 Amended Water: water with non-ionic surfactant wetting agent added to reduce water tension to allow thorough wetting of fibres.

.3 Asbestos-Containing Materials (ACMs): materials that contain 0.5 per cent or more asbestos by dry weight and are identified under Existing Conditions including fallen materials and settled dust.

.4 Asbestos Work Area: area where work takes place which will, or may, disturb ACMs.

.5 Authorized Visitors: Department Representative and representatives of regulatory agencies.

.6 Competent worker person: in relation to specific work, means a worker who:
  .1 Is qualified because of knowledge, training and experience to perform the work.
  .2 Is familiar with the Territorial and federal laws and with the provisions of the regulations that apply to the work.
  .3 Has knowledge of all potential or actual danger to health or safety in the work.

.7 Friable material: means material that:
  .1 When dry, can be crumbled, pulverized or powdered by hand pressure, or
  .2 is crumbled, pulverized or powdered.

.8 Non-Friable Material: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.

.9 Occupied Area: any area of the building or work site that is outside Asbestos Work Area where non-protected personnel are present.

.10 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide protection and isolation.

.11 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must have appropriate capacity for work.
.12 Supervisor: Contractor's worker able to provide a history of satisfactory experience in the area of asbestos abatement that can satisfy Territorial and federal requirements and will be permitted to supervise the work in this Section. The supervisor responsible for the work of this Section is to have a minimum of five (5) years of experience in the area of asbestos abatement.

1.5 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of asbestos-containing waste in accordance with requirements of AHJ.

.3 Submit Territorial and/or local requirements for Notice of Project Form.

.4 Submit proof of Contractor's Asbestos Liability Insurance.

.5 Submit to Departmental Representative necessary permits for transportation and disposal of asbestos-containing waste and proof that asbestos-containing waste has been received and properly disposed.

.6 Submit proof that all asbestos workers and/or supervisor have received appropriate training and education by a competent person in the hazards of asbestos exposure, good personal hygiene and work practices while working in Asbestos Work Areas, and the use, cleaning and disposal of respirators and protective clothing.

.7 Submit proof satisfactory to Departmental Representative that employees have respirator fitting and testing. Workers must be fit tested (irritant smoke test) with respirator that is personally issued.

1.6 QUALITY ASSURANCE

.1 Regulatory Requirements: comply with Federal, Territorial, and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications, more stringent requirement applies. Comply with regulations in effect at time Work is performed.

.2 Health and Safety:

.1 Perform construction occupational health and safety in accordance with Section 01 35 32 - Site Specific Health and Safety Plan.

.2 Safety Requirements: Worker Protection.

.1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area include:

.1 Air purifying half-mask respirator with N-100, R-100 or P-100 particulate filter, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Territorial Authority Having Jurisdiction. The respirator is to be fitted so that there is an effective seal between the respirator and the worker's face, unless the respirator is equipped with a hood or helmet. The respirator is to be cleaned, disinfected and inspected after use on each shift, or more often if necessary, when issued for the exclusive use of one worker, or after each use when used by more than one worker. The respirator identified to have damaged or deteriorated parts shall be replaced prior to further use. When not in use, respirators shall be stored in a convenient, clean and sanitary location. The employer is to establish written procedures regarding the selection, use and care of respirators, and a copy of the procedures to be provided to and reviewed with each worker who is required to wear a respirator. A worker is not to be assigned to an operation requiring
the use of a respirator unless he or she is physically able to perform the operation while using the respirator.

.2 Disposable-type protective clothing that does not readily retain or permit penetration of asbestos fibres. Protective clothing to be provided by the employer and worn by every worker who enters the work area, and the protective clothing shall consist of a head covering and full body covering that fits snugly at the ankles, wrists and neck, in order to prevent asbestos fibres from reaching the garments and skin under the protective clothing to include suitable footwear, and to be repaired or replaced if torn. The contractor is to provide suitable footwear relevant to the safe work procedure. This may be steel toed rubber boots or steel toed boots extending above the ankle.

.2 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.

.3 Before leaving Asbestos Work Area, the worker can decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing, or, if the protective clothing will not be reused, place it in a container for dust and waste. The container to be dust tight, suitable for asbestos waste, impervious to asbestos, identified as asbestos waste, cleaned with a damp cloth or a vacuum equipped with a HEPA filter immediately before removal from the work area, and removed from the work area frequently and at regular intervals.

.4 Facilities for washing hands and face shall be provided where the main point of ingress and egress has been identified for the Asbestos Work Area.

.5 Ensure workers wash hands, face, and respirator when leaving Asbestos Work Area.

.6 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.

.7 If at any time the contractor, Departmental Representative or analytical confirmation shows that the protection factor of the minimum asbestos abatement procedure is inadequate, work procedures are to be upgraded to intermediate or high risk work procedures or additional controls must be requested by the contractor in writing for approval by the Departmental Representative.

### ACM DISPOSAL

.1 Disposal of asbestos waste generated by removal activities must comply with Federal, Territorial and Municipal regulations. Dispose of asbestos waste in sealed double thickness 0.15 mm bags. Label bags with appropriate warning labels.

.2 Transport waste by an approved means to the Temporary Storage Area on-site until wastes can be disposed of at the Contractor’s approved Waste Disposal Facility. Provide manifests describing and listing waste created.

### EXISTING CONDITIONS

.1 Reports and information pertaining to ACMs to be handled, removed, or otherwise disturbed and disposed of using minimum precautions during this Project are identified in Appendix A and on the Drawing BM3-1.

.2 Notify Departmental Representative of friable material discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material pending instructions from Departmental Representative.
1.9 INSTRUCTIONS

.1 Before beginning Work, provide Departmental Representative satisfactory proof that every worker has had instruction and training in hazards of asbestos exposure, in personal hygiene and work practices, and in use, cleaning, and disposal of respirators and protective clothing.

.2 Instruction and training related to respirators includes, following minimum requirements:
   .1 Fitting of equipment.
   .2 Inspection and maintenance of equipment.
   .3 Disinfecting of equipment.
   .4 Limitations of equipment.

.3 Instruction and training must be provided by a competent, qualified person.

1.10 SIGNS

.1 Signage: Display signs in all work areas where access to a contaminated area is possible. The English version of the signs is to read:
   CAUTION, ASBESTOS HAZARD AREA.
   UNAUTHORIZED ENTRY PROHIBITED.
   WEAR PROTECTIVE EQUIPMENT.
   Post a similar sign in the language of the local dialect.

.2 Sign letters: all lettering is to be HELVETICA Medium font. The letter size is to be:
   English:
   Caution, Asbestos Hazard Area. 25 mm
   Unauthorized entry prohibited: 19 mm
   Wear Protective Equipment 19 mm

1.11 MEASUREMENT FOR PAYMENT

.1 The abatement, separation, packaging, and disposal of asbestos debris will not be measured for payment and should be included in the price for demolition of the structures as described in Section 02 41 16 – Structure Demolition, 02 41 23 – Debris and Miscellaneous Removals or 02 81 01 – Hazardous Materials as applicable, including but not limited to the following:
   .1 Supply of all materials, labour, and equipment necessary to perform the work in accordance with these specifications, including the supply and transport to the site of asbestos waste containers.
   .2 Construction of temporary enclosures.
   .3 Handling, separation and disposal of asbestos materials from other debris and miscellaneous materials.
   .4 Preparation of asbestos inventory.
   .5 Temporary storage of asbestos as required, prior to transport to the Contractor’s approved Waste Disposal Facility.
   .6 Transportation to and disposal of asbestos at Contractor’s approved Waste Disposal Facility.

.2 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 – Construction Progress Schedules – Bar (GANTT) Chart.
PART 2 - PRODUCTS

2.1 MATERIALS

.1 Drop Sheets:
   .1 Polyethylene: 0.15 mm thick.
   .2 FR polyethylene: 0.15 mm thick woven fibre reinforced fabric bonded both sides with polyethylene.

.2 Wetting Agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with water in a concentration to provide thorough wetting of asbestos-containing material.

.3 Waste Containers: contain waste in two separate containers.
   .1 Inner container: 0.15 mm thick sealable polyethylene waste bag.
   .2 Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 mm thick sealable polyethylene bag.
   .3 Labelling requirements: affix pre-printed cautionary asbestos warning in both official languages (English and French) that is visible when ready for removal to disposal site.

PART 3 - EXECUTION

3.1 PROCEDURES

.1 Complete occupational health and safety in accordance with Section 01 35 32 – Site Specific Health and Safety Procedures for Contaminated Sites.

.2 Before beginning Work, isolate Asbestos Work Area using, minimum, pre-printed cautionary asbestos warning signs in both official languages (English and French) in upper case ‘Helvetica Medium’ letters reading as follows, where number is parenthesis indicates font size to be used: ‘CAUTION ASBESTOS HAZARD AREA (25 mm) / NO UNAUTHORIZED ENTRY (19 mm) / WEAR ASSIGNED PROTECTIVE EQUIPMENT (19 mm)/ BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM (7 mm)’.

.3 Before beginning work, isolate Asbestos Work Area using, minimum, preprinted cautionary asbestos warning signs in both official languages (English and French) that are visible at access routes to Asbestos Work Area.
   .1 Remove visible dust from surfaces in the work area where dust is likely to be disturbed during course of work.
   .2 Use HEPA vacuum or damp cloths where damp cleaning does not create a hazard and is otherwise appropriate.
   .3 Do not use compressed air to clean up or remove dust from any surface.

.4 Prevent spread of dust from Asbestos Work Area using measures appropriate to work to be done.

.5 Wet materials containing asbestos to be cut, ground, abraded, scraped, drilled, or otherwise disturbed unless wetting creates hazard or causes damage.
   .1 Use garden reservoir type low - velocity fine - mist sprayer.
   .2 Perform Work to reduce dust creation to lowest levels practicable.
   .3 Work will be subject to air monitoring under Contractor’s Quality Assurance program, and to visual inspection under Contractor’s Quality Assurance and by Departmental Representative.
   .4 Contamination of surrounding areas indicated by visual inspection or air monitoring will require complete enclosure and clean-up of affected areas.
Frequently and at regular intervals during Work and immediately on completion of work:

1. Dust and waste to be cleaned up and removed using a vacuum equipped with a HEPA filter, or by damp mopping or wet sweeping, and placed in a waste container, and
2. Drop sheets to be wetted and placed in a waste container as soon as practicable.

Cleanup:

1. Place dust and asbestos containing waste in sealed dust-tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste; wet and fold these items to contain dust, and then place in plastic bags.
2. Clean exterior of each waste-filled bag using damp cloths or HEPA vacuum and place in second clean waste bag immediately prior to removal from Asbestos Work Area.
3. Seal double bagged asbestos waste material and dispose at the Bullmoose Non-Hazardous Landfill. Dispose in accordance with the requirements of the Territorial and Federal Authority Having Jurisdiction.
4. Perform final thorough clean-up of Work areas and adjacent areas affected by Work using HEPA vacuum.

END OF SECTION
PART 1 - GENERAL

1.1 DESCRIPTION

.1 Comply with requirements of this Section when performing following Work:
  .1 Removing non-friable asbestos containing materials by breaking, cutting, drilling, abrading, grounding, sanding or vibrating if the work is done by means of power tools that are attached to dust-collecting devices equipped with HEPA filters.
  .2 Removing minor areas (less than 0.09 m²) of friable asbestos containing ash within footprint of former buildings at the Ruth and Spectrum mine sites.
  .3 Removing non-friable asbestos containing materials using glove bag methods.

.2 These materials can also be removed by breaking, cutting, drilling, abrading, grounding, sanding or vibrating if:
  .1 The material is wetted to control the spread of dust or fibres.
  .2 The work is done only by means of non-powered hand-held tools.
  .3 The work is completed using a glove-bag.

.3 This section shall apply to unknown building materials that may be identified during the Remediation Work.

1.2 RELATED SECTIONS

.1 Section 01 32 18 – Construction Progress Schedules - Bar (GANTT) Chart.
 .2 Section 01 33 00 – Submittal Procedures.
 .3 Section 01 35 15 – Special Project Procedures for Contaminated Sites.
 .4 Section 01 35 32 – Site Specific Health and Safety Plan.
 .5 Section 01 35 43 – Environmental Procedures.
 .6 Section 02 41 16 – Structure Demolition.
 .7 Section 02 41 23 – Debris and Miscellaneous Removals.
 .8 Section 02 81 01 – Hazardous Materials.
 .9 Section 02 82 00.01 – Asbestos Minimum Precautions.
 .10 Section 02 82 00.03 – Asbestos Maximum Precautions.

1.3 REFERENCES

.1 Canada Labour Code (R.S.C., 1985, c.L-2)
  .1 Canada Occupational Health and Safety Regulations (SOR/86-304).
  .1 Part X – Hazardous Substances.

.2 Department of Justice Canada (Jus)
  .1 Canadian Environmental Protection Act (CEPA), 1999 (S.C. 1999, c.33).
.2 Transportation of Dangerous Goods Act (TDGA), 1992 (SC1992, c.34)
.1 Transportation of Dangerous Goods Regulations (SOR/2001-286).

.3 Hazardous Products Act (R.S.C., 1985, c. H-3)
.1 Controlled Products Regulations (SOR/88-66).
.2 Workplace Hazardous Materials Information System.

.3 Canadian General Standards Board (CGSB)
.2 CSA Standard Z94.4-93 (R1997) – Selection, Use and Care of Respirators.

.4 Department of Environment and Natural Resources, Government of the Northwest Territories

.5 Workers Safety & Compensation Commission.
.1 Code of Practice on Asbestos Abatement (2012).


1.4 DEFINITIONS

.1 Amended Water: water with non-ionic surfactant wetting agent added to reduce water tension to allow wetting of fibres.

.2 Asbestos Containing Materials (ACMs): materials that contain 0.5 per cent or more asbestos by dry weight and are identified under Existing Conditions including fallen materials and settled dust.

.3 Asbestos Work Area: area where work takes place which will, or may disturb ACMs, including potentially ACM containing ash in the footprint of the Cookhouse and Manager’s House at Ruth mine site (Figures RM3-1 and RM3-5).

.4 Authorized Visitors: Designated Representative and representatives of regulatory agencies.

.5 Competent worker: in relation to specific work, means a worker who:
.1 Is qualified because of knowledge, training and experience to perform the work.
.2 Is familiar with the Territorial and Federal laws and with the provisions of the regulations that apply to the work.
.3 Has knowledge of all potential or actual danger to health or safety in the work.

.6 Friable Materials: material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered. Includes potentially ACM containing ash.

.7 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any dimension at 99.97% efficiency.

.8 Non-Friable Material: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.

.9 Occupied Area: any area of building or work site that is outside Asbestos Work Area.
.10 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide protection and isolation.

.11 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must have appropriate capacity for scope of work.

.12 Supervisor: Contractor’s worker able to provide a history of satisfactory experience in the area of asbestos abatement that can satisfy Territorial and Federal requirements and will be permitted to supervise the work in this Section. The supervisor responsible for the work of this Section is to have a minimum of five (5) years of experience in the area of asbestos abatement.

.13 Glove Bag: pre-fabricated glove bag as follows:
   .1 Minimum thickness 0.25 mm (10 mil) polyvinyl-chloride bag.
   .2 Integral 0.25 mm (10 mil) thick polyvinyl-chloride gloves and elastic ports.
   .3 Equipped with reversible double-pull double throw zipper on top and at approximately mid-section of the bag.
   .4 Straps for sealing ends around pipe.
   .5 Must incorporate internal closure strip if it is to be moved or used in more than one specific location.

1.5 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of asbestos containing waste in accordance with requirements of authority having jurisdiction.

.3 Submit Territorial and/or local requirements for Notice of Project Form.

.4 Submit proof of Contractor’s Asbestos Liability Insurance.

.5 Submit to Departmental Representative necessary permits for transportation and disposal of asbestos containing waste and proof that asbestos containing waste has been received and properly disposed.

.6 Submit proof satisfactory to Departmental Representative that all asbestos workers and/or supervisor have received appropriate training and education by a competent person in the hazards of asbestos exposure, good personal hygiene, entry and exit from Asbestos Work Area, and aspects of work procedures and protective measures.

.7 Submit proof that supervisory personnel have attended asbestos abatement course, of not less than two (2) days duration, approved by Departmental Representative. Minimum of one supervisor for every ten (10) workers.

.8 Submit Worker’s Safety Compensation Commission status and transcription of insurance prior to commencing asbestos abatement work.

.9 Submit documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials including:
   .1 Encapsulants;
   .2 Amended water;
   .3 Slow drying sealer.
.10 Submit proof satisfactory to Departmental Representative that employees have respirator fitting and testing. Workers must be fit tested (irritant smoke test) with respirator that is personally issued.

1.6 QUALITY ASSURANCE

.1 Regulatory Requirements: comply with Federal, Territorial and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at the time Work is performed.

.2 Health and Safety:

.1 Perform construction occupational health and safety in accordance with Section 01 35 32 – Site Specific Health and Safety Plan.

.2 Safety Requirements: worker and visitor protection.

.1 Designate Asbestos Work Area using an asbestos banner tape barrier surrounding the areas containing asbestos. The areas should include the remains of the Manager’s Building (Figure RM3-5) and Cookhouse (Figure RM3-1) at the Ruth mine site.

.2 Protective equipment and clothing to be worn by workers while in Asbestos Work Area include:

.1 Air purifying half-mask respirator with N-100, R-100 or P-100 particulate filter, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Provincial Authority having jurisdiction. The respirator is to be fitted so that there is an effective seal between the respirator and the worker's face, unless the respirator is equipped with a hood or helmet. The respirator to be cleaned, disinfected and inspected after use on each shift, or more often if necessary, when issued for the exclusive use of one worker, or after each use when used by more than one worker. The respirator to have damaged or deteriorated parts is to be replaced prior to being used by a worker; and, when not in use, it is to be stored in a convenient, clean and sanitary location. The employer is to establish written procedures regarding the selection, use and care of respirators, and a copy of the procedures to be provided to and reviewed with each worker who is required to wear a respirator. A worker is not to be assigned to an operation requiring the use of a respirator unless he or she is physically able to perform the operation while using the respirator.

.2 Disposable type protective clothing that does not readily retain or permit penetration of asbestos fibres is to be worn. Protective clothing to be provided by the employer and worn by every worker who enters the work area, and the protective clothing is to consist of a head covering and full body covering that fits snugly at the ankles, wrists and neck, in order to prevent asbestos fibres from reaching the garments and skin under the protective clothing. It includes suitable footwear, and it to be repaired or replaced if torn. The Contractor is to provide suitable footwear relevant to the safe work procedure. This may be steel toes rubber boots or steel toed boots extending to the ankle.

.3 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.

.4 Before leaving Asbestos Work Area, the worker can decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing, or, if the protective clothing will not be reused, place it in a container for dust and waste. The container to be dust tight, suitable for asbestos waste, impervious to asbestos, identified as asbestos waste, cleaned with a damp cloth or a vacuum equipped with a HEPA filter immediately before removal from the work area, and removed from the work area frequently and at regular intervals.

.5 Facilities for washing hands and face shall be provided where the main point of ingress and egress has been identified for the Asbestos Work Area.
.6 Ensure workers wash hands, face, and respirator when leaving Asbestos Work Area.
.7 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.
.8 If at any time the Contractor, Departmental Representative or analytical confirmation shows that the protection factor of the minimum asbestos abatement procedure is inadequate, work procedures are to be upgraded to intermediate or high risk work procedures or additional controls must be requested by the contractor in writing for approval by the Departmental Representative.
.9 Visitor Protection:
   .1 Provide protective clothing and approved respirators to Authorized Visitors to work areas.
   .2 Instruct Authorized Visitors in the use of protective clothing, respirators and procedures.
   .3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Asbestos Work Area.

1.7 ACM DISPOSAL

   .1 Disposal of asbestos waste generated by removal activities must comply with Federal, Territorial and Municipal regulations. Dispose of asbestos waste in sealed double thickness 15 mm bags or leak proof drums. Label containers with appropriate warning labels.

   .2 Transport waste by an approved means to the Temporary Storage Area on-site until wastes can be disposed of at Contractor’s approved Waste Disposal Facility. Provide manifests describing and listing waste created.

1.8 EXISTING CONDITIONS

   .1 Reports and information pertaining to ACMs to be handled, removed, or otherwise disturbed and disposed of using intermediate precautions during this Project are identified in Appendix A and on the Drawings RM3-1, RM3-5, and SL3.

   .2 Notify Departmental Representative of friable material discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material until instructed by Departmental Representative.

   .3 Quantity and state of ACMs include insulation remaining in the stove pipes, as well as potentially ACM containing ash in vicinity of the stove pipes. Structures are no longer present due to forest fire activity in the area.

1.9 INSTRUCTIONS

   .1 Before beginning Work, provide Departmental Representative satisfactory proof that every worker has had instruction and training in hazards of asbestos exposure, in personal hygiene and work practices, in use of glove bag procedures, and in use, cleaning, and disposal of respirators and protective clothing.

   .2 Instruction and training related to respirators includes, at minimum:
      .1 Fitting of equipment.
      .2 Inspection and maintenance of equipment.
      .3 Disinfecting of equipment.
      .4 Limitations of equipment.
.3 Instruction and training must be provided by competent, qualified person.

1.10 MEASUREMENT FOR PAYMENT

.1 The abatement, separation, packaging, and disposal of asbestos from buildings to be demolished will not be measured for payment and should be included in the price for demolition of the structures as described in Section 02 41 16 – Structure Demolition, 02 41 23 – Debris and Miscellaneous Removals or 02 81 01 – Hazardous Materials as applicable, including but not limited to the following:

.1 Supply of all materials, labour, and equipment necessary to perform the work in accordance with these specifications, including the supply and transport of asbestos waste containers to the site.

.2 Handling, separation and disposal of asbestos materials from other debris and miscellaneous materials.

.3 Preparation of asbestos inventory.

.4 Temporary storage of asbestos as required, prior to transport to the Ruth Non-hazardous Landfill at the Temporary Storage Area.

.5 Transport and on-site disposal of asbestos waste at the Ruth Non-hazardous Landfill.

.2 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 – Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Drop Sheets:

.1 Polyethylene: 0.15 mm thick.

.2 FR polyethylene: 0.15 mm thick woven fibre reinforced fabric bonded both sides with polyethylene.

.2 Wetting Agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with water in concentration to provide thorough wetting of asbestos containing material.

.3 Waste Containers: contain waste in two separate containers.

.1 Inner container: 0.15 mm thick sealable polyethylene bag.

.2 Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 mm thick sealable polyethylene bag.

.3 Labelling requirements: affix pre-printed cautionary asbestos warning, in both official languages (English and French), that is visible when ready for removal to disposal site.

.4 Glove Bag:

.1 Acceptable materials: safe-T-Strip products in configuration suitable for Work.

.2 Glove bags intended for use in more than one location must be equipped with reversible, double-pull, double-throw zipper on top and at approximately mid-section of the bag.

.5 Tape: tape suitable for sealing polyethylene to surfaces under both dry and wet conditions using amended water.

.6 Slow-drying sealer: non-staining, clear, water-dispersible type that remains tacky on surface for at least 8 hours and designed for purpose of trapping residual asbestos fibres.
.7 Encapsulant: surface film forming type conforming to CAN/CGSB-1.205.

.8 Provide 24 volt safety lighting and ground fault interrupter (GFI) circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical cables and equipment.

PART 3 - EXECUTION

3.1 SUPERVISION

.1 Minimum of one (1) Supervisor for every ten (10) workers is required.

.2 Approved Supervisor must remain within Asbestos Work Area during disturbance, removal, or other handling of asbestos-containing materials.

3.2 PROCEDURES

.1 Complete construction occupational health and safety in accordance with Section 01 35 32 - Health and Safety Plan.

.2 Before beginning Work, at the Asbestos Work Areas, install warning signs in both official languages (English and French) in upper case 'Helvetica Medium' letters reading as follows, where number in parentheses indicates font size to be used: ‘CAUTION ASBESTOS HAZARD AREA (25 mm) / NO UNAUTHORIZED ENTRY (19 mm) / WEAR ASSIGNED PROTECTIVE EQUIPMENT (19 mm) / BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM (7 mm)’.

.3 Prevent spread of dust from Asbestos Work Area using measures appropriate to work to be done.

.1 Use FR polyethylene drop sheets where dust or contamination cannot otherwise be safely contained. Drop sheets are not to be reused.

.4 Remove potentially ACM containing ash; thoroughly wet ash to be removed or disturbed before and during Work unless wetting creates hazard or causes damage.

.1 Use garden reservoir type low-velocity sprayer or airless spray equipment capable of producing mist or fine spray.

.2 Perform Work in a manner to reduce dust creation to lowest levels practicable.

.5 Pipe Insulation Removal Using Glove Bag:

.1 Before beginning Work remove visible dust from surfaces in work area where dust is likely to be disturbed during course of work.

.1 Use HEPA vacuum or damp cloths where damp cleaning does not create hazard and is otherwise appropriate.

.2 Do not use compressed air to clean up or remove dust from any surface.

.2 Prevent spread of dust from Asbestos Work Area using measures appropriate to work to be done.

.3 Remove loose material by HEPA vacuum; thoroughly wet friable material containing asbestos to be removed or disturbed before and during Work unless wetting creates hazard or causes damage.

.1 Use garden reservoir type low-velocity sprayer or airless spray equipment capable of producing mist or fine spray.

.2 Complete Work in a manner to reduce dust creation to lowest levels practicable.
.4 Place tools necessary to remove insulation in tool pouch. Wrap bag around pipe and close zippers. Seal bag to pipe with cloth straps.
.5 Place hands in gloves and use necessary tools to remove insulation. Arrange insulation in bag to obtain full capacity of bag.
.6 Insert nozzle of garden reservoir type sprayer into bag through valve and wash down pipe and interior of bag thoroughly. Wet surface of insulation in lower section of bag.
.7 When glove bags are intended for use at more than one location: after wash-down and application of sealer, seal off waste in lower section of bag using zipper at mid-section of bag. Remove air from top section of bag through elasticized valve using HEPA vacuum. Remove bag from pipe, re-install in new location, and reseal to pipe prior to opening lower section of bag. Repeat stripping operation.
.8 If bag is to be moved along pipe, first remove air from top section through elasticized valve using HEPA vacuum. Next loosen straps, move bag, re-seal to pipe using double-pull zipper to pass hangers. Repeat stripping operation.
.9 To remove bag after completion of stripping, wash top section and tools thoroughly. Remove air from top section through elasticized valve using a HEPA vacuum. Pull polyethylene waste container over glove bag before removing from pipe. Release one strap and remove freshly washed tools. Place tools in water. Remove second strap and zipper. Fold over into waste container and seal.
.10 After removal of bag the pipe must be made free of residue. Remove residue using HEPA vacuum or wet cloths. Surfaces must be free of sludge which after drying could release asbestos dust into atmosphere. Seal exposed surfaces of pipe and ends of insulation with slow-drying sealer to seal in any residual fibres.
.11 Upon completion of Work shift, cover exposed ends of remaining pipe insulation with polyethylene taped in place.

.6 Work is subject to air monitoring under contractor’s Quality Assurance program, and to visual inspection under contractor’s Quality Assurance program and by Departmental Representative. Contamination of surrounding areas indicated by visual inspection or air monitoring will require clean-up of affected areas.

.7 Contamination of surrounding areas indicated by visual inspection or air monitoring will require complete enclosure and clean-up of affected areas.

.8 Cleanup:
.1 Frequently during Work and immediately after completion of work, clean up dust and asbestos containing waste (including ash) using HEPA vacuum.
.2 Place dust and asbestos containing waste in sealed dust tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste and wet and fold to contain dust and then place in waste bags.
.3 Immediately before their removal from Asbestos Work Area and disposal, clean each filled waste bag using damp cloths or HEPA vacuum and place in second clean waste bag.
.4 Seal and remove double bagged waste from site. Dispose of in accordance with requirements of the Authority Having Jurisdiction. Supervise dumping and ensure that guidelines and regulations for asbestos disposal are followed.
.5 Perform final thorough clean-up of Asbestos Work Areas and adjacent areas affected by Work using HEPA vacuum.

3.3 FINAL CLEANUP AND DEMOBILIZATION

.1 From beginning of Work until completion of cleaning operations, Departmental Representative to take air samples on daily basis outside of Asbestos Work Areas in accordance with Territorial Occupational Health and Safety Regulations.
.2 If air monitoring shows that areas outside Asbestos Work Areas are contaminated maintain and clean these areas in same manner as that applicable to Asbestos Work Area.

.3 Ensure that respiratory safety factors are not exceeded.

.4 During the course of Work, Departmental Representative to measure fibre content of air outside Work areas by means of air samples analyzed by Phase Contrast Microscopy (PCM).

.1 Stop Work when PCM measurements exceed 0.05 f/cc and correct procedures.

END OF SECTION
PART 1 - GENERAL

1.1 DESCRIPTION

.1 Unless otherwise determined through risk assessment conducted by a qualified person to require intermediate precautions comply with requirements of this Section when performing following Work:

.1 Removal of asbestos containing material from piping as specifically indicated below:

.1 Pipe Insulation (Chrysotile) and burned remnants of Pipe Insulation (Chrysotile) in the former Cookhouse at the Ruth mine site (Drawing RM3-1).

.2 Pipe Insulation (Chrysotile and Crocidolite) and burned remnants of Pipe Insulation (Chrysotile and Crocidolite) in the former Manager’s House at the Ruth mine site (Drawing RM3-5).

.3 Burned remnants of yellow linoleum in north cabin at APEC 23 at the Spectrum mine site (Drawing SL 3).

.4 Burned remnants of yellow linoleum and fibreboard in the north cabin at APEC 26 at the Spectrum mine site (Drawing SL 3).

1.2 RELATED SECTIONS

.1 Section 01 32 18 – Construction Progress Schedules - Bar (GANTT).

.2 Section 01 33 00 – Submittal Procedures.

.3 Section 01 35 15 – Special Project Procedures for Contaminated Sites.

.4 Section 01 35 32 – Site Specific Health and Safety Procedures for Contaminated Sites.

.5 Section 01 35 43 – Environmental Procedures.

.6 Section 02 41 16 – Structure Demolition.

.7 Section 02 41 23 – Debris and Miscellaneous Removals.

.8 Section 02 81 01 – Hazardous Materials.

.9 Section 02 82 00.01 – Asbestos Abatement - Minimum Precautions.

.10 Section 02 82 00.002 – Asbestos Abatement – Intermediate Precautions.

1.3 REFERENCES

.1 Canada Labour Code (R.S.C., 1985, c.L-2)

.1 Canada Occupational Health and Safety Regulations (SOR/86-304).

.1 Part X – Hazardous Substances.

.2 Department of Justice Canada (Jus)

.1 Canadian Environmental Protection Act (CEPA), 1999 (S.C. 1999, c.33).

.2 Transportation of Dangerous Goods Act (TDGA), 1992 (SC1992, c.34)

.1 Transportation of Dangerous Goods Regulations (SOR/2001-286).
.3 Hazardous Products Act (R.S.C., 1985, c. H-3)
   .1 Controlled Products Regulations (SOR/88-66).
   .2 Workplace Hazardous Materials Information System.

.3 Canadian General Standards Board (CGSB)
   .2 CSA Standard Z94.4-93 (R1997) – Selection, Use and Care of Respirators.

.4 Department of Environment and Natural Resources, Government of the Northwest Territories

.5 Workers Safety & Compensation Commission.
   .1 Code of Practice on Asbestos Abatement (2012).


.8 U.S. Department of Health and Human Services/Centers for Disease Control and Prevention
   (CDC)/National Institute for Occupational Safety and Health (NIOSH)

.9 U.S. Department of Labour - Occupational Safety and Health Administration - Toxic and Hazardous
   Substances

1.4 DEFINITIONS

.1 Airlock: System for permitting ingress or egress without permitting air movement between
   contaminated area and uncontaminated area, typically consisting of two curtained doorways at least 2
   m apart.

.2 Amended Water: Water with a non-ionic surfactant wetting agent added to reduce water tension to
   allow wetting of fibres.

.3 Asbestos Containing Materials (ACMs): Materials that contain 0.5 per cent or more asbestos by dry
   weight and are identified under Existing Conditions including fallen materials and settled dust.

.4 Asbestos Work Areas: Area where work takes place which will, or may disturb ACMs.

.5 Authorized Visitors: Departmental Representative and representatives of regulatory agencies.

.6 Competent worker: In relation to specific work, means a worker who:
   .1 Is qualified because of knowledge, training and experience to perform the work.
   .2 Is familiar with the Territorial and Federal laws and with the provisions of the regulations that
      apply to the work.
   .3 Has knowledge of all potential or actual danger to health or safety in the work.

.7 Curtained doorway: Arrangement of closures to allow ingress and egress from one room to another
   while permitting minimal air movement between rooms, typically constructed as follows:
.1 Place two overlapping sheets of polyethylene over existing or temporarily framed doorway, secure each along top of doorway, secure vertical edge of one sheet along one vertical side of doorway, and secure vertical edge of other sheet along opposite vertical side of doorway.

.2 Reinforce free edges of polyethylene with duct tape and weight bottom edge to ensure proper closing.

.3 Overlap each polyethylene sheet at openings not less than 1.5 m on each side.

.8 DOP Test: Testing method used to determine integrity of Negative Pressure unit using dioctyl phthalate (DOP) HEPA-filter leak test.

.9 Friable Materials: Material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered.

.10 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with a filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.

.11 Negative pressure: System that extracts air directly from work area, filters such extracted air through High Efficiency Particulate Air filtering system, and discharges this air directly outside work area to exterior of building.

.1   System to maintain minimum pressure differential of 5 Pa relative to adjacent areas outside of work areas, be equipped with alarm to warn of system breakdown, and be equipped with instrument to continuously monitor and automatically record pressure differences.

.12 Non-Friable Materials: Material that when dry cannot be crumbled, pulverized or powdered by hand pressure.

.13 Occupied Areas: Any area of building or work site that is outside Asbestos Work Area and non-protected personnel are present.

.14 Polyethylene sheeting sealed with tape: Polyethylene sheeting of type and thickness specified sealed with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide continuous protection and isolation.

.15 Sprayer: Garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must be appropriate capacity for scope of work.

.16 Supervisor: Contractor’s worker able to provide a history of satisfactory experience in the area of asbestos abatement that can satisfy Territorial and Federal requirements and will be permitted to supervise the work in this Section. The supervisor responsible for the work of this Section is to have a minimum of five (5) years of experience in the area of asbestos abatement.

1.5 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Before beginning work:

.1 Obtain from appropriate agency and submit to Departmental Representative necessary permits for transportation and disposal of asbestos waste. Ensure that Departmental Representative is fully aware of hazardous nature of material being disposed, and the proper methods of disposal. Submit proof satisfactory to Departmental Representative that suitable arrangements have been made to receive and properly dispose of asbestos waste.

.2 Submit proof satisfactory to Departmental Representative that all asbestos workers have received appropriate training and education by a competent person on hazards of asbestos
exposure, good personal hygiene, entry and exit from Asbestos Work Area, aspects of work procedures and protective measures while working in Asbestos Work Areas, and the use, cleaning and disposal of respirators and protective clothing. Submit proof of attendance in form of certificate.

.3 Ensure supervisory personnel have attended asbestos abatement course, of not less than two (2) days duration, approved by Departmental Representative. Submit proof of attendance in form of certificate. Minimum of one (1) Supervisor for every ten (10) workers.

.4 Submit layout of proposed enclosures and decontamination facilities to Departmental Representative for review.

.5 Submit documentation including test results for sealer proposed for use.

.6 Submit Territorial and/or local requirements for Notice of Project form.

.7 Submit proof of Contractor's Asbestos Liability Insurance.

.8 Submit proof satisfactory to Departmental Representative that employees have respirator fitting and testing. Workers must be fit tested (irritant smoke test) with respirator that is personally issued.

.9 Submit Worker's Compensation Board status and transcription of insurance.

.10 Submit documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials including but not limited to following:

.1 Encapsulants.
.2 Amended water.
.3 Slow drying sealer.

1.6 QUALITY ASSURANCE

.1 Regulatory Requirements: comply with Federal, Territorial and local requirements pertaining to asbestos, provided that in case of conflict among those requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at time work is performed.

.2 Health and Safety:

.1 Do construction occupational health and safety in accordance with Section 01 35 32 – Site Specific Health and Safety Procedures for Contaminated Sites.

.2 Safety Requirements: worker and visitor protection.

.1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area includes:

.1 Powered air purifying respirator (PAPR) with N-100, R-100 or P-100 particulate filter, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Territorial Authority Having Jurisdiction. The respirator is to be fitted so that there is an effective seal between the respirator and the worker's face, unless the respirator is equipped with a hood or helmet. The respirator is to be cleaned, disinfected and inspected after use on each shift, or more often if necessary, when issued for the exclusive use of one worker, or after each use when used by more than one worker. The respirator to have damaged or deteriorated parts is to be be replaced prior to being used by a worker; and, when not in use, to be stored in a convenient, clean and sanitary location. The employer is to establish written procedures regarding the selection, use and care of respirators, and a copy of the procedures to be provided to and reviewed with each worker who is required to wear a respirator. A worker is not to be assigned to an operation requiring the use of a respirator unless he or she is physically able to perform the operation while using the respirator.

.2 Disposable-type protective clothing that does not readily retain or permit penetration of asbestos fibres. Protective clothing to be provided by the
employer and worn by every worker who enters the work area, and the protective clothing to consist of a head covering and full body covering that fits snugly at the ankles, wrists and neck, in order to prevent asbestos fibres from reaching the garments and skin under the protective clothing and is to be repaired or replaced if torn. Within the enclosure, contractor must make available steel toed rubber boots that are sized for the Departmental Representative or visitors which may be required to enter an enclosure. Steel toed rubber boots used in the enclosure are not to be removed until decontaminated at the end of the abatement procedure. Requirements for each worker during ingress and egress of Asbestos Work Area:

.1 Remove street clothes in clean change room and put on respirator with new filters or reusable filters that have been tested as satisfactory, clean coveralls and head covers before entering Equipment and Access Rooms or Asbestos Work Area. Store street clothes, uncontaminated footwear, towels, and similar uncontaminated articles in clean change room.

.2 Remove gross contamination from clothing before leaving work area then proceed to Equipment and Access Room and remove clothing except respirators. Place contaminated work suits in receptacles for disposal with other asbestos - contaminated materials. Leave reusable items except respirator in Equipment and Access Room. Still wearing the respirator proceed naked to showers. Using soap and water wash body and hair thoroughly. Clean outside of respirator with soap and water while showering; remove respirator; remove filters and wet them and dispose of filters in container provided for purpose; and wash and rinse inside of respirator. When not in use in work area, store work footwear in Equipment and Access Room. Upon completion of asbestos abatement, dispose of footwear as contaminated waste or clean thoroughly inside and out using soap and water before removing from work area or from Equipment and Access Room.

.3 After showering and drying off, proceed to clean change room and dress in street clothes at end of each day's work, or in clean coveralls before eating, smoking, or drinking. If re-entering work area, follow procedures outlined in paragraphs above.

.4 Enter unloading room from outside dressed in clean coveralls to remove waste containers and equipment from Holding Room of Container and Equipment Decontamination Enclosure system. Workers must not use this system as means to leave or enter work area.

.2 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.

.3 Ensure workers are fully protected with respirators and protective clothing during preparation of system of enclosures prior to commencing actual asbestos abatement.

.4 Provide and post in Clean Change Room and in Equipment and Access Room the procedures described in this Section, in both official languages (English and French).

.5 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.

.6 Visitor Protection:

.1 Provide protective clothing and approved respirators to Authorized Visitors to work areas.

.2 Instruct Authorized Visitors in the use of protective clothing, respirators and procedures.
.3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Asbestos Work Area.

1.7 ACM DISPOSAL

.1 Disposal of asbestos waste generated by removal activities must comply with Federal, Territorial and Municipal regulations. Dispose of asbestos waste in sealed double thickness 15 mm bags or leak proof drums. Label containers with appropriate warning labels.

.2 Transport waste by an approved means to the Temporary Storage Area on-site until wastes can be disposed of at Contractor’s approved Waste Disposal Facility. Provide manifests describing and listing waste created.

1.8 EXISTING CONDITIONS

.1 Reports and information pertaining to ACMs to be handled, removed, or otherwise disturbed and disposed of using maximum precautions during this Project are identified in Appendix A and on Drawings RM3-1, RM3-5 and SL3.

.2 Notify Departmental Representative of suspect asbestos containing material is discovered during Work and not apparent from drawings, specifications, or reports pertaining to Work. Do not disturb such material until instructed by Departmental Representative.

1.9 SCHEDULING

.1 Not later than ten (10) days before beginning Work on this Project notify following in writing:

.1.1 Appropriate Regional or Zone Director of Medical Services Branch, Health Canada.

.1.2 Regional Office of Labour Canada.

.1.3 Territorial department responsible for labour.

.2 Inform sub-trades of presence of asbestos containing materials identified in Existing Conditions.

.3 Submit to Departmental Representative copy of notifications prior to start of Work.

1.10 OWNER’S INSTRUCTIONS

.1 Before beginning Work, provide to Departmental Representative satisfactory proof that every worker has had instruction and training in hazards of asbestos exposure, in personal hygiene including dress and showers, in entry and exit from Asbestos Work Area, in aspects of work procedures including glove bag procedures, and in use, cleaning, and disposal of respirators and protective clothing.

.2 Instruction and training related to respirators includes, at minimum:

.2.1 Proper fitting of equipment.

.2.2 Inspection and maintenance of equipment.

.2.3 Disinfecting of equipment.

.2.4 Limitations of equipment.

.3 Instruction and training must be provided by competent, qualified person.

.4 Supervisory personnel to complete required training.
1.11 Measurement for Payment

.1 The abatement, separation, packaging and disposal of asbestos from buildings to be demolished will not be measured for payment and should be included in the price for demolition of the structures as described in Section 02 41 16 - Structure Demolition, 02 41 23 – Debris and Miscellaneous Removals or or Section 02 81 01 – Hazardous Materials, as applicable including, but not limited to the following:
   .1 Supply of all materials, labour, and equipment necessary to perform the work in accordance with these specifications, including the supply and transport to the site of asbestos waste containers.
   .2 Construction of temporary enclosures.
   .3 Handling, separation and disposal of asbestos materials from other debris and miscellaneous materials.
   .4 Preparation of asbestos inventory.
   .5 Temporary storage of asbestos as required, prior to transport to the Ruth Non-Hazardous Landfill at the Temporary Storage Area.
   .6 Transport to the Ruth Non-Hazardous Landfill.

.2 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 - Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Polyethylene: minimum 0.15 mm thick unless otherwise specified; in sheet size to minimize joints.

.2 FR polyethylene: minimum 0.15 mm thick, woven fibre reinforced fabric bonded both sides with polyethylene.

.3 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under both dry conditions and wet conditions using amended water.

.4 Wetting agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether, or other material approved by Departmental Representative, mixed with water in concentration to provide adequate penetration and wetting of asbestos containing material.

.5 Waste Containers: contain waste in two separate containers.
   .1 Inner container: 0.15 mm thick sealable polyethylene bag.
   .2 Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 mm thick sealable polyethylene bag.
   .3 Labelling requirements: affix preprinted cautionary asbestos warning, in both official languages (English and French), that is visible when ready for removal to disposal site.

.6 Tape: tape suitable for sealing polyethylene to surfaces under both dry and wet conditions using amended water.

.7 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least eight (8) hours and designed for purpose of trapping residual asbestos fibres.

.8 Sealer: flame spread and smoke developed rating less than 50.
.9 Encapsulants: surface film forming or penetrating type conforming to CAN/CGSB-1.205.

.10 Provide 24 volt safety lighting and ground fault interrupter (GFI) circuits on power source for electrical tools, in accordance with the applicable CSA standard. Ensure safe installation of electrical cables and equipment.

PART 3 - EXECUTION

3.1 PREPARATION

.1 Complete construction occupational health and safety in accordance with Section 01 35 32 – Site Specific Health and Safety Plan.

.2 Work Areas:
   .1 Shut off and isolate air handling and ventilation systems to prevent fibre dispersal to other building areas during work phase. Conduct smoke tests to ensure that duct work is airtight. Seal and caulk joints and seams of active return air ducts within Asbestos Work Area.
   .2 Pre-clean moveable furniture within proposed work area(s) using HEPA vacuum and remove from work area(s) to temporary staging location to be landfilled.
   .3 Pre-clean fixed casework, plant, and equipment within proposed work areas, using HEPA vacuum and cover with polyethylene sheeting sealed with tape.
   .4 Clean proposed work areas using, where practicable, HEPA vacuum cleaning equipment. If not practicable, use wet cleaning method. Do not use methods that raise dust, such as dry sweeping, or vacuuming using other than HEPA vacuum equipment.
   .5 The spread of dust from the work area to be prevented by:
      .1 Using enclosures of polyethylene or other suitable material that is impervious to asbestos (including, if the enclosure material is opaque, one or more transparent window areas to allow observation of the entire work area from outside the enclosure), if the work area is not enclosed by walls.
      .2 Using curtains of polyethylene sheeting or other suitable material that is impervious to asbestos, fitted on each side of each entrance or exit from the work area.
   .6 Put negative pressure system in operation and operate continuously from time first polyethylene is installed to seal openings until final completion of work including final cleanup. Provide continuous monitoring of pressure difference using automatic recording instrument. The system to maintain a negative air pressure of 5 Pa, relative to the area outside the enclosed area. The system to be inspected and maintained by a competent person prior each use to ensure that there is no air leakage, and if the filter is found to be damaged or defective, it to be replaced before the ventilation system is used during the active abatement.
   .7 Seal off openings such as corridors, doorways, windows, skylights, ducts, grilles, and diffusers, with polyethylene sheeting sealed with tape.
   .8 Cover floor and wall surfaces with polyethylene sheeting sealed with tape. Use two layer(s) of FR polyethylene on floors. Cover floors first so that polyethylene extends at least 300 mm up walls then cover walls to overlap floor sheeting.
   .9 Build airlocks at entrances to and exits from work area(s) so that work area(s) are always closed off by one curtained doorway when workers enter or exit.
   .10 At each access to work areas install warning signs in both official languages in upper case "Helvetica Medium" letters reading as follows where number in parentheses indicates font size to be used: "CAUTION ASBESTOS HAZARD AREA (25 mm) NO UNAUTHORIZED ENTRY (19 mm) WEAR ASSIGNED PROTECTIVE EQUIPMENT (19 mm) BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM (7 mm)".
.11 After work area isolation, remove heating, ventilating, and air conditioning filters, pack in sealed plastic bags 0.15 mm minimum thick and treat as contaminated asbestos waste. Remove ceiling - mounted objects such as lights, partitions, other fixtures not previously sealed off, and other objects that interfere with asbestos removal, as directed by Departmental Representative. Use localized water spraying during fixture removal to reduce fibre dispersal.

.12 Maintain emergency and fire exits from work area(s), or establish alternative exits satisfactory to the Authority Having Jurisdiction.

.13 Where application of water is required for wetting asbestos containing materials, shut off electrical power, provide 24 volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical lines and equipment.

.14 Before removing suspended ceilings, remove friable material on upper surfaces using HEPA vacuum equipment.

.15 After preparation of work areas and Decontamination Enclosure Systems, remove designated asbestos containing ceiling tiles within work areas progressively and carefully, clean using HEPA vacuum and damp sponge, wrap clean panels in 0.10 mm minimum thick polyethylene or bags, and store in building as directed by Departmental Representative and dispose of as contaminated waste. Clean "T" grid suspension system within work areas using wet sponge during clean up.

.16 After preparation of work areas and Decontamination Enclosure Systems, remove the asbestos containing materials. Spray asbestos debris and immediate work area with amended water to reduce dust, as work progresses.

.17 After preparation of work areas and Decontamination Enclosure Systems, for the removal of all other asbestos containing materials, remove within work area and dispose of as contaminated waste in specified containers. Spray asbestos debris and immediate work area with amended water to reduce dust, as work progresses.

.3 Worker Decontamination Enclosure System:

.1 Worker Decontamination Enclosure System includes Equipment and Access Room, Shower Room, and Clean Room, as follows:

.1 Equipment and Access Room: build Equipment and Access Room between Shower Room and work areas, with two curtained doorways, one to Shower Room and one to work areas. Install portable toilet, waste receptor, and storage facilities for workers' shoes and protective clothing to be re-worn in work areas. Build Equipment and Access Room large enough to accommodate specified facilities, other equipment needed, and at least one worker allowing him/her sufficient space to undress comfortably.

.2 Shower Room: build Shower Room between Clean Room and Equipment and Access Room, with two curtained doorways, one to Clean Room and one to Equipment and Access Room. Provide one shower for every five workers. Provide constant supply of hot and cold or warm water. Cold water source is available at Tam Lake. Hot water source is available at the hot water tank. Provide piping and connect to water sources and drains. Pump waste water through 5 micrometre filter system acceptable to Departmental Representative before disposing on-site. Sampling of the waste water may be conducted following the Government of the Northwest Territories Guideline for Industrial Waste Discharges (2004). Provide soap, clean towels and appropriate containers for disposal of used respirator filters.

.3 Clean Room: build Clean Room between Shower Room and clean areas outside of enclosures, with two curtained doorways, one to outside of enclosures and one to Shower Room. Provide lockers or hangers and hooks for workers' street clothes and personal belongings. Provide storage for clean protective clothing and respiratory equipment. Install mirror to permit workers to fit respiratory equipment properly.
.4 Container and Equipment Decontamination Enclosure System:
  .1 Container and Equipment Decontamination Enclosure System consists of Staging Area within work area, Washroom, Holding Room, and Unloading Room. Purpose of system is to provide means to decontaminate waste containers, scaffolding, waste and material containers, vacuum and spray equipment, and other tools and equipment for which Worker Decontamination Enclosure System is not suitable.
  .2 Staging Area: designate Staging Area in work area for gross removal of dust and debris from waste containers and equipment, labelling and sealing of waste containers, and temporary storage pending removal to Washroom. Equip Staging Area with curtained doorway to Washroom.
  .3 Washroom: build Washroom between Staging Area and Holding Room with two curtained doorways, one to Staging Area and one to Holding Room. Provide high-pressure low-volume sprays for washing of waste containers and equipment. Pump waste water through 5 micrometre filter system before directing into drains. Provide piping and connect to water sources and drains.
  .4 Holding Room: build Holding Room between Washroom and Unloading Room, with two curtained doorways, one to Washroom and one to Unloading Room. Build Holding Room sized to accommodate at least two waste containers and largest item of equipment used. The curtain doorway is to be sealed on each side except for when the transfer of waste is occurring.
  .5 Unloading Room: build Unloading Room between Holding Room and outside, with two curtained doorways, one to Holding Room and one to outside.

.5 Construction of Decontamination Enclosures:
  .1 Build suitable framing for enclosures or use existing rooms where convenient, and line with polyethylene sheeting sealed with tape. Use two layers of FR polyethylene on floors.
  .2 Build curtained doorways between enclosures so that when people move through or when waste containers and equipment are moved through doorway, one of two closures comprising doorway always remains closed.

.6 Separation of Work Areas from Occupied Areas:
  .1 Separate parts of building required to remain in use from parts of building used for asbestos abatement by means of airtight barrier system constructed as follows:
    .1 Build suitable floor to ceiling lumber or metal stud framing, cover with polyethylene sheeting sealed with tape, and apply 9 mm minimum thick plywood. Seal joints between plywood sheets and between plywood and adjacent materials with surface film forming type sealer, to create airtight barrier.
    .2 Cover plywood barrier with polyethylene sealed with tape, as specified for work areas.

.7 Maintenance of Enclosures:
  .1 Maintain enclosures in tidy condition.
  .2 Ensure that barriers and polyethylene linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery.
  .3 Visually inspect enclosures at beginning of each working period.
  .4 Use smoke methods to test effectiveness of barriers when directed by Departmental Representative.

.8 Do not begin Asbestos Abatement work until:
  .1 Arrangements have been made for disposal of waste.
  .2 For wet stripping techniques, arrangements have been made for containing, filtering, and disposal of waste water.
  .3 Work areas and decontamination enclosures and parts of building required to remain in use are effectively segregated.
.4 Tools, equipment, and materials waste containers are on hand.
.5 Arrangements have been made for building security.
.6 Warning signs are displayed where access to contaminated areas is possible.
.7 Notifications have been completed and other preparatory steps have been taken.

3.2 SUPERVISION

.1 Minimum of one (1) Supervisor for every ten (10) workers is required.
.2 Approved Supervisor must remain within Asbestos Work Area during disturbance, removal, or other handling of asbestos containing materials.

3.3 ASBESTOS REMOVAL

.1 Before removing asbestos:
.1 Prepare site.
.2 Spray asbestos material with water containing specified wetting agent, using airless spray equipment capable of providing "mist" application to prevent release of fibres. Saturate asbestos material sufficiently to wet it to substrate without causing excess dripping. Spray asbestos material repeatedly during work process to maintain saturation and to minimize asbestos fibre dispersion.

.2 Remove saturated asbestos material in small sections. Do not allow saturated asbestos to dry out. As it is being removed pack material in sealable plastic bags 0.15 mm minimum thick and place in labelled containers for transport.

.3 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to the Staging Area. Clean external surfaces thoroughly again by wet sponging before moving containers to decontamination Washroom. Wash containers thoroughly in decontamination Washroom, and store in Holding Room pending removal to Unloading Room and outside. Ensure that containers are removed from Holding Room by workers who have entered from uncontaminated areas dressed in clean coveralls.

.4 After completion of stripping work, wire brushed and wet sponged surfaces from which asbestos has been removed to remove visible material. During this work keep surfaces wet.

.5 After wire brushing and wet sponging to remove visible asbestos, wet clean entire work area including Equipment and Access Room, and equipment used in process. After 24 hour period to allow for dust settling, wet clean these areas and objects again. During this settling period no entry, activity, or ventilation will be permitted. After second 24 hour period under same conditions, clean these areas and objects again using HEPA vacuum followed by wet cleaning. After inspection by Departmental Representative apply continuous coat of slow drying sealer to surfaces of work area. Allow at least 16 hours with no entry, activity, ventilation, or disturbance other than operation of negative pressure units during this period.

.6 Work is subject to air monitoring under contractor’s Quality Assurance program, and to visual inspection under contractor’s Quality Assurance program and by Departmental Representative. Contamination of surrounding areas indicated by visual inspection or air monitoring will require complete enclosure and clean-up of affected areas.

.7 Cleanup:
.1 Frequently during Work and immediately after completion of work, clean up dust and asbestos containing waste using HEPA vacuum or by damp mopping.
.2 Place dust and asbestos containing waste in sealed dust tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste and wet and fold to contain dust and then place in waste bags.

.3 Immediately before their removal from Asbestos Work Area and disposal, clean each filled waste bag using damp cloths or HEPA vacuum and place in second clean waste bag.

.4 Seal and remove double bagged waste from site. Dispose of in accordance with requirements of Territorial and Federal Authority Having Jurisdiction. Supervise dumping and ensure that dump operator is fully aware of hazardous nature of material to be dumped and that guidelines and regulations for asbestos disposal are followed.

.5 Perform final thorough clean-up of Asbestos Work Areas and adjacent areas affected by Work using HEPA vacuum.

### 3.4 FINAL CLEANUP

.1 Following cleaning specified above, and when air sampling shows that asbestos levels on both sides of seals do not exceed 0.01 fibres/cc as determined by membrane filter method at 400-500X magnification phase contrast illumination, as described in NIOSH Method 94-113 or equivalent, proceed with final cleanup.

.2 Remove polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible asbestos containing particles observed during cleanup, immediately, using HEPA vacuum equipment.

.3 Place polyethylene seals, tape, cleaning material, clothing, and other contaminated waste in plastic bags and sealed labelled waste containers for transport.

.4 Include in clean-up Work areas, Equipment and Access Room, Washroom, Shower Room, and other contaminated enclosures.

.5 Include in clean-up sealed waste containers and equipment used in Work and remove from work areas, via Container and Equipment Decontamination Enclosure System, at appropriate time in cleaning sequence.

.6 Conduct final check to ensure that no dust or debris remains on surfaces as result of dismantling operations and carry out air monitoring again to ensure that asbestos levels in building do not exceed 0.01 fibres/cc. Repeat cleaning using HEPA vacuum equipment, or wet cleaning methods where feasible, in conjunction with sampling until levels meet this criteria.

.7 As work progresses, and to prevent exceeding available storage capacity on-site, remove sealed and labelled containers containing asbestos waste and transport to the Ruth Non-hazardous Landfill. Ensure that each shipment of containers transported to dump is accompanied by Contractor’s representative to ensure that dumping is done in accordance with governing regulations.

### 3.5 AIR MONITORING

.1 From beginning of Work until completion of cleaning operations, Departmental Representative is to collect air samples on daily basis outside of work area enclosure in accordance with Health Canada recommendations.

.2 Use results of air monitoring inside work area to establish type of respirators to be used. Workers may be required to wear sample pumps for up to full-shift periods.
.1 If fibre levels are above safety factor of respirators in use, stop abatement, apply means of dust suppression, and use higher safety factor in respiratory protection for persons inside enclosure.

.2 If air monitoring shows that areas outside work area enclosures are contaminated, enclose, maintain and clean these areas, in same manner as that applicable to work areas.

.3 During course of Work, Departmental Representative to measure fibre content of air outside work areas by means air samples analyzed by Phase Contrast Microscopy (PCM).

.1 Stop Work when PCM measurements exceed 0.05 f/cc and correct procedures.

.4 Final air monitoring to be conducted as follows: After Asbestos Work Area has passed visual inspection and acceptable coat of lock-down agent has been applied to surfaces within enclosure, and appropriate setting period has passed, Departmental Representative will perform air monitoring within Asbestos Work Area by aggressive methods, where Territorial regulations require.

.1 Final air monitoring results must show fibre levels of less than 0.01 f/cc.

.2 If air monitoring results show fibre levels in excess of 0.01 f/cc, re-clean work area and apply another acceptable coat of lock-down agent to surfaces.

.3 Repeat as necessary until fibre levels are less than 0.01 f/cc.

3.6 INSPECTION

.1 Perform inspection of Asbestos Work Area to confirm compliance with specification and governing authority requirements. Deviation(s) from these requirements that have not been approved in writing by Departmental Representative may result in Work stoppage, at no cost to Owner.

.2 Departmental Representative will inspect Work for:

.1 Adherence to specific procedures and materials.

.2 Final cleanliness and completion.

.3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

.3 When asbestos leakage from Asbestos Work Area has occurred or is likely to occur Departmental Representative may order Work shutdown.

.1 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

END OF SECTION
PART 1 - GENERAL

1.1 DESCRIPTION

.1 Lead-containing coatings to remain on substrate except when deemed unfeasible.

.2 Comply with requirements of this Section when performing following Work:
   .1 Removal of lead-containing coatings with a chemical gel or paste or with non-powered hand
   tools (other than manual scraping and sanding) as deemed feasible by the Contractor and as
   approved by the Departmental Representative.

1.2 SECTION INCLUDES

.1 Requirements and procedures for abatement of lead based paints.

1.3 RELATED SECTIONS

.1 Section 01 32 18 – Construction Progress Schedules - Bar (GANTT).

.2 Section 01 33 00 – Submittal Procedures.

.3 Section 01 35 15 – Special Project Procedures for Contaminated Sites.

.4 Section 01 35 32 – Site Specific Health and Safety Plan.

.5 Section 01 35 43 – Environmental Procedures.

.6 Section 02 41 16 – Structure Demolition.

.7 Section 02 41 23 – Debris and Miscellaneous Removals.

.8 Section 02 83 11 – Lead-Based Paint Abatement – Intermediate Precautions

.9 Section 02 83 12 – Lead-Based Paint Abatement – Maximum Precautions

1.4 REFERENCES

.1 Canada Labour Code (R.S.C., 1985, c.L-2)
   .1 Canada Occupational Health and Safety Regulations (SOR/86-304).
      .1 Part X – Hazardous Substances.

.2 Department of Justice Canada
   .1 Canadian Environmental Protection Act, 1999 (CEPA).
   .2 Transportation of Dangerous Goods Act (TDGA), 1992 (SC1992, c.34)
      .1 Transportation of Dangerous Goods Regulations (SOR/2001-286).

.3 Hazardous Products Act (R.S.C., 1985, c. H-3)
   .1 Controlled Products Regulations (SOR/88-66).
   .2 Workplace Hazardous Materials Information System

.3 U.S. Environmental Protection Agency (EPA)
.4 U.S. Department of Health and Human Services/Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health (NIOSH)

.5 U.S. Department of Labour - Occupational Safety and Health Administration (OSHA) - Toxic and Hazardous Substances

.6 Underwriters' Laboratories of Canada (ULC)

1.5 DEFINITIONS

.1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with a filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.

.2 Authorized Visitors: Departmental Representative or designated representative(s).

.3 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects over cuts and tears, and elsewhere as required to provide protection and isolation. For protection of underlying surfaces from damage and to prevent lead dust entering in clean area.

.4 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must be appropriate capacity for scope of work.

.5 Action level: employee exposure, without regard to use of respirators, to airborne concentration of lead of 50 micrograms per cubic meter of air (50 ug/m³) calculated as 8-hour time-weighted average (TWA). Minimum precautions for lead abatement are based on airborne lead concentrations less than 0.05 milligrams per cubic meter of air for removal of lead based paint by methods noted in paragraph 1.1.

.6 Competent person: Departmental Representative capable of identifying existing lead hazards in workplace taking corrective measures to eliminate them.

.7 Lead dust: when wipe sampling on vertical surfaces and/or horizontal surfaces, dust and debris is considered to be lead contaminated if it contains more than 40 micrograms of lead in dust per square foot.

.8 Occupied Area: Areas of building or work site that is outside Work Area.

1.6 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit written proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of lead based paint waste in accordance with requirements of Authority Having Jurisdiction.

.3 Submit Territorial/Provincial and/or local requirements for Notice of Project Form.

.4 Provide proof of Contractor's General and Environmental Liability Insurance.

.5 Quality Control:
.1 Provide Departmental Representative necessary permits for transportation and disposal of lead based paint waste and proof that lead based paint waste has been received and properly disposed.

.2 Provide proof satisfactory to Departmental Representative that employees have had instruction on hazards of lead exposure, respirator use, dress, and aspects of work procedures and protective measures.

1.7 QUALITY ASSURANCE

.1 Regulatory Requirements: comply with Federal, Provincial/Territorial and local requirements pertaining to lead paint, provided that in case of conflict among those requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at time work is performed.

.2 Health and Safety:

.1 Do construction occupational health and safety in accordance with Section 01 35 32 - Health and Safety Plan.

.2 Safety Requirements: worker and visitor protection.

.1 Protective equipment and clothing to be worn by workers and visitors in work Area include:

.1 Respirator NIOSH approved and equipped with replaceable HEPA filter cartridges with an assigned protection factor of (10), acceptable to Authority Having Jurisdiction. Suitable for type of lead and level of lead dust exposure. Provide sufficient amount of filters.

.2 Half mask respirator: half-mask particulate respirator with N,R or P - series filter, and 100 % efficiency could be provided.

.2 Eating, drinking, chewing, and smoking are not permitted in work area.

.3 Ensure workers wash hands and face when leaving work area.

.4 Visitor Protection:

.1 Provide approved respirators to Authorized Visitors to work areas.

.2 Instruct Authorized Visitors procedures to be followed in entering and exiting work area.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Territorial/Provincial and municipal regulations.

.2 Disposal of lead waste generated by removal activities must comply with federal, territorial and municipal regulations. Dispose of lead waste in sealed double thickness 6 ml bags or leak proof drums. Label containers with appropriate warning labels.

.3 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

1.9 EXISTING CONDITIONS

.1 Lead-base painted materials to be abated and disposed of using minimum precautions apply to materials not currently identified in Drawings encountered during work and as identified to the Departmental Representative and as assigned minimum precaution requirements.
.2 Notify Departmental Representative of lead based paint discovered during Work and not apparent from
drawings, specifications, or report pertaining to Work. Do not disturb such material until instructed by
Departmental Representative.

1.10 SCHEDULING

.1 Not later than two days before beginning Work on this Project notify following in writing:
   .1 Appropriate Regional or Zone Director of Medical Services Branch, Health Canada.
   .2 Territorial department responsible for labor.
   .3 Disposal Authority.

.2 Inform sub trades of presence of lead-containing materials identified in Existing Conditions.

.3 Provide Departmental Representative copy of notifications prior to start of Work.

1.11 MEASUREMENT FOR PAYMENT

.1 The abatement, separation, packaging, transport and disposal of lead based paint from buildings and
structures to be demolished and debris areas are included in the price for demolition of the structures
as described in Section 02 41 16 - Structure Demolition, Section 02 41 23 – Debris and Miscellaneous
Removals and in Section 02 81 01 – Hazardous Materials including, but not limited to the following:
   .1 Supply of all materials, labour, and equipment necessary to perform the work in accordance
      with these specifications, including the supply and transport to the site of lead waste
      containers.
   .2 Construction of temporary enclosures and drop sheets when necessary.
   .3 Handling, separation and disposal of lead based painted materials from other debris and
      miscellaneous materials.
   .4 Preparation of lead based paint waste inventory.
   .5 Transport and off-site disposal of lead based paint waste and on-site landfilling of the
      unpainted substrate.

.2 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in
Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this
Work as a separate line item in the cost breakdown specified in Section 01 32 18 - Construction
Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Polyethylene 0.15 mm thick unless otherwise specified; in sheet size to minimize joints.

.2 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under dry conditions and wet
conditions using amended water.

.3 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at
least 8 hours and designed for purpose of trapping residual lead paint residue.

.4 Lead waste containers: metal or fibre type acceptable to dump operator with tightly fitting covers and
0.15 mm thickness sealable polyethylene liners.
   .1 Label containers with pre-printed bilingual cautionary Warning Lead clearly visible (in English
      and French) when ready for removal to disposal site.
PART 3 - EXECUTION

3.1 SUPERVISION

.1 Approved Supervisor must remain within work area during disturbance, removal, or handling of lead based paints.

3.2 PREPARATION

.1 Work Area:
   .1 Shut off and isolate HVAC system to prevent dust dispersal into other building areas. Conduct smoke tests to ensure duct work is airtight.
   .2 Pre-clean fixed casework and equipment within work area, using HEPA vacuum and cover and seal with polyethylene sheeting and tape.
   .3 Clean work area using HEPA vacuum. If not practicable, use wet cleaning method. Do not raise airborne dust level.
   .4 Seal off openings with polyethylene sheeting and seal with tape.
   .5 Protect floor surfaces covered from wall to wall with polyethylene sheets.
   .6 Maintain emergency fire exits or establish alternatives satisfactory to Authority Having Jurisdiction.
   .7 Where water application is required for wetting lead containing materials, provide temporary water supply appropriately sized for application of water as required.
   .8 Provide electrical power and shut off for operation of powered tools and equipment. Provide 24 volt safety lighting and ground fault interrupter (GCFI) circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical cables and equipment.

.2 Do not start work until:
   .1 Arrangements have been made for disposal of waste.
   .2 Tools, equipment, and materials waste containers are on site.
   .3 Arrangements have been made for building security.
   .4 Notifications have been completed and preparatory steps have been taken.

3.3 LEAD ABATEMENT

.1 Removal of lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap; or removal equipped with HEPA filters; or removal with using power tools non-powered hand tool, other than manual scraping and sanding.

.2 Remove lead based paint in small sections and pack as it is being removed in sealable 0.15 mm plastic bags and place in labelled containers for transport.

.3 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to staging area. Clean external surfaces thoroughly again by wet sponging. Wash containers thoroughly pending removal to outside. Ensure containers are removed by workers who have entered from uncontaminated areas dressed in clean coveralls.

.4 After completion of stripping work, wire brush and wet sponge surface from which lead based paint has been removed to remove visible material. During this work keep surfaces wet.
.5 After wire brushing and wet sponging to remove visible lead based paint, and after encapsulating lead containing material impossible to remove, wet clean entire work area, and equipment used in process. After inspection by Departmental Representative apply continuous coat of slow drying sealer to surfaces of work area. Do not disturb work area for eight (8) hours (no entry), activity, ventilation, or disturbance during this period.

3.4 INSPECTION

.1 Perform inspection to confirm compliance with specification and governing authority requirements. Deviations from these requirements not approved in writing by Departmental Representative will result in work stoppage, at no cost to Owner.

.2 Departmental Representative will inspect work for:
   .1 Adherence to specific procedures and materials.
   .2 Final cleanliness and completion.
   .3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

3.5 LEAD SURFACE SAMPLING - WORK AREAS

.1 Final lead surface sampling to be conducted as follows:
   .1 After work area has passed a visual inspection for cleanliness approved and accepted by Departmental Representative. Apply coat of lock-down agent to surfaces within enclosure, and appropriate setting period of eight (8) hours has passed, Departmental Representative will perform lead wipe sampling.
      .1 Final lead wipe sampling results from horizontal and vertical surfaces must show lead levels of less than 40 micrograms of lead in dust per square foot. Samples collected and analyzed in accordance with EPA 747-R-95-007.
      .2 If wipe sampling results show levels of lead in excess of 40 micrograms per square foot, re-clean work area at contractor's expense and apply another acceptable coat of lock-down agent to surfaces.
      .3 Repeat as necessary until fibre levels are less than 40 micrograms per square foot.

3.6 FINAL CLEANUP

.1 Following cleaning and when lead wipe surfaces sampling are below acceptable concentrations, proceed with final cleanup.

.2 Remove polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible lead containing particles observed during cleanup, immediately, using HEPA vacuum.

.3 Place polyethylene sheets, tape, cleaning material, clothing, and contaminated waste in plastic bags and sealed labelled waste containers for transport.

.4 Conduct final check to ensure no dust or debris remains on surfaces as result of dismantling operations.

END OF SECTION
PART 1 - GENERAL

1.1 DESCRIPTION

.1 Comply with requirements of this Section when performing following Work:

.1 Removal of lead based paint from the sites as listed in Appendix A and on Drawings, by scraping or sanding using non-powered hand tools, as deemed feasible by the Contractor and as approved by the Departmental Representative, only in cases where removal from site by leaving on substrate and removing painted materials is deemed unfeasible. Locations of Lead-Based Painted materials requiring intermediate precautions are outlined in the following table:

<table>
<thead>
<tr>
<th>Site</th>
<th>Location</th>
<th>Material</th>
<th>Volume (incl. Substrate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ruth Mill Building</td>
<td>Pile of Yellow Sand</td>
<td>0.5 m$^3$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pile of orange/brown sand</td>
<td>0.25 m$^3$</td>
<td></td>
</tr>
<tr>
<td>Blacksmith / Assay Building</td>
<td>Orange powder located under bench</td>
<td>0.25 m$^3$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Orange stained soil inside building</td>
<td>0.5 m$^3$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pile of white powder on floor</td>
<td>0.5 m$^3$</td>
<td></td>
</tr>
<tr>
<td>Manager's House</td>
<td>Painted walls inside of building</td>
<td>4 m$^3$</td>
<td></td>
</tr>
<tr>
<td>Spectrum Drawing SL3</td>
<td>Small drums</td>
<td>3 drums</td>
<td></td>
</tr>
<tr>
<td>Storm Cabin Area</td>
<td>Drums</td>
<td>1 drum</td>
<td></td>
</tr>
<tr>
<td>Chipp Lake Dock</td>
<td>Drum</td>
<td>1 drum</td>
<td></td>
</tr>
</tbody>
</table>

1.2 SECTION INCLUDES

.1 Requirements and procedures for abatement of lead based paints.

1.3 RELATED SECTIONS

.1 Section 01 32 18 – Construction Progress Schedules - Bar (GANTT).
.2 Section 01 33 00 – Submittal Procedures.
.3 Section 01 35 15 – Special Project Procedures for Contaminated Sites.
.4 Section 01 35 32 – Site Specific Health and Safety Plan.
.5 Section 01 35 43 – Environmental Procedures.
.6 Section 02 41 16 – Structure Demolition.
.7 Section 02 41 23 – Debris and Miscellaneous Removals.
.8 Section 02 81 01 – Hazardous Materials.

.9 Section 02 83 10 – Lead-Based Paint Abatement – Minimum Precautions

.10 Section 02 83 11 - Lead-Based Paint Abatement – Intermediate Precautions

1.4 REFERENCES

.1 Canada Labour Code (R.S.C., 1985, c.L-2)
   .1 Canada Occupational Health and Safety Regulations (SOR/86-304).
      .1 Part X – Hazardous Substances.

.2 Department of Justice Canada (Jus)
   .1 Canadian Environmental Protection Act (CEPA), 1999 (S.C. 1999, c.33).
   .2 Transportation of Dangerous Goods Act (TDGA), 1992 (SC1992, c.34)
      .1 Transportation of Dangerous Goods Regulations (SOR/2001-286).

.3 Hazardous Products Act (R.S.C., 1985, c. H-3)
   .1 Controlled Products Regulations (SOR/88-66).
   .2 Workplace Hazardous Materials Information System.

.3 U.S. Environmental Protection Agency (EPA)

.4 U.S. Department of Health and Human Services/Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health (NIOSH)

.5 U.S. Department of Labour - Occupational Safety and Health Administration (OSHA) - Toxic and Hazardous Substances

.6 Underwriters' Laboratories of Canada (ULC).

1.5 DEFINITIONS

.1 Action level: employee exposure, without regard to usage of respirators, to an airborne concentration of lead of 50 micrograms per cubic meter of air calculated as eight (8) hour time-weighted average (TWA). Intermediate precautions for lead abatement are based on airborne lead concentrations greater than 0.05 milligrams per cubic meter of air within Work Area.

.2 Competent person: Departmental Representative capable of identifying existing lead hazards in workplace and taking corrective measures to eliminate them.

.3 Authorized Visitors: Departmental Representative or designated representatives of regulatory agencies.

.4 Occupied Area: areas of building or work site that is outside Work Area and non-protected workers are present.

.5 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.
.6 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must be appropriate capacity for scope of work.

.7 Airlock: ingress or egress system, without permitting air movement between contaminated area and uncontaminated area. Consisting of two (2) curtained doorways at least 2 m apart.

.8 Curtained doorway: arrangement of closures to allow ingress and egress from one room to another. Typically constructed as follows:
   .1 Place two (2) overlapping polyethylene sheets over existing or temporarily framed doorway, securing each along top of doorway, securing vertical edge of one sheet along one vertical side of doorway, and secure other sheet along opposite vertical side of doorway.
   .2 Reinforce free edges of polyethylene with duct tape and add weight to bottom edge to ensure proper closing.
   .3 Overlap each polyethylene sheet at openings 1.5 m on each side.

.9 Lead in Dust: wipe sampling on vertical and/or horizontal surfaces, dust and debris is considered to be lead contaminated if it contains more than 40 micrograms of lead in dust per square foot.

.10 Lead containing paint: Material that is coated with lead based paint that has been analyzed and determined to contain total lead concentrations in excess of 600 ppm.

.11 Contractor’s Designated Hazardous Waste Disposal Facility: A Licensed Hazardous Waste Disposal Facility Designated by the Contractor for the disposal of all hazardous materials specified under the provisions of this contract. The facility must be pre-approved by the Departmental Representative prior to beginning work. Contractor must provide documentation from the Designated Hazardous Waste Disposal Facility indicated full responsibility for all hazardous materials accepted from the sites.

1.6 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit written proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of lead based paint waste in accordance with requirements of Authority Having Jurisdiction.

.3 Submit Territorial/Provincial and/or local requirements for Notice of Project Form.

.4 Submit proof of Contractor’s General and Environmental Liability Insurance.

.5 Quality Control:
   .1 Provide Departmental Representative necessary permits for transportation and disposal of lead based paint waste and proof that it has been received and properly disposed.
   .2 Provide proof satisfactory to Departmental Representative that employees have had instruction on hazards of lead exposure, respirator use, dress, entry and exit from Work Area, and aspects of work procedures and protective measures.
   .3 Provide proof that supervisory personnel have attended lead abatement course, of not less than two (2) days duration, approved by Departmental Representative. Minimum of one (1) supervisor for every ten (10) workers.

.6 Product data:
   .1 Provide documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials including:
1.7 QUALITY ASSURANCE

.1 Regulatory Requirements: comply with Federal, Territorial/Provincial and local requirements pertaining to lead-base paint, in case of conflict among those requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at time Work is performed.

.2 Health and Safety:
   .1 Do construction occupational health and safety in accordance with Section 01 35 32 – Site Specific Health and Safety Plan.
   .2 Safety Requirements: worker and visitor protection.
      .1 Protective equipment and clothing to be worn by workers and visitors in Work Area includes:
         .1 NIOSH approved respirator equipped with filter cartridges with assigned protection factor of 50, acceptable to Authority Having Jurisdiction. Suitable for type of lead and level of lead dust exposure in Lead Work Area. Provide sufficient filters so workers can install new filters following disposal of used filters and before re-entering contaminated areas. Workers to perform work in this Section require medical fit testing to confirm capability to safety wear a respirator.
         .2 Disposable-type protective clothing that does not readily retain or permit skin contamination, consisting of full body covering including head covering with snug fitting cuffs at wrists, ankles, and neck.
   .2 Requirements for workers:
      .1 Remove street clothes in clean change room and put on respirator with new filters or reusable filters, clean coveralls and head covers before entering Equipment and Access Rooms or Work Area. Store street clothes, uncontaminated footwear, towels, and similar uncontaminated articles in clean change room.
      .2 Remove gross contamination from clothing before leaving work area. Place contaminated work suits in receptacles for disposal with other lead-contaminated materials. Leave reusable items except respirator in Equipment and Access Room. When not in use in Work Area, store work footwear in Equipment and Access Room. Upon completion of lead abatement, dispose of footwear as contaminated waste or clean thoroughly inside and out using soap and water before removing from Work Area or from Equipment and Access Room.
      .3 Enter unloading room from outside dressed in clean coveralls to remove waste containers and equipment from Holding Room of Container and Equipment Decontamination Enclosure system. Workers not to use this system as means to leave or enter work area. Doorways of transfer room are to remain sealed except when transfer of waste is occurring.
      .3 Eating, drinking, chewing, and smoking are not permitted in Work Area.
      .4 Ensure workers are fully protected with respirators and protective clothing during preparation of system of enclosures prior to commencing actual lead abatement.
      .5 Facilities for washing hands and face shall be provided adjacent to work areas. Workers must wash hands, face and respirators when leaving Work Area.
.6 Provide and post in Clean Change Room and in Equipment and Access Room the procedures described in this Section, in both official languages (English and French).

.7 No person required to enter a Lead Work Area may have facial hair that affects seal between respirator and face.

.8 Visitor Protection:
   .1 Provide protective clothing and approved respirators to Authorized Visitors to Work Areas.
   .2 Instruct Authorized Visitors in use of protective clothing, respirators and procedures.
   .3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Work Area.

.9 When lead-base paint abatement is to be conducted in an area where asbestos abatement is to be conducted, the most stringent safety requirements (personal protection and decontamination structures/procedures) shall be implemented.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Territorial/Provincial and Municipal regulations.

.2 Disposal of lead waste generated by removal activities must comply with Federal, Territorial and Municipal regulations. Dispose of lead waste in sealed double thickness 6 ml bags or leak proof drums. Label containers with appropriate warning labels.

.3 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for disposal.

1.9 EXISTING CONDITIONS

.1 Summaries of the lead-base painted materials to be abated and disposed of using intermediate precautions are presented in Drawings RM3-1, RM3-5, SL3, CL3, SM3-2, and JM3-1JM.

.2 Notify Departmental Representative of suspect lead-base paint materials discovered during Work and not apparent from drawings, specifications, or reports pertaining to Work. Do not disturb such material until instructed by Departmental Representative.

1.10 SCHEDULING

.1 Not later than two (2) days before beginning Work on this Project notify the following in writing, where appropriate:
   .1 Appropriate Regional or Zone Director of Medical Services Branch, Health Canada.
   .2 Territorial department responsible for labour.
   .3 Disposal Authority.

.2 Inform sub trades of presence of lead-base paint materials identified in Existing Conditions.

.3 Provide Departmental Representative copy of notifications prior to start of Work.
1.11 MEASUREMENT FOR PAYMENT

.1 The abatement, separation, packaging, transport and disposal of lead-base paint from buildings and structures to be demolished and debris areas are included in the price for demolition of the structures as described in Section 02 41 16 - Structure Demolition, Section 02 41 23 – Debris and Miscellaneous Removals and in Section 02 81 01 – Hazardous Materials including, but not limited to the following:

.1 Supply of all materials, labour, and equipment necessary to perform the work in accordance with these specifications, including the supply and transport of lead waste containers to the sites.
.2 Construction of temporary enclosures and drop sheets when necessary.
.3 Handling, separation and disposal of lead based painted materials from other debris and miscellaneous materials.
.4 Preparation of lead based paint waste inventory.
.5 Transport and off-site disposal of lead waste and on-site landfilling of the unpainted substrate in the non-hazardous landfills located at either Bullmoose or Ruth mine sites.

.2 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 - Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Polyethylene: 0.15 mm unless otherwise specified; in sheet size to minimize joints.
.2 FR polyethylene: 0.15 mm woven fibre reinforced fabric bonded both sides with polyethylene.
.3 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under dry conditions and wet conditions using amended water.
.4 Slow-drying sealer: non-staining, clear, water-dispersible type that remains tacky on surface for at least eight (8) hours and designed for trapping residual lead paint residue.
.5 Lead waste containers: metal or fibre type acceptable to landfill operator with tightly fitting covers and 0.15 mm sealable polyethylene liners.

.1 Label containers with pre-printed bilingual (English and French) cautionary Warning Lead clearly visible when ready for removal to disposal site.

PART 3 - EXECUTION

3.1 SUPERVISION

.1 Approved Supervisor must remain within Lead Work Area during disturbance, removal, or other handling of lead-based paint.

3.2 PREPARATION

.1 Remove and wrap items to be salvaged or reused, and transport and store in area specified by Departmental Representative.

.2 Work Area:
.1 Pre-clean fixed casework, and equipment within work areas, using HEPA vacuum and cover with polyethylene sheeting sealed with tape.

.2 Clean work areas using HEPA vacuum. If not practicable, use wet cleaning method. Do not use methods that raise dust, such as dry sweeping, or vacuuming using other than HEPA vacuum.

.3 Seal off openings, corridors, doorways, windows, skylights, ducts, grilles, and diffusers, with polyethylene sheeting sealed with tape.

.4 Cover floor surfaces in work area from wall to wall with FR polyethylene drop sheets to protect existing floor during removal.

.5 Build airlocks at entrances and exits from work areas to ensure work areas are always closed off by one curtained doorway when workers enter or exit.

.6 At point of access to work areas install warning signs in both official languages (English and French) in upper case "Helvetica Medium" letters reading as follows where number in parentheses indicates font size to be used:

.1 CAUTION LEAD HAZARD AREA (25 mm).

.2 NO UNAUTHORIZED ENTRY (19 mm).

.3 WEAR ASSIGNED PROTECTIVE EQUIPMENT AND RESPIRATOR (19 mm).

.4 BREATHING LEAD CONTAMINATED DUST CAUSES SERIOUS BODILY HARM (7 mm).

.7 Maintain emergency and fire exits from work areas, or establish alternative exits satisfactory to Authority Having Jurisdiction.

.8 Where water application is required for wetting lead containing materials, provide temporary water supply by use of appropriately sized hoses for application of water as required.

.9 Provide electrical power and shut off for operation of powered tools and equipment. Provide 24 volt safety lighting and ground fault interrupter (GFI)circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical lines and equipment.

.3 Worker Decontamination Enclosure System:
   .1 Worker Decontamination Enclosure System includes Equipment and Access Room and Clean Room, as follows:
   .1 Equipment and Access Room: construct between exit and work areas, with two (2) curtained doorways, one (1) to the rest of suite, and one (1) to work area. Install waste receptor and storage facilities for workers’ shoes and protective clothing to be re-worn in work areas. Build large enough to accommodate specified facilities, equipment needed, and at least one (1) worker allowing sufficient space to change comfortably.
   .2 Clean Room: construct with curtained doorway to outside of enclosures. Provide lockers or hangers and hooks for workers’ street clothes and personal belongings. Provide storage for clean protective clothing and respiratory equipment. Install mirror to permit workers to fit respiratory equipment properly.

.4 Construction of Decontamination Enclosures:
   .1 Construct framing for enclosures or use existing rooms. Line enclosure with polyethylene sheeting and seal with tape, apply two layers of FR polyethylene on floor.
   .2 Construct curtain doorways between enclosures so when people move through or waste containers and equipment are moved through doorway, one of two closures comprising doorway always remains closed.

.5 Separation of Work Areas from Occupied Areas
   .1 Barriers between Work Area and occupied area to be constructed as follows:
.1 Construct floor to ceiling wood or metal stud framing, cover with polyethylene sheeting and seal with duct tape. Apply plywood over polyethylene sheeting. Seal plywood joints and between adjacent materials with surface film forming sealer, to create airtight barrier.

.2 Cover plywood with polyethylene sheeting and sealed with duct tape.

.6 Maintenance of Enclosures:

.1 Maintain enclosures in clean condition.

.2 Ensure barriers and polyethylene linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately.

.3 Visually inspect enclosures at beginning of each work day.

.4 Use smoke test method to test effectiveness of barriers as directed by Departmental Representative.

3.3 LEAD-BASE PAINT ABATEMENT

.1 Removal of lead-based painted materials for cases where removal and disposal of painted material is deemed unfeasible as confirmed by Departmental Representative is to be performed through the use of a chemical gel or paste, scraping, sanding or sand blasting using non-powered hand tools.

.2 During demolition and dismantling operations, contain paint particles and dust through the use of polyethylene sheets or other measures. Use drop sheets, as required, to collect paint particles that become removed from surfaces during demolition and dismantling operations. Establish a control area around these activities to provide protection to personnel from airborne paint particles. Construct control area to prevent the escape of paint chips.

.3 Remove lead based paint in small sections and pack as it is being removed in sealable 0.15 mm plastic bags and place in labelled containers for transport.

.4 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to Temporary Staging Area. Clean external surfaces thoroughly again by wet sponging before moving containers to decontamination enclosures. Wash containers thoroughly in decontamination enclosure, and move to Clean Room. Ensure containers are removed from Clean Room by workers who have entered from uncontaminated areas dressed in clean coveralls.

.5 After completion of stripping work, wire brush and wet sponge surface from which lead-based paint has been removed to remove visible material. During this work keep surfaces wet.

.6 Collect paint debris and surficial soil impacted by paint chips and containerize as a lead based paint waste. Soils impacted with lead-base paints to be handled and disposed of as lead waste.

.7 After all lead-base paint has been removed from the substrate materials, paint-free substrate materials are to be transported and disposed of in the non-hazardous landfills located at either Bullmoose or Ruth mine sites.

.8 Prior to off-site transportation, store containerized lead waste in a Temporary Storage Area.

.9 Dispose of lead waste at Contractor's Designated Hazardous Waste Disposal Facility.

.10 After wire brushing and wet sponging to remove visible lead based paint, and after encapsulating lead containing material impossible to remove, wet clean work area including equipment and access room, and equipment used in process. After inspection by Departmental Representative, apply continuous
coat of slow drying sealer to surfaces. Do not disturb work for eight (8) hours with no entry, activity, ventilation or disturbance during this period.

.11 After enclosing lead painted surfaces, wet clean work area and equipment and access room. During settling period no entry, activity, or ventilation will be permitted.

.12 The use of heat (e.g. cutting torches) to cut or dismantle facilities containing paint materials is not permitted unless the paint has been removed from the areas to be cut such that excessive heating of the remaining paint does not occur. Notify Departmental Representative prior to torching activities.

3.4 INSPECTION

.1 Perform inspection to confirm compliance with specification and governing authority requirements. Deviations from these requirements not approved in writing by Departmental Representative will result in work stoppage, at no cost to Owner.

.2 Departmental Representative will inspect work for:
   .1 Adherence to specific procedures and materials.
   .2 Final cleanliness and completion.
   .3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

.3 When lead dust leakage from Work Area occurs Departmental Representative may order Work shutdown.
   .1 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

3.5 LEAD SURFACE SAMPLING - WORK AREAS

.1 Final lead surface sampling to be conducted as follows:

   .1 After Work Area has passed a visual inspection for cleanliness approved by Departmental Representative and acceptable coat of lock-down agent has been applied to surfaces within enclosure, and appropriate setting period of eight hours has passed. Departmental Representative will perform lead wipe sampling in Work Area.
   .1 Final lead wipe sampling results from horizontal and vertical surfaces where lead based paints have been removed must show lead levels of less than 40 micrograms of lead in dust per square foot. Samples must be collected and analyzed in accordance with EPA 747-R-95-007.
   .2 If wipe sampling results show levels of lead in excess of 40 micrograms per square foot, re-clean work area at contractor’s expense and apply another acceptable coat of lock-down agent to surfaces.
   .3 Repeat as necessary until fibre levels are less than 40 micrograms per square foot.

3.6 FINAL CLEANUP

.1 Following specified cleaning procedures, and when lead wipe sampling is below acceptable concentrations proceed with final cleanup.

.2 Remove polyethylene sheet by rolling it away from walls to centre of Work area. Vacuum visible lead containing particles observed during cleanup, immediately, using HEPA vacuum equipment.
.3 Place polyethylene seals, tape, cleaning material, clothing, and other contaminated waste in plastic bags and sealed labelled lead waste containers. Seal and label containers and transport to the Temporary Staging Area prior to off-site disposal.

.4 Clean-up Work Areas, Equipment and Access Room.

.5 Clean-up sealed waste containers and equipment used in Work and remove from Work areas, via Container and Equipment Decontamination Enclosure System, at appropriate time in cleaning sequence.

.6 Conduct final check to ensure no dust or debris remains on surfaces as result of dismantling operations.

END OF SECTION
PART 1 - GENERAL

1.1 DESCRIPTION

.1 Lead-containing coatings to remain on substrate except where deemed unfeasible.

.2 Comply with requirements of this Section when performing following Work:
   .1 Removal of lead based paint from Spectrum and Joon mine sites as deemed feasible by the Departmental Representative and Contractor, using power tools with an effective dust collection system equipped with a HEPA filter or by using abrasive blasting method to remove lead-based paint on equipment [at Joon: crusher (8.1 m³) grinder (0.5 m³), engine (0.25 m³), alternator (0.13 m³) and motor parts (0.5 m³); at Spectrum: metal debris (338 m³)], only in cases where removal from site by leaving on substrate and removing painted materials is deemed unfeasible. Abrasive blasting will occur on these materials and other materials to the discretion and feasibility according to the Departmental Representative and Contractor.
   .2 Removal of lead-containing dust using air mist extraction system.
   .3 These materials are identified on Drawings SL3 and JM3-1.

1.2 RELATED SECTIONS

.1 Section 01 32 18 – Construction Progress Schedules - Bar (GANTT).
.2 Section 01 33 00 – Submittal Procedures.
.3 Section 01 35 15 – Special Project Procedures for Contaminated Sites.
.4 Section 01 35 32 – Site Specific Health and Safety Plan.
.5 Section 01 35 43 – Environmental Procedures.
.6 Section 02 41 16 – Structure Demolition.
.7 Section 02 41 23 – Debris and Miscellaneous Removals.
.8 Section 02 81 01 – Hazardous Materials.
.9 Section 02 83 10 – Lead-Based Paint Abatement – Minimum Precautions
.10 Section 02 83 11 – Lead-Based Paint Abatement – Intermediate Precautions

1.3 REFERENCES

.1 Canada Labour Code (R.S.C., 1985, c.L-2)
  .1 Canada Occupational Health and Safety Regulations (SOR/86-304).
  .1 Part X – Hazardous Substances.

.2 Department of Justice Canada (Jus)
  .1 Canadian Environmental Protection Act (CEPA), 1999 (S.C. 1999, c.33).
  .2 Transportation of Dangerous Goods Act (TDGA), 1992 (SC1992, c.34)
    .1 Transportation of Dangerous Goods Regulations (SOR/2001-286).
1.4 DEFINITIONS

.1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with a filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.

.2 Authorized Visitors: Departmental Representative or designated representatives of regulatory agencies.

.3 Occupied Area: area of building or work site outside Work Area where non-protected workers are present.

.4 Dioctyl Phthalate (DOP) Test: testing method used to evaluate particle penetration and air flow resistance properties of filtration materials - HEPA filter leak test.

.5 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Appropriate capacity for scope of work.

.6 Airlock: ingress or egress system without permitting air movement between contaminated area and uncontaminated area. Consisting of two (2) curtained doorways at least 2 m apart.

.7 Curtained doorway: arrangement of closures to allow ingress and egress from one room to another while permitting minimal air movement between rooms, typically constructed as follows:

.1 Place two (2) overlapping sheets of polyethylene over existing or temporarily framed doorway, secure each along top of doorway, secure vertical edge of one sheet along one vertical side of doorway, and secure vertical edge of other sheet along opposite vertical side of doorway.

.2 Reinforce free edges of polyethylene with duct tape and add weight to bottom edge to ensure proper closing.

.3 Overlap each polyethylene sheet at openings 1.5 m on each side.

.8 Action level: employee exposure, without regard to usage of respirators, to an airborne concentration of lead of 50 micrograms per cubic metre of air calculated as an 8-hour time-weighted average (TWA). Maximum precautions for lead abatement are based on airborne lead concentrations greater than 1.25 milligrams per cubic meter of air within Work Area.
.9 Competent person: Departmental Representative capable of identifying existing lead hazards in workplace and taking corrective measures to eliminate them.

.10 Lead in Dust: wipe sampling on the vertical and/or horizontal surfaces, dust and debris is considered to be lead contaminated if it contains more than 40 micrograms of lead in dust per square foot.

.11 Negative Air Pressure Machine: extracts air directly from work area and filters extracted air through a HEPA filter, discharge air to exterior of building.
.1 Maintain pressure differential of 5 to 7 Pa relative to adjacent areas outside of work areas. Machine to be equipped with alarm to warn of system breakdown, and equipped with instrument to continuously monitor and automatically record pressure differences.

1.5 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit written proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of lead based paint waste in accordance with requirements of authority having jurisdiction.

.3 Submit Territorial/Provincial and/or local requirements for Notice of Project Form.

.4 Submit proof of Contractor's General and Environmental Liability Insurance.

.5 Quality Control:
.1 Provide Departmental Representative necessary permits for transportation and disposal of lead based paint waste and proof it has been received and properly disposed.
.2 Provide proof satisfactory to Departmental Representative that employees had instruction on hazards of lead exposure, respirator use, dress, entry and exit from Work Area, and aspects of work procedures and protective measures.
.3 Provide proof that supervisory personnel have attended lead abatement course, of not less than two (2) days duration, approved by Departmental Representative. Minimum of one (1) supervisor for every ten (10) workers.

.6 Product data:
.1 Provide documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials including:
.1 Encapsulants.
.2 Amended water.
.3 Slow drying sealer.

1.6 QUALITY ASSURANCE

.1 Regulatory Requirements: comply with Federal, Territorial/Provincial and local requirements pertaining to lead, in case of conflict among those requirements or with these specifications the more stringent requirement applies. Comply with regulations in effect at time work is performed.

.2 Health and Safety:
.1 Require construction work to be in compliance with the occupational health and safety regulations in 01 35 32 – Site Specific Health and Safety Plan.
.2 Safety Requirements: worker and visitor protection.
.1 Protective equipment and clothing to be worn by workers while in Lead Work Area includes:

.1 Abrasive blasting of lead paint: NIOSH approved and equipped with filter cartridges with assigned protection factor of 1000, acceptable to Authority Having Jurisdiction. Suitable for type of lead and level of lead dust exposure in Lead Work Area. Respirator to be equivalent Type CE abrasive blast supplied air respirator operated in a pressure demand or positive pressure mode with a tight-fitting full-face-piece. Compressed air used to supply supplied air respirators to meet breathing air purity requirements of CAN/CSA-Z180.1. Where an oil-lubricated compressor is used to supply breathing air, a continuous carbon monoxide monitor/alarm to be provided.

.2 Disposable protective clothing that does not readily retain or permit skin contamination, consisting of full body covering including head covering with snug fitting cuffs at wrists, ankles, and neck.

.2 Requirements for workers:

.1 Remove street clothes in clean change room and put on respirator with new filters or reusable filters, clean coveralls and head covers before entering Equipment and Access Rooms or Work Area. Store street clothes, uncontaminated footwear, towels, and similar uncontaminated articles in clean change room.

.2 Remove gross contamination from clothing before leaving work area. Place contaminated work suits in receptacles for disposal with other lead contaminated materials. Leave reusable items except respirator in Equipment and Access Room. When not in use in work area, store work footwear in Equipment and Access Room. Upon completion of lead abatement, dispose of footwear as contaminated waste or clean thoroughly inside and out using soap and water before removing from work area or from Equipment and Access Room.

.3 Enter unloading room from outside dressed in clean coveralls to remove waste containers and equipment from Holding Room of Container and Equipment Decontamination Enclosure system. Workers not use this system as means to leave or enter Work Area.

.3 Eating, drinking, chewing, and smoking are not permitted in Work Area.

.4 Ensure workers are fully protected with respirators and protective clothing during preparation of system of enclosures prior to commencing actual lead abatement.

.5 Facilities for washing hands and face shall be provided adjacent to work areas. Workers must wash hands, face and respirators when leaving Lead Work Area.

.6 Provide and post in Clean Change Room and in Equipment and Access Room the procedures described in this Section, in both official languages (English and French).

.7 No person required to enter Work Area may have facial hair that affects seal between respirator and face.

.8 Visitor Protection:

.1 Provide protective clothing and approved respirators to Authorized Visitors to Work Areas.

.2 Instruct Authorized Visitors in use of protective clothing, respirators and procedures.

.3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Work Area.
1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Territorial/Provincial and Municipal regulations.

.2 Disposal of lead waste generated by removal activities must comply with Federal, Territorial/Provincial and Municipal regulations. Dispose of lead waste in sealed double thickness 6 ml bags or leak proof drums. Label containers with appropriate warning labels.

.3 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for disposal.

1.8 EXISTING CONDITIONS

.1 Summaries of the lead-base painted materials to be abated and disposed of using maximum precautions are presented in Drawing JM 3-1. Reports and further information pertaining to lead-base painted materials to be handled, removed or otherwise disturbed and disposed of during this Project are available for review within the Remedial Action Plan, Stantec Consulting Ltd, 2014.

.2 Notify Departmental Representative of suspected lead-base paint materials discovered during Work and not apparent from drawings, specifications, or reports pertaining to Work. Do not disturb such material until instructed by Departmental Representative.

1.9 SCHEDULING

.1 No later than two (2) days before beginning Work on this Project notify the following in writing; where appropriate.
   .1 Appropriate Regional or Zone Director of Medical Services Branch, Health Canada.
   .2 Territorial department responsible for labour.
   .3 Disposal Authority.

.2 Inform sub trades of presence of lead-base paint materials identified in Existing Conditions.

.3 Provide Departmental Representative copy of notifications prior to start of Work.

1.10 MEASUREMENT FOR PAYMENT

.1 The abatement, separation, packaging, transport and disposal of lead-base paint materials from buildings and structures to be demolished and debris areas are included in the price for demolition of the structures as described in Section 02 41 16 - Structure Demolition, Section 02 41 23 – Debris and Miscellaneous Removals and in Section 02 81 01 – Hazardous Materials including, but not limited to the following:
   .1 Supply of all materials, labour, and equipment necessary to perform the work in accordance with these specifications, including the supply and transport of lead waste containers to the Spectrum and Joon mine sites.
   .2 Construction of temporary enclosures and drop sheets when necessary.
   .3 Handling, separation and disposal of lead based painted materials from other debris and miscellaneous materials.
   .4 Preparation of lead base paint waste inventory.
   .5 Transport and off-site disposal of lead waste and landfilling of the unpainted substrate in the non-hazardous landfill located at either Bullmoose or Ruth mine sites.
.2 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 - Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Polyethylene 0.15 mm unless otherwise specified; in sheet size to minimize joints.

.2 FR polyethylene: 0.15 mm woven fibre reinforced fabric bonded both sides with polyethylene.

.3 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under dry conditions and wet conditions using amended water.

.4 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least eight (8) hours and designed for trapping residual lead paint residue.

.5 Lead waste containers: metal and fibre type acceptable to dump operator with tightly fitting covers and 0.15 mm sealable polyethylene liners.

.1 Label containers with pre-printed bilingual cautionary Warning Lead clearly visible when ready for removal to disposal site.

PART 3 - EXECUTION

3.1 SUPERVISION

.1 Approved Supervisor must remain within Lead Work Area during disturbance, removal, or handling of lead- paints.

3.2 PREPARATION

.1 Remove and wrap items to be salvaged or reused, and transport and store in area specified by Departmental Representative.

.2 Work Area:

.1 Pre-clean fixed casework, and equipment within work areas, using HEPA vacuum and cover with polyethylene sheeting sealed with tape.

.2 Clean work areas using HEPA vacuum. If not practicable, use wet cleaning method. Do not use methods that raise dust, such as dry sweeping, or vacuuming using other than HEPA vacuum.

.3 Install negative pressure machine system and operate continuously from installation of polyethylene sheeting until completion of final cleanup. Provide automatic continuous monitoring and recording instrument of pressure difference.

.4 Seal off openings, corridors, doorways, windows, skylights, ducts, grilles, and diffusers, with polyethylene sheeting sealed with tape.

.5 Cover floor surfaces in work area from wall to wall with FR polyethylene drop sheets to protect existing floor during removal.

.6 Build airlocks at entrances and exits from work areas to ensure work areas are always closed off by one curtained doorway when workers enter or exit.
.7 At point of access to work areas install warning signs in both official languages in upper case "Helvetica Medium" letters reading as follows where number in parentheses indicates font size to be used:
  .1 CAUTION LEAD HAZARD AREA (25 mm).
  .2 NO UNAUTHORIZED ENTRY (19 mm)
  .3 WEAR ASSIGNED PROTECTIVE EQUIPMENT AND RESPIRATOR (19 mm).
  .4 BREATHING LEAD CONTAMINATED DUST CAUSES SERIOUS BODILY HARM (7 mm).

.8 Maintain emergency and fire exits from work areas, or establish alternative exits satisfactory to Authority Having Jurisdiction.

.9 Where water application is required for wetting lead containing materials, provide temporary water supply by use of appropriately sized hoses for application of water as required.

.10 Provide electrical power and shut off for operation of powered tools and equipment. Provide 24 volt safety lighting and ground fault interrupter (GFI) circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical lines and equipment.

.3 Worker Decontamination Enclosure System:
  .1 Worker Decontamination Enclosure System includes Equipment and Access Room and Clean Room, as follows:
    .1 Equipment and Access Room: construct between exit and work areas, with two (2) curtained doorways, one (1) to the rest of the suite, and one (1) to work area. Install waste receptor and storage facilities for workers' shoes and protective clothing to be re-worn in work areas. Build large enough to accommodate specified facilities, equipment needed, and at least one (1) worker allowing sufficient space to change comfortably.
    .2 Clean Room: construct with curtained doorway to outside of enclosures. Provide lockers or hangers and hooks for workers' street clothes and personal belongings. Provide storage for clean protective clothing and respiratory equipment. Install mirror to permit workers to fit respiratory equipment properly.

.4 Construction of Decontamination Enclosures:
  .1 Construct framing for enclosures or use existing rooms. Line enclosure with polyethylene sheeting and seal with tape, apply two (2) layers of FR polyethylene on floor.
  .2 Construct curtain doorways between enclosures so when people move through or waste containers and equipment are moved through doorway, one of two closure comprising doorway always remains closed.
  .3 Shower room in decontamination facility to be provided with the following:
    .1 Hot and cold water or water of constant temperature not less than 40 degrees Celsius or more than 50 degrees Celsius.
    .2 Individual controls inside to regulate water flow and temperature.

.4 Prior to each shift in which a decontamination facility is being used, a competent person should inspect the facility to ensure that there are no defects that would allow lead-containing dust to escape. Defects should be repaired before the facility is used. The decontamination facility should be maintained in a clean and sanitary condition.
.5 Separation of Work Areas from Occupied Areas:
   .1 Barriers between Work Area and occupied area to be constructed as follows:
      .1 Construct floor to ceiling wood or metal stud framing, cover with polyethylene sheeting
          and seal with duct tape. Apply plywood over polyethylene sheeting. Seal plywood
          joints and between adjacent materials with surface film forming sealer, to create
          airtight barrier.
      .2 Cover plywood with polyethylene sheeting and sealed with duct tape.

.6 Maintenance of Enclosures:
   .1 Maintain enclosures in tidy condition.
   .2 Ensure barriers and polyethylene linings are effectively sealed and taped. Repair damaged
       barriers and remedy defects immediately.
   .3 Visually inspect enclosures at beginning of each working day.
   .4 Use smoke test method to test effectiveness of barriers as directed by Departmental
       Representative.

3.3 LEAD - BASE PAINT ABATEMENT

   .1 Removal of lead based paint to be performed using power tools that are attached to dust-collecting
       vacuums with HEPA filters.

   .2 Remove lead-based paint in small sections and pack as it is being removed in sealable 0.15 mm plastic
       bags and place in labelled containers for transport.

   .3 Wet method to be used to reduce dust generation. Examples of wet methods include wetting surfaces,
       wet scraping, and wet shoveling. Wet method not be used if it creates a hazard or cause damage to
       equipment or to project. Power tools to be equipped with a shroud, and to be kept flush with surface.

   .4 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove immediately from
       working area to a Temporary Staging Area. Clean external surfaces thoroughly again by wet sponging
       before moving containers to decontamination enclosure. Wash containers thoroughly in
       decontamination enclosure, and store in Clean Room pending removal. Ensure containers are
       removed from Clean Room by workers who have entered from uncontaminated areas dressed in clean
       coveralls.

   .5 After completion of stripping work, wire brush and wet sponge surface to remove visible material.
       During this work keep surfaces wet. After wire brushing and wet sponging, wet clean and HEPA
       vacuum entire work area including Equipment and Access Room. Compressed air or dry sweeping not
       be used to clean up lead-containing dust or waste. After inspection and approval by Departmental
       Representative apply continuous coat of slow drying sealer to surfaces. Do not disturb work area for
       eight (8) hours, no entry, activity, or ventilation other than operation negative air machine during this
       period.

   .6 After enclosing lead painted surfaces, wet clean work area and equipment and access room. During
       settling period no entry, activity, or ventilation will be permitted.

   .7 Collect paint debris and surficial soil impacted by paint chips and containerize as a lead waste. Soils
       impacted with lead-base paints to be handled and disposed of as lead waste.

   .8 After all lead-base paint has been removed from the substrate materials, paint-free substrate materials
       are to be transported and disposed of in the non-hazardous landfills located at either Bullmoose or
       Ruth mine sites.
.9 Prior to off-site transportation, store containerized lead waste in a Temporary Storage.

.10 Dispose of lead waste at Contractor's Designated Hazardous Waste Disposal Facility.

3.4 INSPECTION

.1 Perform inspection to confirm compliance with specification and governing authority requirements. Deviations from requirements not been approved in writing by Departmental Representative will result in Work shutdown, at no cost to Owner.

.2 Departmental Representative will inspect work for:
   .1 Adherence to specific procedures and materials.
   .2 Final cleanliness and completion.
   .3 No additional costs will be allowed for additional labour or materials required to provide specified performance level.

.3 When lead dust leakage from Work Area occurs Departmental Representative will order Work shutdown.
   .1 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

3.5 LEAD SURFACE SAMPLING - WORK AREAS

.1 Final lead surface sampling conducted as follows:
   .1 After Work Area has passed a visual inspection for cleanliness approved by Departmental Representative and acceptable coat of lock-down agent has been applied to surfaces within enclosure, and appropriate setting period of 8 hours has passed, Departmental Representative will perform lead wipe sampling in Work Area.
   .1 Final lead wipe sampling results from horizontal and vertical surfaces must show lead levels of less than 40 micrograms of lead in dust per square foot. Samples collected and analyzed in accordance with EPA 747-R-95-007.
   .2 If wipe sampling results show levels of lead dust in excess of 40 micrograms per square foot, re-clean work area at contractor's expense and apply another acceptable coat of lock-down agent to surfaces.
   .3 Repeat as necessary until lead dust levels are less than 40 micrograms per square foot.

3.6 FINAL CLEANUP

.1 Following specified cleaning procedures, and when lead wipe sampling is below acceptable concentrations proceed with final cleanup.

.2 Remove polyethylene sheet by rolling it away from walls to centre of Work area. Vacuum visible lead containing particles observed during cleanup, immediately, using HEPA vacuum equipment.

.3 Place polyethylene sheets, tape, cleaning material, clothing, and contaminated waste in plastic bags and sealed labelled lead waste containers and transport to a Temporary Staging Area prior to off-site disposal.

.4 Clean-up Work areas, Equipment and Access Room, and other contaminated enclosures.

.5 Clean-up sealed waste containers and equipment used in Work and remove from Work areas at appropriate time in cleaning sequence.
.6 Conduct final check to ensure no dust or debris remain on surfaces as result of dismantling operations.

END OF SECTION
PART 1 - GENERAL

1.1 DESCRIPTION

.1 Procedures and materials required for the safe handling, management and storage of polychlorinated biphenyl (PCB) material as specified in Appendix A and on Drawings RM3-1 and RM3-4 and as outlined in the table below.

<table>
<thead>
<tr>
<th>Site</th>
<th>Area Description</th>
<th>Drawing</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ruth</td>
<td>Mill Building Westinghouse Circuit Breaker with transformer</td>
<td>RM3-1</td>
<td>0.5 m³</td>
</tr>
<tr>
<td>Ruth</td>
<td>Manager's House Transformer on bedrock behind house</td>
<td>RM3-5</td>
<td>0.1 m³</td>
</tr>
</tbody>
</table>

1.2 RELATED SECTIONS

.1 Section 01 32 18 – Construction Progress Schedules - Bar (GANTT).
.2 Section 01 33 00 – Submittal Procedures.
.3 Section 01 35 15 – Special Project Procedures for Contaminated Sites.
.4 Section 01 35 32 – Site Specific Health and Safety Plan.
.5 Section 01 35 43 – Environmental Procedures.
.6 Section 01 45 00 – Quality Control
.7 Section 02 41 16 – Structure Demolition.
.8 Section 02 41 23 – Debris and Miscellaneous Removals.
.9 Section 02 81 01 – Hazardous Materials.

1.3 REFERENCES

.1 American Board of Industrial Hygiene (ABIH).
.2 Canadian Council of Ministers of the Environment (CCME)
.3 Department of Justice Canada (Jus)
.1 Canadian Environmental Protection Act (CEPA), 1999 (S.C. 1999, c.33).
.1 Storage of PCB Material Regulations (SOR/92-507, Amended SOR/2000-102).
.2 Regulations Amending the PCB Regulations and Repealing the Federal Mobile PCB Treatment and Destruction Regulations (SOR/2014-75).
.3 Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2005-149).
.4 PCB Regulations (SOR/2008-273).
.5 PCB Waste Export Regulations (SOR/97-109).
.2 Transportation of Dangerous Goods Act (TDGA), 1992 (SC1992, c.34)
.1 Transportation of Dangerous Goods Regulations (SOR/2001-286).
.3 Hazardous Products Act (R.S.C., 1985, c. H-3)
.1 Controlled Products Regulations (SOR/88-66).
.2 Workplace Hazardous Materials Information System.

.4 Environment Canada

.5 Department of Environment and Natural Resources, Government of the Northwest Territories

.6 National Institute for Occupational Safety and Health (NIOSH).


1.4 DEFINITIONS

.1 Authorized visitors: Departmental Representative or designated representatives of regulatory authorities.

.2 Contractor’s Site Superintendent: Contractor’s resident site representative who is authorized to make decisions on behalf of the Contractor.

.3 Contractor’s Designated Hazardous Waste Disposal Facility: A Licensed Hazardous Waste Disposal Facility designated by the Contractor for the disposal of all hazardous materials, including PCB waste, under the provisions of this contract. The facility must be pre-approved by the Departmental Representative prior to the beginning of work. Contractor must provide documentation from the facility indicated full responsibility for the hazardous waste accepted from the site.

1.5 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Prior to starting work, Contractor performing work of this section to provide:
   .1 Workers’ Safety & Compensation Commission Board Clearance Certificate.
   .2 Insurance certificates.
   .3 Site Specific Health and Safety Plan.
   .4 Certificate of Approval for Transportation of PCB Waste and Location of Destruction Facility.
   .5 WHMIS Training Certificates for personnel.
   .6 Material Safety Data Sheets (MSDSs) for chemicals or material to be used.

.3 Submittals to local Fire Department and Departmental Representative.
   .1 Two (2) copies of books and records listed under Record Keeping of Control Submittals Article in PART 1 of this Section.

.4 Waste location and description in a PCB Management Plan that includes, but is not limited to:
   .1 Building in which PCB waste is stored.
.2 Size of property used for storage site.
.3 Precise location of PCB waste at storage site.
.4 Container storage method used.
.5 Spill containment features in place at storage site.
.6 Security measures in place at storage site.
.7 Fire detection systems in place at storage site.

1.6 CONTROL SUBMITTALS

.1 Co-ordinate procedural requirements with Section 01 45 00 - Quality Control.

.2 Record keeping: maintain and make available for review by Departmental Representative.

.1 Receipt of waste showing:
   .1 Date of receipt of waste.
   .2 Description of PCB waste including nameplate description, serial number, PCB registration number and quantity.
   .3 Condition of PCB waste.
   .4 Source of PCB waste.
   .5 Name of carrier of PCB waste.
   .6 Name of individual who accepted receipt of PCB waste.

.2 Removal of waste showing:
   .1 Date of removal of PCB waste.
   .2 Description of PCB waste including nameplate description, serial number, PCB registration number and quantity.
   .3 Condition of PCB waste.
   .4 Name of carrier of PCB waste.
   .5 Destination of PCB waste.
   .6 Name of individual authorizing transport of PCB waste.

.3 Monthly inspection, repair and replacement reports.
.4 Submit records to Departmental Representative as requested.

1.7 QUALITY ASSURANCE

.1 Co-ordinate with Section 01 45 00 - Quality Control.

.2 Instruct personnel on dangers of PCB exposure, respirator use, decontamination and applicable Federal, Territorial/Provincial and Municipal Regulations.

.3 Obtain services of industrial hygienist certified by American Board of Industrial Hygiene to certify training, review and approve PCB management plan, including determination of need for personnel protective equipment (PPE) in performing PCB removal work.

.4 Complete Work so that at no time do PCB's contaminate the site and the environment.

1.8 SUPERVISION

.1 Provide an on-site supervisor, with authority to oversee health and safety, remediation methods, scheduling, labour and equipment requirements.

.2 One (1) supervisor for every ten (10) workers is required.
1.9 DELIVERY, STORAGE AND HANDLING

.1 Place materials defined as hazardous or toxic in designated containers.

.2 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Territorial/Provincial and Municipal regulations.

.3 Owners or operators of storage sites.
   .1 Provide method for determining concentration of PCBs in particular waste at request of Departmental Representative.
   .2 Ensure personnel are familiar with and understand current PCB waste management procedures and use of personal protection equipment and clean-up techniques.

.4 Disposal of PCB waste generated by removal activities must comply with Federal, Territorial/Provincial and Municipal regulations.
   .1 Dispose of PCB waste in leak proof drums.
   .2 Containers must be labelled with appropriate warning labels.

.5 Create manifests describing and listing waste created and transport containers by approved means to licensed facility for storage.
   .1 For each bulk load of PCBs: identity PCB waste, earliest date of removal from service for disposal, and weight in kilograms of the PCB waste.
   .2 For each PCB Article Container or PCB Container: unique identifying number, type of PCB waste (i.e., soil, debris, small capacitors), earliest date of removal from service for disposal, and weight in kilograms of PCB waste contained.
   .3 For each PCB Article not in PCB Container or PCB Article Container: serial number if available, or other identification if there is no serial number, date of removal from service for disposal, and weight in kilograms of PCB waste in each PCB Article.

1.10 MEASUREMENT FOR PAYMENT

.1 The abatement, separation, packaging, transport and disposal of PCBs from buildings and structures to be demolished and debris areas are included in the price for demolition of the structures as described in Section 02 41 16 - Structure Demolition, Section 02 41 23 – Debris and Miscellaneous Removals and in Section 02 81 01 – Hazardous Materials including, but not limited to the following:
   .1 Supply of all materials, labour, and equipment necessary to perform the work in accordance with these specifications, including the supply and transport of PCB containers to the site.
   .2 Construction of temporary enclosures and drop sheets when necessary.
   .3 Handling, separation and disposal of PCB materials from other debris and miscellaneous materials.
   .4 Preparation of PCB inventory.
   .5 Transport and off-site disposal of the PCB materials at the Contractor’s Designated Hazardous Waste Disposal Facility.

.2 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 - Construction Progress Schedules – Bar (GANTT) Chart.
PART 2 - PRODUCTS

2.1 STORAGE GENERAL

.1 Storage of PCB materials in accordance with CEPA SOR/92-507 and Authority Having Jurisdiction.

2.2 STORAGE ENCLOSURE

.1 Isolate PCB control area by physical boundaries to prevent unauthorized entry of personnel.

.2 Food, drink and smoking materials are not permitted in areas where PCBs are handled or PCB items are stored.

.3 Room, building or structure with lockable entrance.

.4 Temporary storage facility to be a fully enclosed block wall room within building with appropriate warning signs in both official languages (English and French).

.5 Woven mesh wire fence or other fence with similar characteristics at least 2.5 metres high, with lockable entrance.

.6 Smoking is not permitted within 15 m of PCB control area.

.1 Provide and post "No Smoking" signs as directed by Departmental Representative.

2.3 STORAGE CONTAINERS

.1 Exterior containers:

.1 Structurally-sound and weather-sealed to hold PCB solids, PCB light ballasts, drained PCB containers or drained PCB equipment.

.2 PCB solid and liquid storage.

.1 Drums and containers:

.1 Designed with sufficient durability and strength to prevent PCB solids and liquids from being released into environment, affected by weather, or contaminated by external sources.

.2 Steel or other material approved by Departmental Representative.

.2 Drums:

.1 Capacity no greater than 205 litres.

.2 Steel of minimum 1.2 mm for solids, 1.52 mm for liquids.

.3 Ensure removable steel lid securely attached and complete with PCB-resistant gasket for solids or a closed-head double-bung steel drum.

.4 Paint or treat interior and exterior to prevent rusting.

.3 Drum Liners:

.1 6 mil clear polyethylene bag, 914 mm x 1524 mm, with opening at 914 mm end.

2.4 EMERGENCY RESPONSE EQUIPMENT AND SYSTEMS

.1 Safety requirements in the temporary storage facility:

.1 Fire extinguishers present within the area.
2.2 Storage site clean-up materials:
   .1 Ensure availability at all time of sorbent or solvents, for clean-up of liquid or solids.
   .2 Ensure availability at all times of inert absorbent in sufficient quantity to contain minor leakage.
   .1 Place in bottom of each container holding PCB equipment.

2.3 Respirators: Certified by the National Institute of Occupational Safety and Health (NIOSH) or other testing agency acceptable to the Territorial requirements.
   .1 Use approved full-face organic vapour cartridge respirator for exposure to hot PCBs.
   .2 Vapour concentration less than or equal to 5 mg/m³.
      .1 Supplied-air respirator with full face piece, helmet or hood.
      .2 Self-contained breathing apparatus with full face piece.

   .3 Vapour concentration greater than 5 mg/m³ or unknown concentrations.
      .1 Self-contained breathing apparatus with full face piece operated in positive pressure mode.
      .2 Type C supplied-air respirator with full face piece operated in positive pressure of continuous flow mode and auxiliary self-contained breathing apparatus operated in positive pressure mode.

2.5 WARNING SIGNS AND LABELS

   .1 Label containers with PCB materials as follows: "ATTENTION — contains 50 mg/kg or more of PCBs / content 50 mg/kg ou plus de BPC" in black lettering on a white background, in a font size of no less than 36 points; measure at least 150 mm by 150 mm or at least 76 mm by 76 mm in the case of capacitors; and in the case of equipment for which an extension is applied for under section 17, state a unique identification number. They shall affix a label in a readily visible location on any product containing PCBs in a concentration of 50 mg/kg or more and that are stored at the PCB storage site, which states "Date of Commencement of Storage / Date de début de stockage" and the date on which the storage begins.

   .2 Maintain signs and labels in clear and legible condition.

PART 3 - EXECUTION

3.1 GENERAL

   .1 Complete construction occupational health and safety in accordance with Section 01 35 32 – Site Specific Health and Safety Plan.

   .2 Follow procedures set out in PART 2 – PRODUCTS.

   .3 Store PCB waste materials to CEPA (SOR/92-507).

   .4 Select PCB removal procedure to minimize contamination of work areas with PCB or other PCB-contaminated debris/waste. Handle PCBs such that no skin contact occurs.

   .5 As feasible, do not carry out PCB handling operations in confined spaces. Confined space means space having limited means of egress and inadequate cross ventilation.

   .6 Ensure that work operations or processes involving PCB or PCB-contaminated materials are conducted in accordance with Federal, Territorial/Provincial and Municipal Regulations and applicable requirements of this Section, including but not limited to:
      .1 Obtaining advance approval of PCB storage sites.
.2 Notify Departmental Representative prior to beginning operations.
.3 Report leaks and spills to Departmental Representative.
.4 Maintain access log of employees working in PCB control area and provide copy to Departmental Representative upon completion of operations.
.5 Inspect PCB and PCB-contaminated items and waste containers for leaks and forward copies of inspection reports to Departmental Representative.
.6 Maintain spill kit for emergency spills entitled "PCB Spill Kit".
.7 Maintain inspection, inventory and spill records.

3.2 ACCESS TO STORAGE SITE

.1 Keep entrance to site locked or guarded.
.2 Maintain register at site containing name, address, telephone number and place of business of each person who enters, or is authorized to enter site.
.3 Permit only authorized personnel to enter site.

3.3 ACCESS TO STORED MATERIAL

.1 Store materials and equipment to permit easy access for inspection.

3.4 STORAGE PRACTICES

.1 Stack containers only if designed for stacking.
.2 Stack liquid containers or drums no higher than two (2) containers.
.3 Separate stacked drums from each other with pallets.
.4 Store material to prevent it catching fire.
.5 Store material to prevent it being released.
.6 Store PCB material together, and away from other stored materials.
.7 Exterior:
  .1 Cover PCB liquid containers with waterproof roof or cover extending beyond curbing or sides of container.
  .2 Elevate PCB waste containers and PCB equipment on pallets or other suitable devices to reduce corrosion.
  .3 Store transformers on skids.
.8 Interior:
  .1 Place on skids or pallets PCB equipment and containers of PCB material not permanently secured to floor or surface.

3.5 HANDLING LIQUID CHLOROBIPHENYL (54% CHLORINE)

.1 Use impervious clothing (nitrile), gloves, face shields 200 mm minimum and other appropriate protective clothing necessary to prevent skin contact. Do not use natural rubber, neoprene, or polyvinyl chloride (PVC).
.2 Place contaminated clothing in closed containers for storage. Dispose of contaminated clothing in same manner as PCBs.

.3 Ensure that contaminated non-pervious clothing is removed promptly and not re-worn until cleaned.

.4 Wear splash-proof safety goggles where liquid chlorobiphenyl (54% chlorine) may contact eyes.

3.7 EMERGENCY RESPONSES

.1 General:
   .1 Immediately report to Departmental Representative PCB spills on ground or in water, PCB spills in drip pans, or PCB leaks.
   .2 Rope off area around edges of PCB leak or spill and post "PCB Spill Authorized Personnel Only" caution sign. Immediately transfer leaking items to drip pan or other container.
   .3 Initiate cleanup of spills as soon as possible, but no later than 48 hours of its discovery. If misting, elevated temperatures or open flames are present, or if spill is situated in confined space, notify Departmental Representative. Mop up liquid with rags or other conventional absorbent. Properly contain and dispose of spent absorbent as solid PCB waste.
   .4 Workers to evacuate site. When leaving, shut down water in use. Only personnel trained in use of, and wearing SCUBA apparatus, will be allowed to re-enter site.
   .5 Do not return to site until Departmental Representative and Ministry of the Environment representatives have declared the area safe for re-entry.

.2 Spill, leak, and disposal procedures:
   .1 Permit access to only those wearing protective equipment and clothing.
   .2 Issue poison warnings.
   .3 Call local fire department or PCB Emergency Response Team.
   .4 Avoid contact and inhalation.
   .5 Remove ignition sources.
   .6 Ventilate areas of spill or leak.
   .7 Stop or reduce discharge if possible without risk.
   .8 Collect spilled material for reclamation.
   .9 Do not flush to sewer.
   .10 Use only inert sawdust/vermiculite/dry sand/earth absorbents as approved by Departmental Representative.
   .11 Wipe contaminated area with rags and kerosine/fuel oil/1,1,1-trichloroethane chlorothene VG solvent. Do not use acetone or toluene.
   .12 Notify environmental authorities to determine disposal and clean-up procedures.

.3 Fire protection and emergency procedures plan for storage sites.
   .1 Ensure most recent revision of plan is in effect.
   .2 Develop plan in consultation with local fire department.
   .3 Ensure employees authorized to enter PCB storage site are familiar with contents of fire protection and emergency procedures plan.
   .4 Send one (1) copy to local fire department.
   .5 Display one (1) copy at storage site in area accessible in fire or spill situation.
   .6 Display one (1) copy at storage site owner's place of business.

.4 Respirators:
   .1 Use when chlorobiphenyl concentrations are above permissible exposure levels.
   .2 Use when entering tanks or closed vessels.
   .3 Use in emergency situations.
.5 Permissible exposure limit.
.1 0.5 milligram of chlorobiphenyl (54% chlorine) per cubic metre of air, averaged over eight (8) hours, 1.0 microgram of chlorobiphenyl (54% chlorine) per cubic metre of air up to ten (10) hours/day.

.6 Fire protection:
.1 Wear totally encapsulated suit and self-contained breathing apparatus with full face piece operated in positive pressure mode.

3.8 SANITATION

.1 Promptly wash liquid-contaminated skin with soap or mild detergent and water.

.2 Prohibit eating and smoking in areas where liquid chlorobiphenyl (54% chlorine) is handled, processed or stored.

.3 Wash hands thoroughly with soap or mild detergent and water after handling liquid chlorobiphenyl (54% chlorine).

3.9 TRANSPORTATION AND DISPOSAL

.1 Furnish labour, materials, and equipment necessary to store, transport, and dispose of PCB contaminated material in accordance with Federal, Territorial/Provincial and Municipal requirements and guidelines.

.2 Prepare and maintain waste shipment records and manifests as required.

.3 Transport PCB contaminated soils in vehicles designed to carry PCB contaminated soils in accordance with Federal, Territorial/Provincial and Municipal requirements.

.4 Transport PCB contaminated solid material, articles, or equipment in approved containers with removable heads in accordance with TDGA.

.5 Store liquid PCBs in specification approved containers in accordance with TDGA.

.6 In addition to those requirements:
.1 Inspect and document vehicles and containers for proper operation and covering. Repair or replace damaged containers.
.2 Inspect vehicles and containers for proper markings, manifest documents, and other requirements for waste shipment.
.3 Perform and document decontamination procedures prior to leaving the site and again before leaving disposal site.
.4 Shipping Documentation:
.1 Before transporting PCB materials, the Departmental Representative will sign and date the manifests.
.2 Provide copies of manifests to Departmental Representative.
.3 Ensure that manifest accompanies PCB waste at all times.
.4 Ensure transporter provides copy of manifest signed and dated by disposal facility.

.5 Solvent Cleaning:
.1 Clean contaminated tools, and containers, after use by rinsing three (3) times with appropriate solvent or by wiping down three (3) times with solvent wetted rag. Suggested solvents are Stoddard solvent or hexane.
.7 Reports:
.1 Prepare and submit a remediation closeout report at completion of Work.

3.10 FIELD QUALITY CONTROL

.1 Owners or Operators of Storage Sites:
.1 At request of Departmental Representative, measure concentration of PCBs in accordance with CEPA SOR/92-507 - Storage of PCB Material Regulations.
.2 Inspect storage site weekly and repair or replace, if necessary, PCB equipment, floors, drains, drainage systems, waterproof roofs or barriers, fire prevention apparatus, personnel protection equipment, security fences and materials used for clean-up at site.
.3 Immediately repair or replace drum, container or equipment found to be leaking PCBs. Report action taken to Departmental Representative.
.4 Immediately clean up contaminated area.
.5 Ensure controlled access to storage site to prevent entry by unauthorized persons.

END OF SECTION
PART 1 - GENERAL

1.1 DESCRIPTION

.1 This Section specifies general requirements for the processing of aggregates to be incorporated into the work as granular fill.

.2 It is anticipated that there will be no requirement for crushing of granular materials to satisfy grading specifications. There may be requirements for select, blend, and/or screen granular materials to satisfy gradation specifications, as indicated in this Section. Moisture conditioning of material from borrow sources to satisfy granular fill may be required.

.3 Activities that may require aggregate include the following:
   .1 Ruth Landfill, approximate volume of aggregate required based on berm and cover design is 7667 m$^3$
   .2 Bullmoose Landfill, approximate volume of aggregate required based on berm and cover design is 4762 m$^3$
   .3 Bullmoose Landfarm, approximate volume of aggregate required based on berm design is 1042 m$^3$
   .4 Backfill of excavations, volume as required.
   .5 Waste rock cover, volume as required.
   .6 Airstrip and road repairs/improvements, volume as required.

1.2 RELATED SECTIONS

.1 Section 01 32 18 – Construction Progress Schedules – Bar (GANTT) Chart
.2 Section 01 33 00 – Submittal Procedures
.3 Section 02 61 00.01 – Soil Remediation
.4 Section 31 22 13 – Rough Grading
.5 Section 31 23 33.1 – Excavating, Trenching, and Backfilling.

1.3 REFERENCES

.1 American Society for Testing and Materials (ASTM)
   .1 ASTM D4791-10, Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.

.2 Canadian General Standards Board (CGSB)

1.4 POTENTIAL BORROW SOURCES

.1 Abide by conditions of the Land Use Permit, Water License, Quarry Permit and/or other requirements of Authorities Having Jurisdiction (AHJ).
.2 Sources of borrow materials to be incorporated into work requires approval by Departmental Representative. Potential areas of borrow material are indicated on Drawing PC2 – Potential Borrow Sources.

.3 Defined borrow areas (sources) and stockpiles are to be used. Approval to excavate borrow material from a previously undisturbed area will be granted by Departmental Representative based on areas that do not require new access roads, areas that have minimal ice-rich permafrost, and areas located away from water bodies only when all previously identified sources area depleted or are determined by Departmental Representative to be unsuitable.

.4 Inform Departmental Representative of proposed source of aggregates and provide access for sampling at least fourteen (14) days prior to commencing production. Departmental Representative will conduct confirmatory sampling of borrow material, if required, to determine if any contamination is present.

.5 If, in the opinion of the Departmental Representative, materials from the proposed source do not meet, or cannot reasonably be processed to meet specified requirements, locate an alternate source or demonstrate that material from the source in question can be processed to meet specified requirements.

.6 Contractor required to submit a Quarry Operations Plan, in accordance with the AANDC Northern Land Use Guidelines: Pits and Quarries (2010) and relevant Federal and Territorial Legislation. This plan should be submitted 30 days following contract award.

.7 Should a change of material source be proposed during Work, advise Departmental Representative one (1) week in advance of proposed change to allow sampling and testing.

.8 Acceptance of a material at source does not preclude future rejection if it is subsequently found to lack uniformity, or if it fails to conform to requirements specified, or if its field performance is found to be unsatisfactory.

.9 Geotechnical information, including borrow assessment and the results of laboratory analysis of soil samples obtained from the site are included in the RAP report and at Appendix B.

1.5 QUALITY CONTROL

.1 Aggregate will be subject to sampling by Departmental Representative during production, at the source and/or at the place of work. The aggregate is to meet the required specifications, regardless of the place of sampling.

.2 Provide Departmental Representative with access to aggregate source and processed aggregate material for purpose of sampling and testing.

.3 Samples are to be obtained according to industry accepted practices.

.4 Acceptance of material at source does not preclude future rejection if it fails to conform to requirements specified, lacks uniformity, or if its field performance is found to be unsatisfactory.

.5 Notify Departmental Representative whenever unsuitable materials are encountered in borrow areas.

1.6 MEASUREMENT FOR PAYMENT
.1 Location and development of borrow sources including stripping, processing, handling, stockpiling, transport, replacement of organics, and any necessary restoration will be incidental to the work of Section 31 22 13 – Rough Grading, and will not be measured separately.

.2 Work under this Section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 – Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, or other substances that would act in deleterious manner for use intended.

.2 Type 1 Granular Fill:

.1 Type 1 Granular Fill is selected material obtained from excavations or borrow areas approved by Departmental Representative, generally consisting of pit-run, screened stone, gravel and sand in an unfrozen state and free from rocks larger than 50 mm, waste, or other deleterious materials. Gradations to be within the following limits when tested to ASTM C136 and ASTM C117, sieve sized to CAN/CGSB-8.1.

<table>
<thead>
<tr>
<th>Sieve Designation (mm)</th>
<th>% Passing by Weight</th>
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<tr>
<td>0.425</td>
<td>10-35</td>
</tr>
<tr>
<td>0.08</td>
<td>2-15</td>
</tr>
</tbody>
</table>

.1 Refer to Section 31 22 13 – Grading for placement, moisture conditioning, and compaction of Type 1 Granular Fill.

.2 Type 1 Granular Fill is generally used for:

.1 Regrading low area, upgrading existing road or constructing new access road, as required.

.2 Backfill for contaminated soil excavations.

.3 General site grading requirements.

.4 Watercourse/drainage course crossings upgrades as needed.

.5 Soil berm construction for landfill and landfarm.

.6 Landfill cover.

.3 When coarser-grained materials are encountered on site satisfying the upper gradation limits and maximum particle size of Type 1 Granular Fill, then this material shall be classified as Select Type 1 Granular Fill to be used for surfacing the side slopes of the landfill to enhance erosion protection. Select Type 1 Granular Fill shall be approved by Departmental Representative and meet the following gradation limits:

<table>
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<tr>
<th>Sieve Designation (mm)</th>
<th>% Passing by Weight</th>
</tr>
</thead>
</table>

.1 Refer to Section 31 22 13 – Grading for placement, moisture conditioning, and compaction of Select Type 1 Granular Fill.
Type 2 Granular Fill:

1. Type 2 Granular Fill is selected material obtained from excavations or borrow areas approved by Departmental Representative, consisting of sand, gravel and sand, in an unfrozen state and free from rocks larger than 25 mm, waste, or other deleterious material. Crushed particles will not be allowed.

2. Gradations to be within the following limits:

<table>
<thead>
<tr>
<th>Sieve Designation (mm)</th>
<th>% Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
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<td>2</td>
<td>30-70</td>
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<td>0.425</td>
<td>10-40</td>
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<tr>
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</table>

3. Type 2 Granular Fill is generally used for:

1. Bedding material to protect the landfarm liner system prior to placement of hydrocarbon contaminated soil as indicated.

2. Intermediate fill between waste layers as needed.

3. Backfill for contaminated soil excavations in areas not susceptible to erosion from runoff.

Sand Bedding:

1. Sand Bedding consists of screened granular material, with maximum particle size 12 mm and no more than 10% passing a 80 um sieve, from identified borrow sources and is generally used for a protection layer next to synthetic liners as indicated on drawings.

Rip Rap:

1. Rip Rap consists of screened coarse well graded gravel and cobbles with maximum particle size 250 mm and no more than 10% passing a 25 mm sieve, from identified borrow sources and is generally used for erosion protection on steeper slopes as indicated.

Vegetation Support Layer:

1. Vegetation Support Layer consists of native till materials, placed in an uncompacted state, with a saturated hydraulic conductivity ranging from 10-3 to 10-4 cm/sec and is generally used to support vegetative growth as part of waste rock cover.

Unsuitable materials to use as aggregate will include:

1. Soils with moisture content exceeding optimum moisture by 5% or more.

2. Soils containing organic material, snow, ice, or other deleterious material.

Screening may be required to meet the Type 1 and Type 2 Granular Fill requirements. Field testing data is provided in Appendix B.
PART 3 - EXECUTION

3.1 DEVELOPMENT OF AGGREGATE SOURCE

.1 Prior to excavating materials for aggregate production, remove any debris (known or unknown) from area, as described in Section 02 41 23 – Debris Removal.

.2 Delineate with the Departmental Representative the limits of borrow sources and have the topography surveyed by a licensed surveyor to confirm the site grades at the beginning of the aggregate recovery program.

.3 Any significant deposits of organic material, as determined by Departmental Representative, are to be avoided and left undisturbed during development of an aggregate source, or stripped and stockpiled for replacement to restored borrow area.

.4 Strip area ahead of quarrying or excavating operation sufficient to prevent contamination of aggregate by deleterious material.

.5 Implement erosion control measures as required to minimize impacts on the local environment and comply with the conditions outlined in Section 01 35 43 – Environmental Protection.

.6 When excavation is complete, dress sides of excavations to achieve gentle slopes, maximum of 5H:1V, which fit local topography and provide swales or ditches are required to prevent surface standing water.

.7 Trim off and dress slopes of waste material piles and leave site in neat condition.

.8 Trim, backblade and restore burrow areas to a condition acceptable to Departmental Representative.

3.2 PROCESSING

.1 Process aggregate uniformly using methods that prevent contamination and degradation.

.2 Blend aggregates, if required, to obtain gradation requirements. Use methods and equipment accepted by Departmental Representative. Blending to decrease percentage of flat and elongated particles is permitted.

.3 When operating in stratified deposits use excavation equipment and methods that produce uniform, homogeneous aggregate.

.4 Moisten aggregate as required to achieve the specified density and/or degree of saturation.

.5 Dry aggregate as required to place and compact according to this Specification.

.6 Do not use frozen aggregate in any areas that require compaction.

3.3 HANDLING

.1 Handle and transport aggregates to avoid segregation, contamination and degradation.

3.4 STOCKPILING
1. Stockpile aggregates on site in locations specified by the Departmental Representative. Stockpiles are not to be located on undisturbed tundra.

2. Stockpile aggregates in sufficient quantities to meet Project schedules.

3. Stockpiling sites to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.

4. Except where stockpiled on acceptably stabilized areas, provide compacted sand base not less than 300 mm in depth to prevent contamination of aggregate. Stockpile aggregates on ground but do not incorporate bottom 300 mm of pile into Work.

5. Separate different aggregates stockpiles far enough apart to prevent intermixing.

6. Do not use intermixed or contaminated materials. Remove and dispose of rejected materials as directed by Departmental Representative within 48 h of rejection.

7. Transport granular fill from borrow areas to the work areas via existing access routes where available. Maintain and provide for dust control on the access route between the borrow area and the work area.

8. Uniformly spot-dump aggregates delivered to stockpile in trucks and build up stockpile in uniform layers of one (1) metre maximum thickness.

9. Do not cone piles or spill material over edges of piles (2 m maximum height and flatten top).

10. Complete each layer over the entire stockpile area before beginning next layer.

11. During winter operations (snowy conditions), prevent ice and snow from becoming mixed into stockpile.

3.5 EXCAVATING

1. Obtain aggregated from potential borrow areas as indicated.

2. Ensure drainage of all excavated areas and maintain crowns and cross slopes to provide surface drainage.

3. Notify Departmental Representative whenever unsuitable materials are encountered.

4. Transport granular fill from borrow areas to the work areas via existing access routes where available. Maintain and provide for dust control on the access route between the borrow area and the work area.

3.6 RECLAMATION OF AGGREGATE SOURCE AND STOCKPILE CLEANUP

1. Final grading of borrow area upon completion to be tidy, in a well-drained condition, free of standing water to the satisfaction of Departmental Representative.

2. Upon completion of final grading, leave all slopes in a stable condition, no steeper than 3H:1V, and spread all stripped topsoil or organics. Trim and backblade to a condition acceptable to Departmental Representative. The final grading should mimic the natural topography.
.3 Leave temporary aggregate stockpile in tidy, well drained condition, free of standing surface water.

.4 Upon completion of Work, unused aggregates to be left in stable condition, with slopes mimicking natural topography. The final condition must meet the satisfaction of Departmental Representative.

.5 For temporary or permanent abandonment of aggregate source, restore source to condition meeting requirements of authority having jurisdiction.

END OF SECTION
PART 1 - GENERAL

1.1 DESCRIPTION

.1 This Section specifies earthwork associated with:

.1 Upgrading existing air strips, roads and constructing new access roads as required.
.2 Constructing the Bullmoose Landfill, Ruth Landfill and Bullmoose Landfarm.
.3 Decommissioning of the Bullmoose Landfarm.
.4 Borrow sources.
.5 Regrading of areas and depressions created by the removal of debris and contaminated soil, sediment, tailings, and waste rock.

.2 Individual Drawings should be referred to for a description of the designated area(s), design grades, contours, elevations or cover soil thickness.

1.2 RELATED SECTIONS

.1 Section 31 05 16 – Aggregate Materials.
.2 Section 31 23 33.01 - Excavating, Trenching and Backfilling.

1.3 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.1 ASTM D 698-91(1998), Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m³).

1.4 DEFINITIONS

.1 Constructing: The supply and placement of granular fill in designated areas to construct soil berms; cover and intermediate fill layers for an on-site landfill facility; soil berms and liner bedding materials for an on-site landfarm facility; requirements for upgrading existing and constructing new airstrips and site access roads; creekbed restoration works; and waste rock soil covers.

.2 Reshaping: The leveling and grading, to a maximum depth of 600 mm, including the movement of boulders, in designated areas to blend in with the natural terrain and provide positive drainage. Reshaping does not require the supply and placement of additional granular fill. Excavation of the terrain to a depth greater than 600 mm during reshaping operations is to be considered as unclassified excavation.

.3 Regrading: The supply and placement of granular fill in designated areas to blend in with the natural terrain, to provide positive drainage, and to place additional granular fill materials at the drainage channel crossings.

.4 Granular Fill Type 1, Select Type 1, Type 2, Rip Rap, Sand Bedding, and Vegetation Support Layer: Material as specified in Section 31 05 16 – Aggregate Materials.

.5 General Fill: Granular fill used for regarding low areas, to backfill contaminated excavations, and for waste rock soil covers (referenced as till or native materials).

.6 Waste Material: Excavated material unsuitable for use in work or surplus to requirements.

.7 Borrow Material: Material obtained from approved areas and required for construction, re-grading and
backfilling requirements.

.8 Unclassified Excavations: Excavation of materials of whatever nature encountered in the work to a depth greater than 600 mm.

.9 Truck Box: The capacity of the granular fill hauling vehicle that will be measured to the closest 0.1 cubic metre. The vehicle, once measured, will not be changed without consent of the Departmental Representative. The box is to be leveled by the Contractor, using a strike-off method prior to measurement. No heaping or mounding of the truck box is allowed. The following bulking factors will be applied to truck box measurements.

  .1 Granular materials: 15%.
  .2 Debris: 50%.

.10 Maximum Dry Density: Determine by the Standard Proctor Method in accordance with ASTM D698.

.11 Corrected Maximum Dry Density: Applicable if more than 30% of the material is retained on the ASTM 19 sieve. It is defined as:

\[
D = \frac{D1 \times D2}{(F1)(D2)+(F2)(D1)}
\]

Where:

- D = corrected maximum dry density kg/m³
- F1 = fraction (decimal) of total field sample passing ASTM 19.0 mm sieve
- F2 = fraction (decimal) of total field sample retained on ASTM 19.0 mm sieve (equal to 1.00 – F1)
- D1 = maximum dry density (kg/m³ of material passing ASTM 19.0 mm sieve determined in accordance with Method C of ASTM D698 or latest edition thereof.
- D2 = bulk density, kg/m³ of material retained on ASTM 19.0 mm sieve, equal to 1,000 G where G is bulk specific gravity (dry basis) of material when tested to ASTM C127-84, or latest edition thereof.

.11 Re-vegetation: Placement of seeds or shoots of native plants on vegetation support layers.

1.5 EXISTING CONDITIONS

.1 Suspend grading operation whenever climatic conditions are unsatisfactory for grading Work to conform with this Specification.

.2 Do not operate equipment in work areas until the material has dried sufficiently to prevent excessive rutting.

.3 Areas to be graded are to be free from debris and excessive snow, ice or standing water prior to grading work.

.4 Contractor is advised that soft ground conditions may be at the site during periods of maximum thaw of the permafrost. Schedule and carry out work to minimize disturbance to permafrost soils.

.5 Contractor is advised that existing access roads and airstrips to be used during construction activities may require repair, upgrading, and general maintenance.

.6 Contractor is advised that locations of buried objects are to be established before commencing the work.
1.6 PROTECTION

.1 Maintain access roads to prevent accumulation of construction related debris on roads.

.2 Prevent damage to surface or underground services or utility lines which are to remain. Immediately repair any damage to the above or replace the above in the event of damage, at no cost to Departmental Representative.

.3 Protect archaeological sites from construction and construction traffic.

.4 Unanticipated archaeological resources may be encountered during construction; suspend all activities in that area and notify Departmental Representative immediately.

.5 Protect and do not disturb nesting sites, fish spawning beds and wildlife breeding grounds during construction.

.6 Protect all monitoring wells and survey monuments. Repair or replace, at no cost to the Departmental Representative, any monitoring wells or survey monuments damaged by Contractor’s operations.

.7 Environmental protection measures are to be in accordance with the requirements specified in Section 01 35 45 – Environmental Procedures. Follow the approved Erosion, Sediment and Drainage Control Plan submitted in accordance with Section 01 35 43 – Environmental Procedures.

1.7 SITE ACCESS UPGRADE PLAN

.1 Submit the Site Access Upgrade Plan to Departmental Representation prior to mobilization, in accordance with Section 01 33 00 – Submittal Procedures.

.2 The Site Access Upgrade Plan to include, but not be limited to, the following:

   .1 Drainage improvements.
   .2 Air strip, road sections, and camp areas to be built up, as required.
   .3 Estimated quantity of granular material required and borrow sources proposed for use.
   .4 Passing, pull-out or turn around locations.
   .5 Safety measures to be put in place in narrow or steep road section, as required.

1.8 LANDFILL AND LANDFARM DESIGN

.1 Landfill

   .1 Examine Drawings BM6-3 and RM 6-3 for conceptual landfill designs and Drawing PC 3 for potential landfill locations.
   .2 Submit a Landfill Design Plan to Departmental Representative a minimum of 45 days prior to construction, in accordance with Section 01 33 00 – Submittal Procedures.
   .3 The Landfill Design Plan to include at a minimum:

      .1 Contractor’s proposed location for the Bullmoose and Ruth Landfills.
      .2 Survey of proposed landfill locations including original ground elevation and proposed base elevation.
      .3 Areas requiring cut and/or fill and volume of material required/generated. Indicate borrow source if volume of fill material is greater than volume of cut material.

.2 Landfarm
.1 Examine Drawings BM6-4 for conceptual landfarm design and Drawing PC3 for landfarm location.

.2 Submit a Landfarm Design Plan to Departmental Representative a minimum of 45 days prior to construction, in accordance with Section 01 33 00 – Submittal Procedures.

.3 The Landfarm Design Plan to include at a minimum:
   .1 Contractor’s proposed location for the Bullmoose Landfarm.
   .2 Survey of proposed landfarm location including original ground elevation and proposed base elevation.
   .3 Areas requiring cut and/or fill and volume of material required/generated. Indicate borrow source if volume of fill material is greater than volume of cut material.

1.9 MEASUREMENT FOR PAYMENT

.1 Payment for grading will be based on cubic metres of borrow material placed for constructing of an on-site landfill facility and an on-site landfarm facility.

.2 The supply and placement of Type 1 and Select Type 1 Granular Fill and of General Fill for the landfill berms and cover, landfarm berms, and waste rock soil covers will be measured for payment by the cubic metre in place in each of the landfill and landfarm, as determined by the survey method. Type 1 Granular Fill will be paid under Item 31 22 13-1 in the Basis of Payment Schedule.

.3 The supply and placement of Type 2 Granular Fill for the landfarm and Bullmoose Creek will be measured for payment by the cubic metre in place in the landfarm and along Bullmoose Creek, as determined by survey. Type 2 Granular Fill used for the landfarm and Bullmoose Creek will be paid under Item 31 22 13-2 in the Basis of Payment Schedule.

.4 The supply and placement of Type 2 Granular Fill for the intermediate fill for the landfill will be measured for payment by truck box as described in Article 1.4 – Definitions of this Section. The capacity of the truck box will not be changed with consent of the Departmental Representative. The Departmental Representative may, at their discretion, determine the granular material volume without enforcing the strike-off method. Truck boxes are to be thoroughly cleaned when unloading. Type 2 Granular Fill used for the landfill will be paid under Item 31 22 13-2 in the Basis of Payment Schedule.

.5 Revegetation for waste rock soil covers will be measured for payment by the square metre and will be paid under Item 31-22-13-4 in the Basis of Payment Schedule.

.6 Decommissioning and reclamation of the landfarm area, including the removal and off-site disposal of the geotextile and geomembrane material, will be lump sum and will be paid under Item 31-22-13-4 in the Basis of Payment Schedule.

.7 No measurement for payment will be made for:
   .1 Building, enhancing or maintaining roads;
   .2 Preparation of borrow sources;
   .3 Excavations to prove borrow sources;
   .4 Surplus material;
   .5 Waste and reject material;
   .6 Placement of granular fill beyond the limits and depths specified, unless specifically authorized by Departmental Representative.

.8 The following work items will be incidental to the work described in this Section, and will not be measured separately:
   .1 Stripping, stockpiling and replacement of placement of organic material from borrow areas as
directed by Departmental Representative, and where required from construction areas upon where granular material is to be placed.

.2 Construction of access roads and upgrading the infrastructure to facilitate site remediation activities as required for construction including placement of granular materials and installation of culverts.

.3 Disposal of waste material from the borrow areas.

.4 Removal of surficial boulders over 300 mm in diameter from borrow areas, separating, processing, screening, and stockpiling of borrow materials.

.5 Grading of borrow areas to approximate the before-construction condition upon completion.

.6 Loading, hauling and haul road construction, maintenance and rehabilitation.

.7 Water from moisture conditioning, compaction, and dust control should such be used as per water permit requirements.

.8 Surveying and calculation of granular material quantities for progress payment purposes.

.9 Reshaping and regarding of borrow areas and Contractor’s laydown areas including the supply, placement and compaction of granular material.

.10 Draining of wet areas prior to regarding operations.

.11 Removal and disposal or burial of abandoned utility lines exposed by Contractor during the excavation or granular materials.

.9 Except as otherwise indicated herein, Work under this Section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 – Construction Progress Schedule – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

.1 Fill materials in accordance with Section 31 05 16 – Aggregate Materials and Section 31 23 33.01 - Excavating, Trenching and Backfilling.

.2 Fill materials require the approval of Departmental Representative.

.3 Excavated or graded material existing on site may be suitable to use as fill for grading work if approved by Departmental Representative.

2.2 LINEAR MATERIALS

.1 Geotextile in accordance with Section 31 32 19.01 – Geotextile.

.2 Geomembrane in accordance with Section 31 32 19.02 – Geomembranes.

PART 3 - EXECUTION

3.1 SITE PREPARATION

.1 Unless specifically indicated or directed by Departmental Representative, do not remove existing topsoil or organic materials from construction areas. Remove exposed surface boulders over 300 mm in diameter that are located in areas to receive granular fill. Dispose of boulders by placing on embankment side slopes.

3.2 LANDFILL AND LANDFARM CONSTRUCTION
Landfill

1. Examine Drawings BM6-3 and RM6-3 for conceptual landfill designs, Drawing PC3 for Potential Camp, Landfill, and Landfill Locations, and Contractor’s approved Landfill Design Plan.

2. Set grades and lay out work in detail from control points in areas of granular fill placement. Verify the original ground topography by survey.

3. Level and maintain the landfill base elevation by cut and fill as required.

4. Haul granular fill material from borrow areas to designated landfill area.

5. Place granular fill material to the lines and dimensions indicated on the Drawings and to the grades and elevations indicated in the Contractor’s approved Landfill Design Plan, or agreed to with Departmental Representative.

6. Do not place fill material which is frozen or place fill material on frozen surfaces.

7. Do not place granular fill on snow or surface ice.

8. Maintain natural drainage patterns, unless otherwise directed.

9. Construct landfill perimeter berms to design elevations (Type 1 Granular Fill), while leaving access corridor.

10. Do not dump fill material over the side slopes of berms.

11. Place and compact fill material in horizontal lifts.

12. Place waste in 0.5 metre lifts separate by 0.15 metre intermediate cover (Type 2 Granular Fill); place lifts to design height.

13. Cover with a minimum 1 metre of Type 1 Granular Fill. For erosion protection, the top 0.5 metre should be Select Type 1 Granular Fill on the side slopes as indicated on Drawings BM6-3 and RM6-3.

14. All granular fill is to be placed in an unfrozen state. Fill material to be free from debris, snow, and ice. Do not place granular fill if the outside air temperature is below 0\(^\circ\)C, unless otherwise directed by Departmental Representative.

15. Maintain a crowned surface during construction to ensure ready runoff of surface water. Do not place material in free standing water. Drain low areas before placing material.

16. Moisture condition granular fill as required to meet compaction requirements. Provide a water truck capable of efficiently placing water on granular fill. If material is excessively moist, aerate by scarifying with suitable equipment until moisture content is corrected.

17. Compacted Type 1 and Select Type 1 Granular Fill material to a minimum of 95 percent of Maximum Dry Density in accordance with ASTM D698 or as determined from a Control Strip Density. The method for determining the maximum dry density will be established by Departmental Representative.

18. Control Strip Density:

1. A Control Strip is a lift of granular material placed over a minimum 300 m\(^2\) area that requires regarding.

2. To determine the Control Density, moisture and density readings are to be taken by Departmental Representative during the compaction process until a maximum dry density is attained.

3. The density and moisture content of the Control Strip are to be measured by Departmental Representative after each pass of the compaction equipment to determine the type of equipment and number of passes required to obtain the specified density.

4. A new Control Strip will be required if, as established by Departmental Representative, the material type, moisture content, or subgrade of the area to be regarded is significantly different than that of the Control Strip.

5. Proof-roll areas compacted in accordance with the Control Strip Density upon completion of grading and compaction or as requested by Departmental Representative.

6. Use a fully loaded tandem axle truck (or an approved equivalent piece of heavy equipment) for the proof-rolling operation. The speed of the vehicle is not to exceed 4
kilometres per hour during proof-rolling. Departmental Representative may authorize the use of alternative proof-rolling equipment.

.7 Make sufficient passes with the proof-rolling equipment to subject every point on the surface to three separate passes of a loaded tire.

.8 Where proof-rolling reveals areas of defective granular fill, remove and recompact the granular fill, and modify the compaction process as required.

.9 The Control Strip Density method for compaction is not intended to relax the specified compaction requirements, but to reduce compaction testing requirements.

.19 If granular fill has dried out prematurely due to weather condition, scarify surface, adjust moisture condition and re-compact at Departmental Representative’s discretion. No extra payment will be made for extra costs incurred as a result of any extra work.

.20 Compaction equipment must be capable of obtaining required densities uniformly in materials on the project. Hand equipment must be available for compaction in areas where large equipment cannot access and around instrumentation.

.21 Landfilling Non-Hazardous Waste

.1 Place Non-Hazardous Wastes in the designated area(s) in uniform, horizontal lifts between and against the berm. The thickness of each waste lift is to be such that there are minimal voids within the waste.

.2 Compact waste during placement with a double steel drum compactor or approved alternative during placing and spreading of the waste material. The equipment must be capable of crushing demolition debris.

.3 For placement in landfill, cut all demolition debris as required:

.1 To minimize displacement and lifting of landfilled materials resulting from landfill compaction operations;

.2 To satisfy the overall landfill dimension requirements as indicated on the Drawings;

.3 Large equipment/vehicles shall be cut to length and reduced in volume at the recommendation and discretion of the on-site Departmental Representative.

.4 Cut structural steel material into separate members prior to placement in landfills. Place large materials including structural steel members on the base of the landfill preferably, so that the materials lay on a compacted, flat surface. Cut hollow components or objects, such as tanks as required allowing for nesting of materials. As a minimum, hollow components are to be cut in half parallel to the lengthwise axis. Within the landfill, support the underside of nested materials with intermediate cover or other debris material to minimize displacement and lifting of materials.

.5 Crush, cut or shred barrels to be landfilled on site to reduce the total original barrel volume by minimum of 75 percent.

.2 Landfarm

.1 Examine Drawing BM6-4 for conceptual landfarm design, Drawing PC3 for Potential Camp, Landfill, and Landfill Locations, and Contractor’s approved Landfarm Design Plan.

.2 Set grades and lay out work in detail from control points in areas of granular fill placement. Verify the original ground topography by survey.

.3 Remove cobbles, boulders, and sharp objects within the landfarm footprint.

.4 Place granular fill material to the lines and dimensions indicated on the Drawings and to the grades and elevations indicated in the Contractor’s approved Landfarm Design Plan, or agreed to with Departmental Representative.

.5 Haul granular fill material from borrow areas to designated landfill area.

.6 Do not place fill material which is frozen or place fill material on frozen surfaces. Do not place granular fill on snow or surface ice.

.7 Moisture condition granular fill as required to meet compaction requirements. Provide a water
truck capable of efficiently placing water on granular fill. If material is excessively moist, aerate by scarifying with suitable equipment until moisture content is corrected.

.8 Compact Type 1 Granular Fill material to a minimum of 95 percent of Maximum Dry Density in accordance with ASTM D698 or as determined from a Control Strip Density. The method for determining the maximum dry density will be established by Departmental Representative.

.9 Construct landfarm perimeter berms using Type 1 Granular Fill and compact fill material to at least 95% of standard maximum dry density in accordance with ASTM D698.

.10 Place geotextiles in accordance with Section 31 32 19.01 – Geotextiles.

.11 Place geomembrane in accordance with Section 31 32 19.02 – Geomembranes and follow up geotextiles.

.12 Install a sump within a corner of the landfarm where 1 to 2% slope downward to the sump as per Drawing BM6-4 and Contractor’s approved Landfarm Design Plan.

.13 Place 300 mm maximum thickness of Type 2 Granular Fill above the top layer of geotextile. All granular fill is to be placed in an unfrozen state. Fill material to be free from debris, snow and ice. Do not place granular fill if the outside air temperature is below 0°C, unless otherwise directed by Departmental Representative.

.14 Place 300 mm maximum thickness of hydrocarbon contaminated soil.

.15 Upon completion of landfarm activities, decommission and reclaim landfarm area. Decommission and reclamation to include, but not be limited to:

.1 Removal and off-site disposal of geomembrane and geotextile material at the Contractor’s approved waste disposal facility.

.2 Recontouring of berms to mimic natural topography.

.3 Ensure surface water ponding does not occur.

3.3 UPGRADE EXISTING ROADS AND CONSTRUCTING NEW ROADS

.1 Improve stability of the existing roads for equipment access, as required. Drawing PC1 shows existing access trails at the site.

.2 Strip topsoil in areas where new access roads are required to be constructed.

.3 Haul granular fill material from borrow areas to designated areas.

.4 Do not place fill material which is frozen.

.5 Maintain natural drainage patterns, unless otherwise directed, and fill depressions to avoid any ponding of water adjacent to embankments.

.6 All granular fill is to be placed in an unfrozen state. Fill material to be free from debris, snow and ice. Do not place granular fill if the outside air temperature is below 0°C, unless otherwise directed by Departmental Representative.

.7 Maintain a crowned surface during construction to ensure ready runoff of surface water. Do not place material in free standing water. Drain low areas before placing material.

.8 Place Type 1 Granular Fill generally consisting of well-graded sand and gravel and free from rocks larger than 300 mm, waste or other deleterious material.

.9 If granular fill has dried out prematurely due to weather conditions, scarify surface, adjust moisture
condition and recompact at Departmental Representative’s discretion. No extra payment will be made for extra costs incurred as a result of any extra work.

.10 Where the alignment of new access road or upgrading of an existing trail crosses a natural drainage channel or watercourse that is flowing with water or intermittently flows with water, then the Contractor may be required to install a culvert (or equivalent) to permit water flow under the road to maintain natural drainage patterns until such time that the access road is no longer required.

.11 The Contractor is required to submit a Drainage and Sediment Control Plan prior to commencing work as described in Section 01 35 43 – Environmental Procedures.

.12 Compaction equipment must be capable of obtaining the required densities uniformly in materials on the project. Hand equipment must be available for compaction in areas where large equipment cannot access and around instrumentation.

.13 Surface haulage roads are to be designed, constructed and maintained to provide:

1 a travel width where dual lane traffic exists, of not less than three times, or where single lane traffic exists, of not less than two times the width of the widest haulage vehicle used on the road; and

2 a shoulder barrier of a width that is additional to the travel width, of:

.1 at least 3/4 the height of the largest tire on any vehicle using the road,
.2 of a construction or a specification that is acceptable to the AHJ,
.3 located and maintained along the edge of the haulage road wherever a drop-off greater than 3 m exists, and
.4 incorporating breaks that do not exceed the width of the blade of the equipment constructing and maintaining the breaks, to allow for drainage and snow clearance.

3.4 TESTING

.1 Inspection and testing of soil compaction will be carried out by Departmental Representative.

3.5 SURPLUS MATERIAL

.1 Surplus material and material unsuitable for filling or grading will be distributed in the borrow area to match the natural terrain as directed by Departmental Representative.
PART 1 - GENERAL

1.1 DESCRIPTION

This Section specifies the excavating, trenching and backfilling that is required for earthworks associated with:

1.1 Upgrading existing air strips, roads and constructing new access roads as required.
1.2 Constructing the Bullmoose Landfill, Ruth Landfill and Bullmoose Landfarm.
1.3 Decommissioning of the Bullmoose Landfarm.
1.4 Borrow sources.
1.5 Regrading of areas and depressions created by the removal of debris and contaminated soil, sediment, tailings, and waste rock.

1.2 RELATED SECTIONS

1.2.1 Section 01 33 00 - Submittal Procedures.
1.2.2 Section 01 35 32 – Site Specific Health and Safety Plan
1.2.3 Section 01 45 00 - Quality Control.
1.2.4 Section 31 05 16 – Aggregate Materials.
1.2.5 Section 31 22 15 – Grading.
1.2.6 Section 02 61 00.01 – Soil Remediation.

1.3 REFERENCES

1.3.1 American Society for Testing and Materials International (ASTM)
1.3.1.2 ASTM D 422-63(2002), Standard Test Method for Particle-Size Analysis of Soils.
1.3.1.3 ASTM D 698-00ae1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³) (600 kN-m/m³).

1.4 DEFINITIONS

1.4.1 Excavation classes: two classes of excavation will be recognized.
1.4.1.1 Rock excavation: solid material in excess of 1.00 m³ and which cannot be removed by means of heavy duty mechanical excavating equipment with 0.95 to 1.15m³ bucket. Frozen material not classified as rock.
1.4.1.2 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.

1.4.2 Topsoil: native surficial material suitable for reuse for landscaping purposes as approved by Departmental Representative.

1.4.3 Waste material: excavated material unsuitable for use in Work or surplus to requirements.

1.4.4 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.

1.4.5 Recycled fill material: material, considered inert, obtained from alternate sources and engineered to
meet requirements of fill areas.

1.5 SUBMITTALS

.1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Quality Control: in accordance with Section 01 45 00 - Quality Control:
   .1 Submit condition survey of existing conditions as described in EXISTING CONDITIONS article of this Section.
   .2 Submit to Departmental Representative written notice at least 7 days prior to excavation work, to ensure cross sections are taken.
   .3 Submit to Departmental Representative written notice when bottom of excavation is reached.
   .4 Submit to Departmental Representative testing/inspection results and report as described in PART 3 of this Section.

.3 Preconstruction Submittals:
   .1 Submit construction equipment list for major equipment to be used in this Section prior to start of Work.

.4 Samples:
   .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
   .2 Contractor will provide sieve analysis for borrow materials. Borrow materials to be accepted by Departmental Representative prior to use by the Contractor.

1.6 QUALITY ASSURANCE

.1 Qualification Statement: submit proof of insurance coverage for professional liability.

.2 Do not use soil material until written report of soil test results are approved Departmental Representative.

.3 Health and Safety Requirements:
   .1 Do construction occupational health and safety in accordance with Section 01 35 32 – Site Specific Health and Safety Plan.
1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Divert petroleum hydrocarbon-impacted soils to Bullmoose Landfarm for treatment in accordance with Section 02 61 00 – Soil Remediation.

.2 Divert petroleum hydrocarbon and metals impacted soils to on-site landfills for disposal in accordance with Section 02 55 13 – Contaminated Soil.

.3 Divert metals impacted soils, sediments, tailings, and waste rocks to on-site landfills for disposal in accordance with Section 02 55 13 – Contaminated Soil.

1.8 EXISTING CONDITIONS

.1 Examine Updated Remedial Action Plan (Stantec, 2014) and Drawings.

.2 Existing buildings and surface features:
   .1 Conduct, with Departmental Representative, condition survey of the natural ecosystem which may be affected by Work.
   .2 As much as possible, protect the natural ecosystem from damage while Work is in progress. In the event of damage, immediately make repair as directed by Departmental Representative.

1.9 MEASUREMENT FOR PAYMENT

.1 Payment for the excavation and stockpiling of clean overburden material will be based on cubic metres of overburden placed. Payment includes excavating, hauling (if required), stockpiling, and replacement and is included in the payment under Item 31 23 33-1, as indicated in the Basis of Payment Schedule. Payment will be based on initial and final cross sections as follows:
   .1 Initial survey of the ground profile prior to backfilling.
   .2 Final survey of the ground profile upon backfilling. Clean overburden limits will be determined by the Departmental Representative.

.2 Payment for the excavation of contaminated soil will be based on cubic metres of contaminated soil excavated and incorporated into the work as determined by survey. Payment includes excavating, loading, hauling to treatment area, and stockpiling material and is included in the payment under Items 02 55 13-2 (metals-impacted soils, tailings and sediments), 02 55 13-3 (co-impacted soils, tailings and sediments) and 02 55 13-1 (PHC-impacted soils), as indicated in the Basis of Payment Schedule. Payment will be based on initial and final cross sections as follows:
   .1 Initial survey of the ground profile prior to excavating the areas of environmental concern.
   .2 Final survey of the ground profile upon completion of excavating the areas of environmental concern.

.3 Payment for the backfilling of the contaminated soil excavations will be based on cubic metres as determined by survey. Payment includes loading, hauling, backfilling, compacting and reshaping the areas to conform to existing conditions and included in the payment under Item 31 23 33-2 as indicated in the Basis of Payment Schedule. Payment will be based on initial and final cross sections as follows:
   .1 Initial survey of the ground profile prior to excavating the areas of environmental concern.
   .2 Final survey of the ground profile upon completion of excavating the areas of environmental concern.
.4 Payment for the backfilling of trenches will be based on cubic metres as determined by survey. Payment includes loading, hauling, backfilling, compacting and reshaping the areas to conform to existing conditions and included in the payment under Item 31 23 33-3, as indicated in the Basis of Payment Schedule. Payment will be based on initial and final cross sections as follows:
  .1 Initial survey of the ground profile prior to backfilling.
  .2 Final survey of the ground profile upon completion of backfilling.

.5 Payment for airstrip improvements will be lump sum and will be paid under Item 31 23 33-4 in the Basis of Payment Schedule. Payment includes loading, hauling, backfilling, compacting and reshaping the areas as required.

PART 2 - PRODUCTS

2.1 MATERIALS

  .1 Type 1 and Type 2 materials: properties to Section 31 05 16 - Aggregate Materials

  .2 Environmental Protection Supplies as per Section 01 35 43 – Environmental Procedures.

PART 3 - EXECUTION

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

  .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction and approved Sediment and Erosion Control Plan, whichever is more stringent.

  .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

  .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.2 SITE PREPARATION

  .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.

  .2 Remove all brush, weeds, grasses and accumulated debris from the site.

3.3 PREPARATION/ PROTECTION

  .1 Keep excavations clean, free of standing water, and loose soil.

  .2 Where soil is subject to significant volume change due to change in moisture content, cover and protect to Departmental Representative approval.

  .3 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing tundra from damage.
.4 Environmental protection measures are to be in accordance with the Environmental Protection Plan and as specified in Section 01 35 43 – Environmental Procedures.

.5 Install temporary erosion, sediment and drainage controls prior to construction and excavation activities.

.6 Suspend operations whenever climatic conditions are unsatisfactory for excavation or grading to conform with this specification.

.7 Some areas designed for clean-up under this contract involve soils and hazardous materials which contain PCBs, inorganic elements, and other contaminants which are considered hazardous to human health.

.8 A listing of the waste materials that may exist within the existing Work areas is included in Appendix A of the specification and on Drawings.

.9 When working with inorganic elements, PCB containing materials, and other contaminants, workers are to wear protective clothing and equipment acceptable to Labour Canada or Territorial Labour Department suitable for exposure in the work area. Follow National Institute for Occupational Safety and Health (NIOSH) guidelines in providing protection for on-site personnel including contract employees and subcontractor, Departmental Representative and Departmental Representative’s Authorized Personnel. Comply with all applicable regulation as indicated in Section 02 82 00.01 – Asbestos Abatement Minimum Precautions, Section 02 84 00 – PCBs, and Section 02 81 01 – Hazardous Materials.

.10 Unless otherwise specified, carry out excavation work in accordance with Section 01 35 32 – Site Specific Health and Safety Plan.

3.4 STOCKPILING

.1 Stockpile excavated materials in areas designated by Departmental Representative.

.2 Cover impacted materials from precipitation to reduce leachate pending transportation to landfarm area.

.3 Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.

.4 Place stockpile of excavated materials at a distance from the excavation equal to the depth of the excavation. Stockpile height not to exceed 2 metres.

3.5 DEWATERING AND HEAVE PREVENTION

.1 Keep excavations free of water while Work is in progress.

.2 Provide for Departmental Representative review details of proposed dewatering or heave prevention methods, including dikes, and well points.

.3 Avoid excavation below groundwater table if quick condition or heave is likely to occur.

.1 Prevent piping or bottom heave of excavations by groundwater lowering, sheet pile cut-offs, or other means.

.4 Protect open excavations against flooding and damage due to surface run-off.
Dispose of water in accordance with Section 01 35 43 - Environmental Procedures to approved collection runoff areas and in manner not detrimental to public and private property, or portion of Work completed or under construction.

Provide and maintain temporary drainage ditches and other diversions outside of excavation limits.

3.6 EXCAVATION

Contractor to initiate and complete topographic survey in advance of excavation operations for initial cross section to be taken.

Remove concrete, above-ground tanks, demolished foundations and rubble, and other obstructions encountered during excavation in accordance with Section 02 41 16 – Structure Demolition.

Prior to excavation, remove all surface snow/ice and direct surface water run-off around the excavation.

Excavate to lines, grades, elevations and dimensions as indicated and as directed by Departmental Representative.

When excavating in the vicinity of a drainage course or a body of water, erect silt fences, floating silt curtains and/or containment berms to prevent the release of sediment or deleterious material into the water.

Collect melt water/groundwater/leachate at the low point of the excavation and provide for settling of sediments and testing of water prior to discharge to the environment. Carry out testing of melt water/groundwater. Release of water is to conform to the wastewater discharge criteria described in Section 01 35 43 – Environmental Procedures. Submit results of testing to Departmental Representative.

Use a VOC instrument to continuously measure the concentrations of VOC during excavation operations within impacted areas. When the concentrations of VOC exceed 20% LEL, temporarily halt work until ventilation (natural or induced) reduces the concentration levels to a safe working level.

For trench excavation, unless otherwise authorized by Departmental Representative in writing, do not excavate more than 30 metres of trench in advance of installation operations and do not leave open more than 15 metres at end of day’s operation.

Keep excavated and stockpiled materials a safe distance away from edge of trench as directed by Departmental Representative.

Restrict vehicle operations directly adjacent to open trenches.

Dispose of surplus and unsuitable excavated non-hazardous materials in approved location on site landfill location as directed by Departmental Representative.

Do not obstruct flow of surface drainage or natural watercourses.

Notify Departmental Representative when bottom of excavation is reached.

Obtain Departmental Representative approval of completed excavation.
.15 Remove unsuitable material from trench bottom including those that extend below required elevations to extent and depth as directed by Departmental Representative.

.16 Do not damage permafrost during excavation.

.17 Correct unauthorized over-excavation as follows:
   .1 Fill under other areas with Type 2 fill compacted to not less than 95% of corrected Standard Proctor maximum dry density.

.18 Hand trim, make firm and remove loose material and debris from excavations.
   .1 Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil.
   .2 Clean out rock seams and fill with concrete mortar or grout to approval of Departmental Representative.

.19 Install geotextiles and geomembranes in accordance with Section 31 32 19.01 - Geotextiles and Section 31 32 19.02 – Geomembranes.

3.7 FILL TYPES AND COMPACTION

.1 Compact Type 1 – Granular Fill Section 31 05 16 – Aggregate Materials to 95% Standard Proctor Maximum Dry Density (ASTM D698).

3.8 BACKFILLING

.1 Do not proceed with backfilling operations until completion of following:
   .1 Survey of the ground profile upon completion of the final excavation limits and Departmental Representative has inspected and approved final excavation limits.
   .2 The confirmatory soil results indicate that soils along the final excavation limits meet the applicable guidelines and confirmed by Departmental Representative.

.2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.

.3 Do not use backfill material which is frozen or contains ice, snow or debris.

.4 Place backfill material in uniform layers not exceeding 250 mm compacted thickness up to 0.3 metres above original grade to account for settlement, prevent ponding and blend into the surrounding terrain. Compact each layer before placing succeeding layer.

3.9 RESTORATION

.1 Clean and reinstate, including revegetation, areas affected by Work as directed by Departmental Representative.

.2 Protect newly graded areas from traffic and erosion and maintain free of trash or debris.

END OF SECTION
PART 1 - GENERAL

1.1 DESCRIPTION

.1 This Section specifies the requirements for the supply and installation of non-woven geotextiles for the Bullmoose Landfarm in conjunction with geomembrane liners as indicated on Drawing BM6-4.

1.2 RELATED SECTIONS

.1 Section 01 32 18 – Construction Progress Schedules – Bar (GANTT) Chart.

.2 Section 01 33 00 - Submittal Procedures.

.3 Section 31 22 15 – Grading.

.4 Section 31 23 33.01 - Excavating, Trenching and Backfilling.

1.3 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)
  .3 ASTM D 4716-(08), Test Method for Determining the (In-Plane) Flow Rate Per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.

.2 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-4.2 No. 11.2-(2004) Textile Test Methods - Bursting Strength - Ball Burst Test (Extension of September 1989).
  .2 CAN/CGSB-148.1, Methods of Testing Geotextiles and Complete Geomembranes.
    .1 No.2-(M85), Methods of Testing Geosynthetics - Mass per Unit Area.
    .2 No.3-(M85), Methods of Testing Geosynthetics - Thickness of Geotextiles.
    .3 No.6.1-(93), Methods of Testing Geotextiles and Geomembranes - Bursting Strength of Geotextiles Under No Compressive Load.
    .4 No.7.3-(92), Methods of Testing Geotextiles and Geomembranes - Grab Tensile Test for Geotextiles.
    .5 No. 10-(94), Methods of Testing Geosynthetics - Geotextiles - Filtration Opening Size.

1.4 SUBMITTALS

.1 Obtain written acceptance from Departmental Representative for geotextile before the installation of the material in Work.

.2 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
.3 Product Data:
  .1 Submit manufacturer's instruction, printed product literature and data sheets for geotextiles
      and include product characteristics, performance criteria, physical size, finish and limitations.
  .2 Provide a written warranty from the manufacturer against defects or deficiencies in the
      quality of the geotextile material supplied.

.4 Samples:
  .1 Submit the following samples four (4) weeks prior to beginning Work:
      .1 Minimum length of 2 m of roll width geotextile.
      .2 Methods of joining – minimum of 1 m seam with at least 300 mm of geotextile on
         both sides of seam.

.5 Testing and Evaluation Reports:
  .1 Submit three (3) copies of mill test data and certificate at least four (4) weeks prior to start of
      Work.

1.5 DELIVERY, STORAGE AND HANDLING

  .1 Deliver, store and handle material in accordance with Section 01 61 00 – Common Product
      Requirements.

  .2 Contractor to supply and deliver all geotextile to the site in sufficient quantities to cover area
      designated in the Contract Documents and as requested by Departmental Representative.

  .3 Storage and Handling Requirements:
      .1 Store materials in clean, dry and well-ventilated location and in accordance with
         manufacturer’s recommendations.
      .2 Store and protect geotextiles from direct sunlight, ultraviolet rays, excessive heat, mud, dirt,
         dust, debris and rodents.
      .3 Replace defective or damaged materials with new.

1.6 MEASUREMENT FOR PAYMENT PROCEDURES

  .1 All costs for the supply, delivery, and placement of geotextiles are to be included in the lump sum
      payment under Item 31 32 19.01-1.

  .2 No payment will be made for other construction applications where geotextile is required.

  .3 Payment at the tendered price shall be full compensation for furnishing all materials, preparation,
      delivery, storage, laying the geotextile and for all labour, equipment, tools and other work incidental
      to this Section.

  .4 Overlap and seams of geotextile shall be considered incidental to surfaced area covered.

  .5 No separate payment for repairs to damaged geotextile.

  .6 No separate payment for surface preparation.

  .7 Except as otherwise indicated herein, Work under this Section will not be measured. Include all
      costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment schedule. Indicate the cost
      of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 –
      Construction Progress Schedules – Bar (GANTT) Chart.
PART 2 - PRODUCTS

2.1 MATERIAL

.1 Geotextile fabric shall consist of polymeric filament or yarns such as polypropylene, polyethylene, polyester, or other polymers excluding polyamides, formed into a stable network such that the filaments or yarns retain their relative position to each other. The geotextile shall be inert to commonly encountered chemicals, resistant to ultraviolet light and heat exposure, and shall be indestructible by micro-organisms and insects.

.2 Where sections of geotextile are joined, seam strength shall meet the minimum tensile strength requirements for the class of geotextile, unless otherwise specified in the Contract.

.3 Seams of the geotextile shall be sewn with thread of the material meeting the material requirements of the geotextile.

.4 Geotextile rolls shall be supplied with an opaque protective covering by the manufacturer or supplier.

   .1 Width: 4.5m minimum.
   .2 Length: 91m minimum.
   .3 Composed of: minimum 85% by mass of polypropylene or polyester with inhibitors added to base plastic to resist deterioration by ultra-violet and heat exposure.

.6 Physical properties:
   .1 Thickness: to CAN/CGSB-148.1, No.3, minimum 1.5 mm.
   .2 Mass per unit area: to CAN/CGSB-148.1, No.2, minimum 406 g/m².
   .3 Tensile strength and elongation (in any principal direction): to ASTM D 4595.
     .1 Tensile strength: minimum 1,330 N.
     .2 Elongation at break: 50%.

.7 Hydraulic properties:
   .1 Apparent opening size (AOS): to ASTM D 4751, 150 micrometres.
   .2 Permittivity: to ASTM D 4491, 1.0 sec⁻¹.

.8 Securing pins and washers: to CAN/CSA-G40.21, Grade 300W, hot-dipped galvanized with minimum zinc coating of 600 g/m² to CAN/CSA G164.

.9 Factory seams: sewn in accordance with manufacturer’s recommendations.

.10 Thread for sewn seams: equal or better resistance to chemical and biological degradation than geotextile.

.11 Materials not meeting these specifications will not be accepted without prior authorization by the Departmental Representative.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for geotextile material installation in accordance with manufacturer’s
written instructions.
  .1 Visually inspect substrate in presence of Departmental Representative.
  .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 INSTALLATION

  .1 Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.
  .2 Place geotextile material on sloping surfaces in one continuous length from toe of slope to upper extent of geotextile.
  .3 Overlap each successive strip of geotextile 600 mm over previously laid strip. Do not use securing pins when placing geotextile material over geomembrane liner.
  .4 Employ sufficient temporary anchorage to hold geotextile in place during placement, and during placement of other elements of the liner system until backfilled.
  .5 Heat track of glue geotextile overlaps prior to placing granular fill cover to prevent lifting or separation of overlap.
  .6 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.
  .7 After installation, cover with overlying layer within 4 h of placement.
  .8 Replace damaged or deteriorated geotextile to approval of Departmental Representative.
  .9 Place geomembrane in accordance with Section 31 32 19.02 - Geomembranes, follow by an additional layer of geotextile, bedding soil layer, and hydrocarbon contaminated soil layer in accordance with Section 31 22 13 – Grading.

3.3 CLEANING

  .1 Remove construction debris from Project site and dispose of debris in an environmentally responsible and legal manner.

3.4 PROTECTION

  .1 Vehicular traffic not permitted directly on geotextile.

END OF SECTION
PART 1 - GENERAL

1.1 DESCRIPTION

This Section specifies the requirements for the supply and installation of the following:

1. 60 mil and 100 mil HDPE Geomembranes at the Bullmoose Creek/Bullmoose Portal Areas
2. 40 mil HDPE Geomembrane at the Bullmoose Landfarm
3. 90 mil HDPE Geomembrane at both the Bullmoose Landfill and Ruth Landfill.

1.2 RELATED SECTIONS

1. Section 01 33 00 - Submittal Procedures.
2. Section 31 22 15 – Grading.
3. Section 31 23 33.01 – Excavating, Trenching and Backfilling.
4. Section 31 32 19.01 – Geotextiles.

1.3 REFERENCES

1. All references to this Specifications, Standards, or Methods shall be understood to refer to the latest adopted revision, including all amendments.
   6. ASTM D 1204-02, Standard Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature.

1.4 SUBMITTALS
.1 Obtain written acceptance from Departmental Representative for geomembrane before installation of material.

.2 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.3 Product Data:
   .1 Submit manufacturer’s instructions, printed product literature and data sheets for geomembranes and include product characteristics, performance criteria, physical size, finish and limitations.

.4 Shop Drawings:
   .1 Submit drawings stamped and signed by professional engineer licensed in Northwest Territories, Canada.
   .2 Submit shop drawings and indicate installation layout, dimensions and details, including fabricated and field seams, anchor trenches and protrusion details.

.5 Samples:
   .1 Submit to Departmental Representative following samples at least 4 weeks prior to beginning Work.
   .1 Minimum 2 m length of standard width membrane.
   .2 Minimum of 1 m seam with at least 300 mm of membrane on both sides of seam.

.6 Certificates:
   .1 Submit 3 copies of manufacturer’s mill test data 4 weeks minimum before beginning Work.
   .2 Submit certificates, including test results 2 weeks before delivery to job site.

1.5 QUALITY ASSURANCE

   .1 Test quality of resin and membrane to ensure consistency of raw material and geomembrane quality in accordance with manufacturer's recommendations.

   .2 Test seams in strength and peel at beginning of each seaming period, and at least once every 4 h if welding operation is interrupted, for each seaming apparatus and seamer used that day. Also test at least two samples from each panel, with samples taken from extra material, such that panel is not damaged and blanket geometry is not altered.

   .3 If seam test specimen fails in seam, repeat on new specimen. If new specimen fails in seam, material will not be used for seaming until deficiencies are corrected and two consecutive successful test seams are achieved.

   .4 Test seams by non-destructive methods over their full length, using vacuum test unit, air pressure test or thermo-fusion methods as specified in the ASTM test methods.

   .5 Provide test results to Departmental Representative for each shift's production, including documentation of non-destructive testing and repairs at the end of each shift.

1.6 DELIVERY, STORAGE AND HANDLING

   .1 Deliver, store and handle materials in accordance with Section 01 61 00 – Common Product Requirements.
.2 Contractor to supply and deliver all geomembrane to the site in sufficient quantities to cover the area designated in the Contract Documents and as requested by Departmental Representative.

.3 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labeled with manufacturer’s name and address.

.4 During delivery and storage, protect geo-membranes from direct sunlight, ultraviolet rays, excessive heat, mud, dirt, dust, debris and rodents.

.5 Storage and Handling Requirements:
   .1 Store materials in dry location and in accordance with manufacturer’s recommendations in clean, dry, well-ventilated areas.
   .2 Replace defective or damaged materials with new.

1.7 MEASUREMENT FOR PAYMENT

.1 All costs for the supply, delivery and installation of geomembrane are to be included in the lump sum payment under Item 31 32 19.02-1.

.2 No payment will be made for other construction applications where geomembrane is required.

.3 Payment at the tendered price shall be full compensation for furnishing all materials, preparation, delivery, storage, installation of the geomembrane and for all labour, equipment, tools and other work incidental to this Section.

.4 Overlap and seams of geomembranes shall be considered incidental to surface area covered.

.5 No separate payment for repairs to damages geomembranes.

.6 No separate payment for surface preparation.

.7 Except as otherwise indicated herein, Work under this Section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 – Construction Progress Schedules – Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 HDPE Geomembrane:
   .1 The physical properties of the Textured (both sides) HDPE Geomembrane shall be in accordance with ASTM D1248 where applicable. The material shall have the minimum properties specified as follows:

<table>
<thead>
<tr>
<th>Property</th>
<th>Requirement</th>
<th>As per drawings</th>
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<tr>
<td>Thickness – Typical (ASTM D5994)</td>
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<td></td>
</tr>
<tr>
<td>Tensile Strength – Stress at Break (ASTM D6693 – Modified Type IV Die)</td>
<td>15.8 kN/m</td>
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<td>Tensile Strength – Stress at Yield (ASTM D6693 – Modified Type IV Die)</td>
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<td>Tensile Strength – Strain at Break – 50 mm gauge (ASTM D6693 – Modified Type IV Die)</td>
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<td><strong>Thickness – Typical (ASTM D5994)</strong></td>
<td><strong>As per drawings</strong></td>
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<tr>
<td>-------------------------------------</td>
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<tr>
<td>Tensile Strength – Strain at Yield – 33 mm gauge (ASTM D6693 – Modified Type IV Die)</td>
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<td>Tear Resistance (ASTM D1004)</td>
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<tr>
<td>Puncture Resistance (ASTM D4833)</td>
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<tr>
<td>Carbon Black Content (ASTM D1603; D4218)</td>
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<td>Notched Constant Load – ESCR (ASTM D5397)</td>
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<tr>
<td>Low Temperature (ASTM D746)</td>
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<tr>
<td>Asperity Height (ASTM D7466)</td>
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<td>Coefficient of Friction (Peak and Residual) Geomembrane and Non-Woven Geotextile (ASTM 5321)</td>
<td>18 Degrees</td>
<td></td>
</tr>
</tbody>
</table>

.2 The HDPE geomembrane shall be formulated from resin incorporating a flexible modified, and consisting of approximately 98% polyethylene, 2.0% carbon black, and trace amounts of antioxidants and heat stabilizers.

.3 The HDPE geomembrane shall incorporate a co-extruded textured surface on both sides to increase the friction between the liner and the material on which it is placed.

.4 The geomembrane shall be designed for flexible geomembrane applications, resistant to UV radiation, and suitable for exposed conditions.

.5 The HDPE geomembrane shall be capable of being heat sealed or solvent welded for making field splices, seams, and repairs.

.6 Seams: welded in accordance with manufacturer's recommendations. Physical properties for resin used for welding to be same as those for resin used in manufacture of membrane.

.2 Geotextiles
.1 Non-woven geotextiles in accordance with Section 31 32 19.01 – Geotextiles.

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

.1 Verification of Conditions:
.1 Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for geomembrane installation in accordance with manufacturer’s written instructions.
.2 Visually inspect substrate in presence of Departmental Representative.
.3 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
.4 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

**3.2 PREPARATION**

.1 Geotextile fabric shall be installed in accordance with Section 31 32 19.01 – Geotextiles prior to geomembrane installation.

.2 Prepare 150 mm of sand bedding granular fill base layer as indicated on drawings by leveling and compacting the layer to 95% of Maximum Dry Density in accordance with ASTM D698. Do not begin installation of the geomembrane until the base layer has been approved by the Departmental
Representative.

.3 A certificate of subgrade acceptance will be prepared by the geomembrane installation contractor prior to membrane installation.

3.3 INSTALLATION

.1 Maintain area of installation free of water, deleterious material, and snow accumulations.

.2 Prepare excessively soft supporting material as directed by Departmental Representative.

.3 Do not proceed with panel placement and seaming when ambient temperatures are below minus 5 degrees C or above 40 degrees C, during precipitation, in presence of excessive moisture (eg. fog, dew).

.4 Installation of the membrane in winds above 20 km/hr can proceed only if the installer can demonstrate that the liner will not be at risk of damage.

.5 Do not install in any weather conditions that may be detrimental to the function of the membrane.

.6 Ensure all personnel working on the geomembrane do not use damaging footwear.

.7 Place and seam panels in accordance with manufacturer's recommendations on graded surface in orientation and locations indicated. Minimize wrinkles, avoid scratches and crimps to geomembranes and avoid damage to supporting material.

.8 Protect installed membrane from displacement, damage or deterioration before, during and after placement of material layers.

.9 Replace damaged, torn or permanently twisted panels to approval of Departmental Representative. Remove rejected damaged panels from site.

.10 Keep field seaming to minimum. Locate field seams up and down slopes, with no horizontal field seam less than 1.5 m beyond toe of slope.

.11 Keep seam area clean and free of moisture, dust, dirt, debris and foreign material.

.12 Make field seam samples in accordance with requirements described in PART 2 on fragment pieces of geo-membrane and test to verify that seaming conditions are adequate.

.13 Test field seams as seaming work progresses by non-destructive methods over their full length. Repair seams which do not pass non-destructive test. Reconstruct seam between failed location and any passed test location, until non-destructive testing is successful.

3.4 SECTIONS REPAIR

.1 Inspect seams and non-seam areas for holes, tears, or other defects.

.2 Repair minor tears and pinholes by patching until non-destructive testing is successful.

.3 Patches to be round or oval in shape, made of same geomembrane material, and extend minimum of
75 mm beyond edge of defect.

.4 All repairs to be visually inspected.

.5 Keep records of all repairs and the results of inspections.

3.5 PROTECTION

.1 Protect panels from damage.

.2 Handle carefully to avoid damaging the geomembrane.

.3 Do not permit vehicular traffic directly on membrane.

END OF SECTION