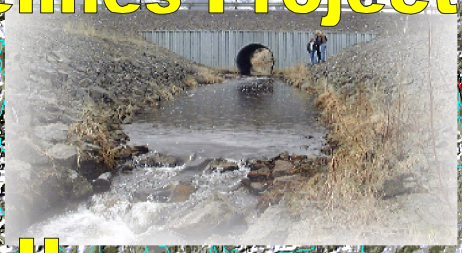
Yukon

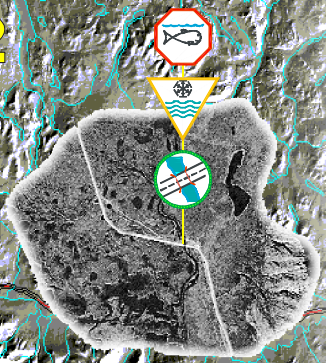
Community and Transportation Services

Shakwak Special Areas Maintenance Guidelines Project



Volume II

Sections 1 and 2



September, 2001

Prepared By:

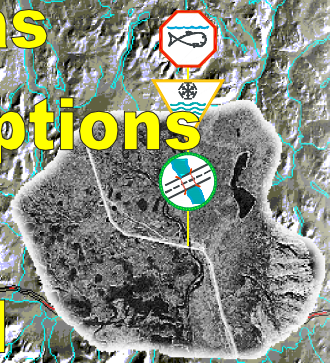
ACCESS CONSULTING GROUP

Yukon

Community and Transportation Services

Shakwak Special Areas Maintenance Guidelines Project

Volume II, Section 1
General Maintenance and Special Areas Maintenance Prescriptions



September, 2001

Prepared By:

ACCESS CONSULTING GROUP

Yukon

Shakwak Special Areas Maintenance Guidelines Project

Volume II, Section I
General Maintenance and Special Areas Maintenance Prescriptions

September, 2001

Prepared by:

ACCESS CONSULTING GROUP

TABLE OF CONTENTS

B. ENGINEERING COMPONENT

C. ENVIRONMENTAL COMPONENT

INTRODUCTION

This volume describes the general maintenance and special areas maintenance prescriptions for each highway feature and engineering and environmental/aesthetic component. For each feature or component, the objective and procedures are detailed. Other items addressed for highway features and engineering components include level of service, materials, equipment and scheduling. The approach is to provide general maintenance procedures with special maintenance requirements identified for specific identified areas.

Where appropriate, the applicable Yukon Government ("YTG"), Community and Transportation Services ("C&TS") activity code has been noted in italics beneath the feature or code.

GENERAL MAINTENANCE and SPECIAL AREAS MAINTENANCE PRESCRIPTIONS

A. HIGHWAY FEATURE

1.0  AC ACCESS POINTS

(YTG code: 402, 201)

The general prescription has been developed for the 'notification' level of concern. All access points (AC) in the mapped area are at the 'notification' level; it was not necessary to develop a special maintenance prescription.

1.1 *OBJECTIVE*

- Develop a general prescription for the 'notification' level of concern (MAS);
- Create and or maintain safe access to the highway right-of-way for commercial, residential and recreational users;
- Grade and reshape unpaved access points to correct adverse conditions such as:
    - Washboard conditions;
    - Windrows and loose rocks;
    - Potholes;
    - Ponding water;
    - Gullying and other erosion.

1.2 *LEVEL OF SERVICE*

- Need for maintenance varies with level of usage;
- Grading should be done after periods of wet weather when there is sufficient moisture present.

1.3 *MATERIALS*

- Crushed or pit run gravel;
- Signs;
- Posts.

1.4 *EQUIPMENT*

- Grader;
- Dump truck;
- Loader;
- Shovel, rake;
- Stake truck.

1.5 *PROCEDURE*

- Place safety devices and signs as required;
- Dump aggregate into depressions and soft spots;
- Spread evenly with grader;
- Compact using the truck tires to roll finished surface of small holes or depressions;
- Remove safety devices and signs;
- If grading is required, use the appropriate signage and follow the instructions for grading;
- Maintain and repair signage as required.

1.6 *SCHEDULING*

- Surfaces require special attention twice a year. In the spring repairs should be done to correct conditions that have developed over the winter, and in the fall repair should be done before the winter makes it impossible to do so;
- Signs control, warn and provide information as to highway conditions and routes. Signs intended to protect the motoring public as well as the commercial, residential and/or recreational users will be installed as soon as possible.

2.0  BP BORROW PITS

(YTG Code: 402)

The general prescription has been developed for the 'notification' level of concern. All access points (AC) in the mapped area are at the 'notification' level.

Special maintenance procedures were developed for borrow pits in the Tatshenshini - Alsek Park due to the special status and high visibility of the area. All operations within the park are subject to obtaining a Park Use Permit. Operations must comply with all BC Acts and Regulations retaining to sand and gravel extraction. BC Mines Branch has agreed to waive the requirement for the posting of a reclamations bond. Please refer to the YTG, Department of Community and Transportation Services, Transportation Engineering Branch document entitled: **Granular Resource Management Plan (2nd Edition)** for specifics relating to a pit development plan and reclamation plan.

2.1 *OBJECTIVE*

- Develop a general prescription for the 'notification' level of concern (MAS);
- Limit public access to Borrow Pits while maintaining freedom of access to authorized users;
- Minimize disturbance of areas that have been revegetated within Borrow Pits.

2.2 *LEVEL OF SERVICE*

- Limiting access to pits for safety concerns is of high importance. Security should be checked on a regular basis and maintenance immediate;
- Signage should be regularly maintained, and replaced when necessary.

2.3 *MATERIALS*

- Signs and posts;
- Gates to limit access;
- Locks and keys.

2.4 *EQUIPMENT*

- Varies with use.

2.5 *PROCEDURE*

- Establish perimeter of quarry or borrow pit by reviewing appropriate maps and/or documentation;
- Set up key-lock gates at the access points;
- Set up signs warning the public not to trespass;
- Signs should also be erected to indicated that large, slow moving vehicles may be pulling out of and into the borrow pit when in use;
- Decommission by re-grading as necessary, re-cover with stripped organics, re-seed with appropriate seed mix. Specific funding request and work order required. Obtain permission from Manager of Highway Maintenance;
- Alert authorized users of borrow pits to the presence of revegetation sites through signage and barriers so as not to disturb the site.

2.6 *SCHEDULING*

- Security measures should be installed as soon as possible;
- Appropriate signage should also be erected as soon as possible to alert motorists to the possibility of slow moving traffic, when in use.

2.7 *SPECIAL AREAS MAINTENANCE PRESCRIPTION*

BR014 – Five Mile Creek - Five Mile Pit, 114-P-05

- YTG is responsible for gating the access t this pit, and for assisting BC Parks with sign and gate maintenance;
- Progressive reclamation of the site, i.e. when an area of the borrow pit is no longer in use it will be revegetated and reclaimed;
- Fuel supply management.

BR032 – Stonehouse Creek – Stonehouse Pit, 114-P-04

- Reclaim this pit to the satisfaction of the Ministry of Environment, Lands, and Parks (MELP) represented by BC Parks;

- Progressive reclamation of the site, i.e. when an area of the borrow pit is no longer in use it will be revegetated and reclaimed;
- Fuel supply management.

Government of Yukon Highway Maintenance Camp: Mule Creek Grader Station

- If MELP requires any reduction in the size of the permit area, Yukon and BC Ministry of Transportation (MOT) agree to perform, and share equally the cost for, an environmental assessment or audit of the entire site to determine whether significant soil contamination has occurred;
- Should contamination of the area in the vicinity of the grader station be found and be attributed to Yukon's activities, Yukon agrees to take full responsibility for the remediation of that portion of the site
- Should contamination of the remainder of the site be found, MOT agrees to take full responsibility for remediation required.

BR042 – Datlaska Pit, 114-P-01

- Yukon to undertake a geotechnical review to determine if the size of the licensed area can be reduced; consult with the Park Board on the findings of the review;
- Yukon to provide to MELP and the Park Board a reclamation plan, a projected usage plan, and a pit development plan;
- Progressive reduction in the use of the site and to rehabilitation of the site as the areas within it become exhausted;
- To locate further stockpiles in the lower areas of the pit to reduce visibility;
- To allow MELP, as represented by BC Parks, access to small amounts of pit run;
- To allow MELP, as represented by BC Parks, access to small amounts of manufactured aggregates for use within the park on a cost recovery basis;
- Progressive reclamation of the site, i.e. when an area of the borrow pit is no longer in use it will be revegetated and reclaimed;
- Fuel supply management.

3.0  BR BRIDGE

(YTG Code: 601, 603, 701)

The general prescription has been developed for the 'caution' level of concern. All bridges in the mapped area are at the 'caution' level, primarily due to water quality concerns for bridge washing, repainting, or other maintenance activities. However, it was not necessary to develop a special maintenance prescription for higher MAS concerns.

The general prescription is based on information from **Road Maintenance Standards** from the Yukon Department of Highways. A Bridge Management System has been developed by YTG based on the **Alberta Bridge Inspection and Maintenance System.** This is part of a larger system, which includes the three basic elements of inventory, inspection, and maintenance. The YTG system is very similar to that of Alberta, and provides a coordinated management facility to ensure safety of motorists. The primary difference between the Alberta and Yukon system is the frequency of bridge inspections that is called for – in the Yukon a bridge must be inspected once in a two year period, Whereas the Alberta system calls for inspections once every 2 to 5 years.

3.1 OBJECTIVE

- To preserve safe driving surface of bridge throughout year;
- Develop a general prescription for the 'caution' level of concern (MAS);
- To remove, contain and dispose of all dirt, debris and deleterious material;
- Minimize the impact that cleaning has on water quality and/or fish habitat – this will be accomplished by washing all material to the ends of the bridge rather than concentrating the flow of dirt, debris and deleterious material through drainage pipes located on the bridge;
- Regular cleaning of bridges including hand or machine sweeping, blowing with compressed air, washing with water under pressure, cleaning deck drains, horizontal surfaces, joints, bridge seats, and vegetation control on substructure.

3.2 *LEVEL OF SERVICE*

- Annual washing;
- The activity covers the regular routine cleaning of structures to prevent build-up of dirt and debris, particularly on horizontal surfaces and in narrow openings, which may restrict normal movement of the structure, and/or retain moisture or chemicals leading to component deterioration;
- Service applies to areas such as:
    - Structural steel below a level about two metres above deck level (spray zone);
    - All horizontal surfaces below that level;
    - Deck, drains, handrail;
    - Pier caps, bridge seats, ballast walls;
    - Bearing and expansion joints.

3.3 *MATERIALS*

- Water used for washing the bridge shall not contain any materials that may be damaging to the bridge structure, water quality or fish habitat;
- The source of the water will be subject to the approval of the Engineer.

3.4 *EQUIPMENT*

- Low pressure, high volume equipment, high pressure equipment or any other method deemed acceptable, e.g. hand-held implements such as a broom;
- No method or material shall use or contain harmful or damaging agents;
- Pickup;
- Water pump;
- Tanker if required.

3.5 *PROCEDURE*

- Inspect bridge, deck and superstructure; Report any excessive wear/damage to Transportation Engineer;
- Place safety devices and signs:
    - All work shall take place during daylight hours;
    - Traffic control and signage shall take place in accordance with existing regulations;
    - Inspect Bridge deck and bridge super-structure for structural integrity;

  - Foremen are responsible for the safety of men working under their control as well as the public traveling through maintenance work areas;
  - No washing shall take place when the ambient temperature is 5°C or less, or when such temperatures are forecast by Environment Canada for the region during the time when bridge cleaning is scheduled.
- Clean Structure:
  - All horizontal surfaces and narrow openings shall be scraped and blown free of dirt and debris;
  - Scrape loose compacted material prior to sweeping, blowing or flushing. Special attention should be paid to horizontal flanges, internal angles, bridge seats, pier caps and bearing blocks;
  - All areas within the 'splash zone' shall be liberally flushed with clean water wherever possible.
- Remove safety devices and signs.

3.6 *SCHEDULING*

- Cleaning shall be carried out annually in the spring of the year, and be coordinated where necessary with bridge painting program.

3.7 *SPECIAL AREAS MAINTENANCE PRESCRIPTIONS*

BR042 – Five Mile Creek – Bridge Alert, Fisheries Caution

- Bridge cleaning activities may negatively influence fisheries values. Cleaning products must be environmentally friendly, and debris must be swept to the end of the bridge so that it is not washed into the fish habitat;
- Contact Environmental Coordinator prior to conducting in-stream maintenance.

4.0  CV CULVERT

(YTG Code: 503, 301, 302, 304)

The general prescription has been developed for the 'notification' level of concern. Many culverts in the mapped area are at the 'notification' level, although there are some culverts at the 'caution' and 'alert' levels of concern; it was necessary to develop a special maintenance prescription for the higher MAS concerns. These special prescriptions are included at the end of this section.

The general prescription is based on information from **Road Maintenance Standards** from the Yukon Department of Highways. A Culvert Monitoring Agreement has been developed and should be adhered to. This is a verbal agreement based on communication between C &TS and DFO. Check with C&TS Environmental Coordinator prior to conducting maintenance activities.

4.1 OBJECTIVE

- Develop a general prescription for the 'notification' level of concern (MAS);
- Removal of silt and/or debris from culvert barrel and culvert sloped sections to restore proper drainage;
- Minimize siltation that may adversely affect fisheries and water quality;
- Maintain structures that were put in place for engineering or fisheries values;
- Repair and/or replacement of damaged or undersized culverts;
- Remove any beaver blockage.

4.2 *LEVEL OF SERVICE*

- Culverts requiring repair or replacement should be noted and reported by Camp foreman;
- Inspect culverts after heavy storms or periods of high run off;
- Prior to culvert being replaced, correct size and type of new culvert to be installed shall be reviewed with the Regional Highway Superintendent and Engineering Branch experts;

- Where culverts fail due to washouts, Transportation Engineering should be contacted to check hydrology and hydraulic design;
- No culvert less than 457 mm/ 18 inches will be installed;
- Minimum cover should be at least 1metre;
- Culverts shall match the drainage flow line;
- Culverts shall be placed at the correct height to minimize sedimentation, ponding and erosion;
- Requires notification to Superintendent.

4.3 *MATERIALS*

- Corrugated steel pipe (galvanized);
- Couplers.

4.4 *EQUIPMENT*

- Hand-held implements, which may include but is not limited to rakes, shovels, and whatever implements are deemed necessary;
- Dump trucks;
- Loader;
- Grader;
- Crawler Tractor;
- Pickup.

4.5 *PROCEDURE* (Based on Activity No.0302 from Yukon Department of Highways, Road Maintenance Standards)

- Contact C&TS Environmental Coordinator;
- Material will be removed and disposed of in such a way as to restore flow through the culvert;
- Ensure proper drainage through culverts at private crossings;
- All work will take place during daylight hours;
- Check for permit or licence requirements;
- Where fisheries values have been identified and/or there are special fisheries structures in place, these structures will be maintained according to original engineering plans;

- If permits or licences exist, follow permit requirements or consult with Environmental Coordinator;
- All work should be done by hand so that no damage is done to the culvert or the fisheries structures that are in place;
- Place safety devices and signs;
- Construct detours or manage traffic using flag people;
- Manage streamflows; avoid compaction of stream bed and disturbance of fish habitat;
- Divert water flow;
- Ensure proper drainage through culverts at private crossings;
- Excavate and remove old structure;
- Prepare foundation and erect or place the new culvert in place:
    - Excavate soft, clayey or unstable subgrade material and replace with a layer of granular bedding;
    - Preshape bedding material to curve of the culvert and match the drainage flow line, with the stream bed elevation at each end of the culvert;
    - Place new culvert to ensure joints are tightly closed, bands or connectors are firmly attached and culvert is aligned correctly in plan and profile.
- Place and Compact Backfill material:
    - Drop Backfill material on road adjacent to culvert;
    - Shovel material under culvert haunches in approximately 6-inch layers and thoroughly compact in situ using mechanical tamping equipment;
    - Compact each layer before placement of the next layer;
    - Fill should be kept roughly horizontal along the length of the culvert at all times;
    - Height of backfill should be approximately equal on both sides of the culvert at all times;
    - A minimum of one foot of compacted backfill over the culvert must be attained before mechanical equipment may cross it;
    - Backfill may be placed in approximate 6 inch layers using mechanical equipment when this minimum cover has been achieved;
    - Reinstate traffic when completed.
- Reinstate Road surface:
    - Place and compact gravel road base to width and depth to match existing base;
    - Have premix asphaltic concrete placed if necessary.
- Remove Safety devices and signs;

- Remove diversion channel;
- Remove detour, if necessary.

4.6 *SCHEDULING*

- Work shall take place only when backfill material can be properly compacted;
- Check with Department of Fisheries and Oceans or C&TS Environmental Coordinator so that any work will not interfere with monitoring programs;
- Check for any Permits or Licenses in the vicinity and any limitations that may be imposed on the timing or range of work to be completed.

4.7 *SPECIAL AREAS MAINTENANCE PRESCRIPTIONS*

BR017 – Culvert Caution

- Longitudinal culvert at toe of embankment, monitor for blockage.

BR024 - Seltat Creek – Culvert Alert, Fisheries Caution

- There is a culvert alert because there are fish in the stream and the point is being used as a pull out. The high use of this area and the high value of fisheries necessitates careful surveillance and maintenance of the culvert. Twin concrete box culvert, inspection is required annually to verify structural integrity and fish passage design features.

BC068 – Culvert Caution, Fisheries Caution, Wildlife Habitat Caution

- Inspect culvert for blockage from beaver activity
- Instream construction must be performed between 06/01 and 08/15

BR0104 – Culvert Caution, Wildlife Notification

- Inspect beaver control structure during routine maintenance and clean debris.

BR142 – Culvert Caution

- Headwall on culvert inlet

BR168 – Flying Squirrel Lake – Culvert Caution, Wildlife Habitat Notification

- Inspect beaver control structure.

HJ005 – Culvert Alert, Icing Control Alert

- Culvert will tend to freeze and build up ice in the winter. This culvert requires careful monitoring and frequent icing control. Do not disturb in stream ice control weir.

HJ009 – ***Flipper Creek*** – Culvert Caution

- Material removed from Flipper Creek to be deposited in Decommissioned Borrow Pit across highway.

HJ042 – Culvert Caution, Icing Control Caution

- Culvert will tend to freeze and build up ice in the winter. This culvert requires careful monitoring and frequent icing control. Do not disturb in stream ice control weir.

HJ047 – Culvert Alert, Icing Control Alert

- Culvert will tend to freeze and build up ice in the winter. Culvert requires frequent monitoring and icing control. Do not disturb in stream ice control weir.

DB054 - Culvert Caution, Icing Control Caution

- Culvert will tend to freeze and build up ice in the winter. This culvert requires careful monitoring and frequent icing control. Do not disturb in stream ice control weir.

BC005 – Culvert Caution, Icing Control Caution

- Culvert will tend to freeze and build up ice in the winter. This culvert requires careful monitoring and frequent icing control. Do not disturb in stream ice control weir.

BC036 – Culvert Alert, Icing Control Alert

- Monitor culvert for ice/glaciation build up. Do not disturb instream ice control weir.

BC037– Culvert Alert, Icing Control Alert

- Monitor culvert for ice/glaciation build up. Do not disturb instream ice control weir.

BC039– Culvert Alert, Icing Control Alert

- Monitor culvert for ice/glaciation build up. Do not disturb instream ice control weir.

BC040– Culvert Alert, Icing Control Alert

- Monitor culvert for ice/glaciation build up. Do not disturb instream ice control weir.

BC056 – Culvert Caution, Icing Control Alert

- Culvert will tend to freeze and build up ice in the winter. This culvert requires careful monitoring and frequent icing control.
- Do not disturb in stream ice control weir.

BC155 – Culvert Caution

- Maintain culverts' integrity for Beaver Creek drainage;
- Maintain community Access;
- Maintain community trail.

BC158– Culvert Caution

- Maintain culverts' integrity for Beaver Creek drainage;
- Maintain community access;
- Maintain community trail.

5.0  DNG DRAINAGE (ROADSIDE DITCH, RUN-OFF CONTROL STRUCTURES, ETC.)

(YTG CODE: 402, 301, 304)

The general prescription has been developed for the 'notification' level of concern. Most of the drainage features in the mapped area are at the 'notification' level, however there are some features at the 'caution' level; special maintenance prescriptions are included for these ' caution' sites.

5.1 *OBJECTIVES*

- Develop a general prescription for "notification' and 'caution' levels of concern (MAS);
- Clean drainage structures, culverts, and run-off control structures;
- Correct deficiencies such as:
  - blockage with debris;
  - debris in inlet and outlet channels;
  - erosion.
- Clean and reshape drainage and "offtake" ditches by excavating, loading, hauling and disposal of material removed to correct deficiencies such as:
  - ditch erosion;
  - non-conformity in grade line or cross-section;
  - rubbish and debris;
  - weeds and brush.

5.2 *LEVEL OF SERVICE*

- Maintenance Foremen should be continuously alert for drainage problems caused by obstruction of the flow of water through drainage structures; visual inspection during inclement weather will aid in the location of blocked or restricted areas where work is required to restore normal drainage patterns;
- Clean out drainage structures in the late fall to ensure that they will be serviceable for spring freshet;
- Care should be taken to maintain slopes with uniform grades to prevent additional erosion or ponding of water in low places;

- Winter inspection as required to react to glaciation.

5.3 *MATERIALS*

- As required.

5.4 *EQUIPMENT*

- Pickup truck;
- Water pump;
- Hand held implements as required (rake, spade, etc.);
- Excavation equipment – crawler tractor, large backhoe, etc.

5.5 *PROCEDURE*

- Identify required maintenance;
- Contact Environmental Coordinator;
- Check permit/license terms and conditions, if applicable;
- Acquire land use permit as necessary;
- Place safety devices and signs;
- Note the presence of any geotextiles and/or filters in the vicinity;
- Perform work:
    - Excavate ditch;
    - Load truck if necessary to haul material away;
    - Haul and dispose of surplus material;
    - Check for proper grade and alignment of ditch;
    - Ensure proper drainage through culverts at private crossings.
- Remove safety devices and signs.

5.6 *SCHEDULING*

- Drainage problems should be scheduled for remedial work as soon as possible after having been identified;
- Schedule inspection for spring to allow for identification during wet periods and schedule work for late summer to permit ample time to fix the problem before winter;
- Clean out drainage structures in the late fall to prepare them for the winter season.

5.7 *SPECIAL AREAS MAINTENANCE PRESCRIPTIONS*

BR015 – Drainage Caution and ECP Caution

- At this site erosion control is reinforced by geotextile. Any maintenance procedure at this site must be very careful not to disturb the geotextile and/or drainage structures in place.

BR120 – Drainage Caution

- Perforated Pipes.

BR174 – Drainage Caution

- Perforated Pipes.

HJ008 – Drainage Caution, ECP Caution

- Erosion control is reinforced by geotextile. Maintenance in this area must be extremely careful not to disturb/destroy geotextile or drainage structures that are in place.

HJ046 – Drainage Caution, Icing Control Notification

- There is a caution associated with drainage at this site due to the presence of an icing control concern.

BC030 – Drainage Caution, Fisheries Caution

- Maintain rip-rap berm
- Caution, fish habitat

BC113 – Drainage Caution

BC 155 – Beaver Creek Community Drainage – Culvert Caution

- Maintain culverts' integrity for Beaver Creek drainage.

BC 158 – Beaver Creek Community Drainage – Culvert Caution

- Maintain culverts' integrity for Beaver Creek drainage.

6.0  GS GRANULAR SOURCE/STOCKPILE

(YTG Code: 402)

The general prescription has been developed for the 'notification' level of concern. All Granular Sources/Stockpiles (GS) in the mapped area are at the 'notification' level; it was not necessary to develop a special maintenance prescription.

Please refer to the **Granular Resource Management Plan (2nd Edition)** for specifics relating to a pit development plan and reclamation plan. The pit will be developed and operated as described in the pit development plan. A final reclamation plan will be prepared as pit extraction nears completion. This will involve updating of the original reclamation plan to ensure it is still relevant. Contact the C&TS Environmental Coordinator for information.

6.1 *OBJECTIVE*

- Limit access to the granular source/ stockpile by unauthorized personnel and wildlife;
- Minimize possible detrimental affects of the granular source/stockpile;
- Handling and transportation of aggregate will be done with approved equipment to prevent contamination, segregation and degradation.

6.2 *LEVEL OF SERVICE*

- Quality control;
- Soil testing may be required to maintain specifications.

6.3 *MATERIALS*

- Non-permeable membranes such as geotextile, clay, concrete, or asphalt;
- Material to cover the granular stockpile;
- Fencing material;
- Lock and key.

6.4 *EQUIPMENT*

- Loader;

- Highway tandem axle dump truck.

6.5 *PROCEDURE*

- Stockpiles shall not be constructed at locations or by methods that will interfere with or damage any utilities such as power lines, telephone lines, pipe line and underground utilities;
- Establish a base on which to put the granular stockpile that will minimize possible leaching that will affect water quality, wildlife and fisheries values and contamination;
- The floor of the stockpile will be shaped to a uniform smooth surface and graded to ensure positive drainage;
- The completed stockpile should be neat and regular, and take up the smallest feasible area;
- Build a fence high enough to deter wildlife and unauthorized personnel, if appropriate;
- Put a lock on the gates and leave the key with the appropriate personnel;
- Establish appropriate signage at access point;
- Maintain “Aggregate Identifier Signs” for each stockpile.

6.6 *SCHEDULING*

- Gravel may be crushed from the early spring to late fall.

BR037 – Access Notification, Granular Source/Stockpile Caution

- Datlaska is an active pit;
- Stockpiles to be constructed in topographic lows on site;
- Minimize stockpile heights in order to reduce the degree of visual intrusion experienced by park visitors.

7.0  IS INSULATED STRUCTURE

The general prescription has been developed for the 'alert' level of concern. All Insulated structures in the mapped area are at the 'alert' level, and it was not necessary to develop a special maintenance prescription for other MAS concerns.

7.1 *OBJECTIVES*

- Maintain the integrity of the engineered surface during any work on the road surface;
- Minimize thermal changes during construction of new structures;
- Minimal disruption of the road surface.

7.2 *MATERIALS*

- As per engineering.

7.3 *EQUIPMENT*

- As required.

7.4 *PROCEDURE*

- Before work is done on the highway, check as-built drawings for the presence and location of insulated structures;
- Where insulated structures are present special care must be taken during any work on the road so as not to disturb the structure.

7.5 *SCHEDULING*

- As required.

8.0  MP MULTIPLATE

(YTG Code: 301, 302)

The general prescription has been developed for the 'notification' level of concern. Many multiplates in the mapped area are at the 'notification' level, although there are some multiplates at the 'caution' and 'alert' levels of concern; it was necessary to develop a special maintenance prescription for the higher MAS concerns. These special prescriptions are included at the end of this section.

8.1 *OBJECTIVE*

- Develop a general prescription for the 'notification' level of concern (MAS);
- Maintain and repair as necessary all components of the multiplate, including major structural repair.

8.2 *LEVEL OF SERVICE*

- Deficiencies of a critical nature should be repaired immediately;
- Each spring the multiplate should be inspected for damage or deterioration and schedule the required maintenance.

8.3 *MATERIALS*

- As required.

8.4 *EQUIPMENT*

- As required.

8.5 *PROCEDURE*

- Safety devices and signs.
- Complete structural inspection. This may include:
    - Checking the amount of backfill;
    - Checking for buckling of the multiplate due to loss of backfill and subsequent adverse increases in pressure;
    - Check for bolts that are no long flush with the surface of the multiplate;

- Complete maintenance and repair as required;
- Remove signs and safety devices;
- Check rip rap and bank stabilization features.

8.6 *SCHEDULING*

- Each spring the multiplate should be inspected for damage or deterioration and schedule the required maintenance.

8.7 *SPECIAL AREAS MAINTENANCE PRESCRIPTIONS*

BR028 – Tina Creek – Multiplate Caution, Fisheries Caution

- Check rip-rap inside pipe for fisheries condition;
- Instream construction to be completed between April 20 and September 01.

BR036 – Multiplate Caution, Fisheries Caution

- Geotextile present under inlet and outlet;
- Instream construction to take place between June 01 and August 15;
- Perforated Pipe in embankment.

BR051 – Multiplate Caution

- Geotextile under multiplate outlet channel.

BR160 – Klukshu Creek – Multiplate Caution, Fisheries Alert, Wildlife Caution

- There is a fisheries alert because a multiplate is located in a known fish-bearing stream. Special maintenance is required to ensure that there is no degradation of fish habitat due to the presence of the multiplate. Yearly inspections of the multiplate should take place in the fall to ensure that any special structures that have been put in place are still operating as intended;
- Salmon spawning near highway right of way. Contact C&TS Environmental Coordinator prior to conducting in-stream maintenance.

DB051 – Multiplate Alert, Icing Control Alert

- The multiplate at this location is known to freeze up in the winter and cause icing problems. The special maintenance prescription requires frequent monitoring of the multiplate over the course of the winter and icing control whenever required. This is a special maintenance prescription because this multiplate will require more frequent monitoring and maintenance than other multiplates in the area. Do not disturb in stream ice control weir.

BC008 – Glacier #5 – Multiplate Alert, Icing Control Alert, Fisheries Alert

- Clean out lower sediment pond, as needed, with eduction truck for lower multiplate maintenance. Icing control carried out on the multiplate may have adverse effects on fish and/or fish habitat;
- Monitor multiplate for ice/glaciation build up. Do not disturb in stream ice control weir.

BC058 – Multiplate Alert, Icing Control Alert

- Monitor multiplate for ice/glacier build up. Do not disturb instream ice control weir.

BC096 – Sanpete Creek – Multiplate Caution, Fisheries Alert

- Sanpete Creek subject to flash flooding.

BC104 – Dry Creek – Multiplate Caution

- Baffles within Multiplate
- Geotextile under rock groin riprap and above inlet channel.

BC143 – Enger Creek – Multiplate Caution, Fisheries Alert

- Monitor multiplate headwall for structural integrity, damaged bolts;
- Fisheries maintenance window for stream work (July 1 – September 30); contact **C&TS Environmental Coordinator** to conduct instream maintenance works.

BC144 Enger Creek – Multiplate Caution, Fisheries Alert

- Monitor multiplate headwall for structural integrity, damaged bolts;
- Fisheries maintenance window for stream work (July 1 – September 30); contact **C&TS Environmental Coordinator** to conduct instream maintenance works;
- **Waste placed upstream for stream channel control.**

9.0  PO PULL OUT

(YTG Code: 201, 402)

The general prescription has been developed for the 'notification' level of concern. All Pull Outs (PO) in the mapped area are at the 'notification' level; it was not necessary to develop a special maintenance prescription.

9.1 *OBJECTIVE*

- Develop a general prescription for the 'notification' level of concern " (MAS);
- Keep the pull out safe, accessible and clean;
- Maintain signage;
- Blading and reshaping pull out areas adjacent to pavement and BST surfaces without addition of material to correct such deficiencies as:
    - Vegetation growth build-up;
    - Shoulder drop-off or loss of slope ruts or soft spots;
    - Windrows and excess material on pavement;
    - Sign maintenance (no overnight camping, etc., if appropriate).

9.2 *LEVEL OF SERVICE*

- Well maintained pull outs increase effective use of the highway, and effective drainage;
- Unpaved shoulders along asphalt paved surfaces should be graded once a year.

9.3 *MATERIALS*

- Supply all materials required to complete the work.

9.4 *EQUIPMENT*

- Snowplows, sanders and/or trucks to keep the pull out free of snow and ice;
- Gloves, garbage bag and litter pickers to pick up and dispose of litter;
- Shovel, rake;
- Grader;
- Pick-up.

9.5 *PROCEDURE*

- For grading the pull out:
    - Place safety devices and signs;
    - Cut and pull material toward pavement;
    - Remove excess material from pavement;
    - Remove safety signs and devices.
- Litter will be picked from the pullout on a regular basis;
- Large irregularities, such as deep ruts or large mounds of gravel, will be regularly graded during the heavy traffic season. A quick response must be ensured for the safety of those using the highway.

9.6 *SCHEDULING*

- Grading should take place in the spring when the shoulder material is moist and vegetation easily removed;
- Prior to heavy summer traffic.

10.0  Q QUARRIES

(YTG Code: 402)

The general prescription has been developed for the 'notification' level of concern. All Quarries (Q) in the mapped area are at the 'notification' level; it was not necessary to develop a special maintenance prescription.

10.1 *OBJECTIVE*

- Develop a general prescription for the 'notification' level of concern (MAS);
- Limit public access to Quarries while maintaining freedom of access to authorized users;
- Minimize disturbance of areas that are being revegetated within quarries.

10.2 *LEVEL OF SERVICE*

- Limiting access to pits for safety concerns is of high importance. Security should be checked on a regular basis and fix or repair as needed, immediately;
- Signage should be regularly maintained, and replaced when necessary.

10.3 *MATERIALS*

- Signs and posts;
- Gates to limit access;
- Locks and keys.

10.4 *EQUIPMENT*

- As required.

10.5 *PROCEDURE*

- Establish perimeter of quarry by reviewing appropriate maps and/or documentation;
- Set up key-lock gates at the access points;
- Set up signs warning the public not to trespass;
- Signs should also be erected to indicated that large, slow moving vehicles may be pulling out of and into the quarry;

- Decommission exhausted quarries by limited re-contouring as necessary, re-seed;
- Alert authorized users of borrow pits to the presence of revegetation sites through signage and barriers so as not to disturb the site;
- Check for scaling areas - potential safety hazard.

10.6 *SCHEDULING*

- Security measures should be installed as soon as possible;
- Appropriate signage should also be erected as soon as possible to alert motorists to the possibility of slow moving traffic.

11.0  RA REST AREA

(YTG Code: 402, 69)

The general prescription has been developed for the 'notification' level of concern. All Rest Areas (RA) in the mapped area are at the 'notification' level; it was not necessary to develop a special maintenance prescription.

11.1 *OBJECTIVE*

- To develop a general prescription for the 'notification' level of concern (MAS);
- Servicing of litterbins and toilets adjacent to primary highways but not contained within rest areas;
- Highway maintenance camps record and maintain rubbish bins that are their responsibility;
- Maintain rest area in neat and tidy appearance.

11.2 *LEVEL OF SERVICE*

- The need for new signs, facilities and/or services at rest areas will be determined by the Manager of Highway Maintenance.

11.3 *MATERIALS*

- Garbage bags;
- Mira-Sol, or similar, (industrial strength, environmentally friendly chemical);
- Toilet tissue;
- Cleaning supplies; and,
- Graffiti remover.

11.4 *EQUIPMENT*

- All materials required to complete the work.

11.5 *PROCEDURE*

Toilets

- Wash the inside of the toilet facility, including the walls, floors and seats;
- Remove graffiti from both the interior and exterior of the building;
- Replenish toilet tissue;
- Add approximately 1 litre of chemical each service;
- Seal roof leaks, replace door hinges, replace toilet tissue holders, and other minor repairs;
- Handpick litter around toilets and pathways;
- Mow pathways (at least 2 metres wide) and keep pathways free of obstructions such as holes, trees, brush and snow.

Litter Bins

- Empty all trash barrels, replacing plastic garbage bags in each trash barrel with a new bag, and disposing of collected litter in appropriate landfill site;
- Hand-pick any litter in the litter station and adjacent ditches from the point at which the pavement widens to the point at which it returns to the typical shoulder;
- Perform minor repairs to litter bins, such as replacing hinges or fastening loose boards;
- Keep the area in front of the bins free of obstructions such as holes, trees, brush and snow; and,
- Report any vandalism immediately.

11.6 *SCHEDULING*

- The Manager of Highway Maintenance may consider closing some facilities, or reducing the frequency of maintenance services to them during the winter when use is low;
- Maintenance schedules should reflect use of facilities, i.e. during the summer facilities should be checked much more frequently than during the winter;
- Coordinate with Manager of Highway Maintenance re: annual “pump out” contract.

12.0  RC ROCK CUTS/SLIDE AREAS

(YTG Code: 703, 701)

The general prescription has been developed for the 'caution' level of concern. Most Rock Cuts/Slide Areas have been mapped at the 'caution' level; where there is an 'alert' associated with an RC, a special maintenance prescription has been developed and is included at the end of this section.

12.1 *OBJECTIVE*

- Develop a general prescription for 'notification' and 'caution' levels of concern (MAS);
- Remove debris, soil and rock as quickly as possible after a mass movement has occurred;
- Minimize further disturbance to potentially unstable sites;
- Attempt to stabilize area and mitigate future mass movement events;
- Use appropriate signage to alert motorists to possible dangers in area;
- The rock cut symbol appears within the cautionary icon to emphasize the important impact that these features may have on the right of way and high level of service that they require to ensure motorist safety.

12.2 *LEVEL OF SERVICE*

- Any evidence of rock face instability (such as faults/fractures, bulging or cratering of the rock face) should be attended to immediately;
- During the spring possible slide areas should be monitored closely to check for signs of instability;
- It is important that signs are properly maintained;
- Daily road inspection required in the spring in areas showing evidence of spalling;
- Visually inspect rock bolting for any evidence that the bolts are becoming loose. Report immediately to Maintenance Foreman.

12.3 *MATERIALS*

- Signs and posts.
- Rock bolts/wire mesh.

12.4 *EQUIPMENT*

- Backhoe and/or bulldozer and/or loader to remove rock, soil and debris from road;
- Appropriate signs warning drivers of landslide potential, and/or work being done in the area.

12.5 *PROCEDURE*

- Use appropriate means to remove material from road following a slide;
- Try to route water away from potentially unstable site;
- Consider the possible requirement of placing pre-formed concrete barriers adjacent to the road where it passes the base of the rock cut/slide area;
- Alert Manager of Highway Maintenance/Superintendent of significant evidence of spalling, danger hazards;
- Controlled blasting to initiate slides/falls at known times may be considered.

12.6 *SCHEDULING*

- Unstable areas should be closely monitored at all times, particularly during the spring;
- Preventative measures should be installed during the fall to minimize the potential for mass movement in the following spring season;
- Appropriate signs must be installed as soon as possible to alert motorists to work in the area and/or potential mass movement.

12.7 *SPECIAL AREAS MAINTENANCE PRESCRIPTIONS*

BC010 – RC and User Safety Alert - Raven's Rock

- Monitor rock bolts on Raven's Rock. Monitor rockslide for fallen rock. Remove fallen rock and place on Edith Creek guide bank.

BC016 – Rock Cut Alert, User Safety Alert

- Remove fallen rock to Edith Creek bank when cleaning out ditch.

13.0  RS ROAD SURFACE

(YTG Code: 203, 207, 201)

The general prescription has been developed for the 'caution' level of concern. All Road Surfaces (RS) in the mapped area are at the 'caution' level; it is necessary to develop a separate prescription for the higher MAS concerns (such as permafrost degradation, longitudinal cracking, etc.). There were no areas mapped at an 'alert' level of concern. YTG will independently develop special prescriptions for permafrost related distresses in the Beaver Creek area.

The general prescription is based on information from **Road Maintenance Standards** from the Yukon Department of Highways. C &TS has developed a **BST Management System** for Yukon Highways, and produces an annual condition report. The BST Management System includes a surface condition rating system, and an annual report describes the various classes of BST in use and the elements of the condition rating system, as well as a comprehensive analysis of the condition rating data collected over annual intervals. The annual report prioritizes road surfaces of condition and is a basis for budgeting surface rehabilitation.

13.1 *OBJECTIVE*

- Repair gravel surfaces using crushed or pit-run gravel to correct deficiencies such as:
  - Unstable areas;
  - Localized road depressions;
  - Settlement at utility cuts or culverts;
  - Erosion;
  - Cracking.

- Patch paved and BST roadway surfaces and shoulders using hot or cold premix to correct deficiencies such as:
  - Potholes;
  - Small abrupt grade depressions;
  - Channels or ruts;

- Utility cuts;
- Pavement edge breaks.

13.2 *LEVEL OF SERVICE*

- Soft wet areas under traffic should be repaired- causes of water lying on surface or running across the surface should be determined and corrected;
- Patching with premix is performed to provide safe, smooth driving conditions and prevent rapid, progressive deterioration;
- Patching with premix is a priority and potholes should be fixed immediately;
- Signage should be maintained as required.

13.3 *MATERIAL*

- Crushed or pit-run gravel;
- Cold mix;
- Post patches.

13.4 *EQUIPMENT*

- Dump truck;
- Loader;
- Rake;
- Grader (if required).

13.5 *PROCEDURE*

- Check vicinity for insulated culverts or other possible causes of differential settling;
- Place safety devices, signs and traffic control as required;
- Control dust with appropriate, available means;
- Remove loose material- clean holes of broken pavement, loose aggregate and water. Sweep the immediate area clear of debris;
- Dump aggregate into depressions and soft spots **OR** shape the hole to provide sharp clean edges with sides trimmed nearly vertical and one pair of faces at right angles to the direction of traffic.

- Spread gravel evenly with grader **OR** shovel cold mix into the hole by placing material into the hole against the edges first, putting down layers approximately 3 inches deep one at a time; thoroughly compact each layer before proceeding with the next;
- **For Premix:** smooth and/or rake patched area to match elevation of adjacent surface. For large depressions/settlements use grader to place the cold mix material;
- Compact – use the truck tires to roll finished surface of small holes or depressions. For large areas, a ride-on compactor is required;
- **For Premix:** broom off excess material;
- Remove safety devices and signs, restore traffic.

13.6 *SCHEDULING*

- In the spring repairs should be done to correct conditions which develop from melting snow and thawing out of the frozen subgrade;
- During the late fall repairs should be made in preparation for winter conditions when effective repair is impossible;
- Ongoing observation is required during daily road checks throughout all seasons.

14.0  SP SNOW POLES

(YTG Code: 703)

The general prescription has been developed for the 'notification' level of concern. All Snow Poles (SP) in the mapped area are at the 'notification' level; it was not necessary to develop a special maintenance prescription.

14.1 *OBJECTIVE*

- Straighten, repair, paint, clean and replace snow poles;
- Correct deficiencies such as:
  - Damage to poles;
  - Paint deterioration;
  - Obstructed sign visibility due to vegetation;
  - Vandalism.

14.2 *LEVEL OF SERVICE*

- Snow poles are essential for effective and safe snow removal and icing control, as such they should be repaired as soon as possible.

14.3 *MATERIALS*

- Snow poles;
- Yellow and white reflective markings.

14.4 *EQUIPMENT*

- Pickup;
- Stake truck.

14.5 *PROCEDURE*

- Recognize poles which are missing, bent or broken and require repair or replacement;
- Make a night inspection of the reflective quality of all signs in November of each year and rectify any deficiencies;

- Correct snow pole alignment where required and replace where necessary;
- Any poles requiring paint should be noted, and the poles painted in the fall to prepare for the winter.

14.6 *SCHEDULING*

- Painting, repair and replacement of poles should be completed no later than October 1st each year.

15.0 SCHEDULING  UC UTILITY ENCROACHMENT/CROSSING

The general prescription has been developed for the 'caution' level of concern. All Utility Crossings (UC) in the mapped area are at the 'caution' level; it was not necessary to develop a special maintenance prescription.

15.1 *OBJECTIVE*

- Safe operating procedures in the vicinity of utilities, crossings and infrastructure;
- Avoidance of damage to the utility, crossing and/or infrastructure through awareness;
- Repair, paint, replace, etc. signs that indicate utility encroachment/crossing.

15.2 *LEVEL OF SERVICE*

- The need for new signs on the highway will be determined by the Manager of Highway Maintenance;
- Signs control and warn traffic – traffic signs are instructions from the Department to the public and it is important that they are properly maintained.

15.3 *MATERIALS*

- Signs;
- Posts.

15.4 *EQUIPMENT*

- Signs indicating workers in the area;
- Accurate, up-to-date maps indicating where the utilities are located and specifications of their height/depth;
- Stake truck.

15.5 *PROCEDURE*

- The individual operating equipment in the vicinity of utilities should familiarize him/herself with the location of crossings;
- When there is work proposed close to a known utility (exercise caution – there may be buried cables leading up to and away from above-ground electrical utility infrastructure);

- Operators must have valid training and certification in order to work under and/or near power lines;
- Signs should be installed in accordance with specific instructions, which may include sketches provided by the Manager of Highway Maintenance.

15.6 *SCHEDULING*

- Signs intended to protect the public should be installed as soon as possible.

16.0  WX WILDLIFE CROSSING

(YTG Code: 402, 703)

The general prescription has been developed for the 'caution' level of concern. All Wildlife Crossings (WX) in the mapped area are at the 'notification' or 'caution' level. A Special Maintenance Prescription was developed where a wildlife crossing is associated with User Safety (US).

16.1 *OBJECTIVE*

- Alert road users to the possibility of wildlife in the area so that caution is taken while driving through the area;
- Minimize wildlife fatalities due to collisions.

16.2 *LEVEL OF SERVICE*

- The need for new signs on the highway right-of-way will be determined by the Manager of Highway Maintenance;
- Traffic signs are instructions from the Department to the traveling public and it is important that they are properly maintained.

16.3 *MATERIALS*

- Appropriate signs alerting drivers to the presence of wildlife in the area;
- Posts.

16.4 *PROCEDURE*

- Identify areas that are used frequently by wildlife to cross the highway;
- Ensure right of way brushing control is pursued more frequently than other parts of the right of way.

16.5 *SCHEDULING*

- Signs intended to protect the motoring public should be installed as soon as possible;
- Information signs will typically be installed during the period from May to September, i.e. when the ground is not frozen.

16.6 *SPECIAL AREAS MAINTENANCE PRESCRIPTIONS*

DB055 – Donjek River – High incidence of moose crossing at Donjek Bridge; brushing control required at bridge approaches.

GENERAL MAINTENANCE and SPECIAL AREAS MAINTENANCE PRESCRIPTIONS

B. ENGINEERING COMPONENT

1.0  EC EROSION CONTROL

The general prescription has been developed for the 'caution' level of concern. All Erosion Control (EC) components in the mapped area are at the 'caution' level; there were no higher levels of concern associated with Erosion Control so no Special Areas Maintenance Prescriptions were developed.

1.1 *OBJECTIVE*

- The objective of maintenance procedures in the vicinity of erosion control measures is to avoid damage through awareness.

1.2 *LEVEL OF SERVICE*

- Erosion control features do not need to be serviced once they are in place unless there is a special provision to do so.

1.3 *MATERIALS*

- As required.

1.4 *EQUIPMENT*

- As required.

1.5 *PROCEDURE*

- Prior to any maintenance work commencing, personnel will consult the maintenance atlas and check for areas that contain erosion control measures;

- Any work required within the vicinity of these engineering components must proceed with caution, and every measure must be taken to avoid damage to the erosion control measures in place.

1.6 *SCHEDULING*

- Routine inspection of problem area. Identification of area for follow-up maintenance.

2.0  ECP EROSION CONTROL WITH PROTECTION

The general prescription has been developed for the 'caution' level of concern. Most Erosion Control with Protection (ECP) features in the mapped area are at the 'caution' level; where there was a higher level of concern associated with ECP, a special maintenance prescription was developed and is included at the end of this section.

2.1 *OBJECTIVE*

- The objective of maintenance procedures in the vicinity of erosion control measures is to avoid damage through awareness;
- The erosion control symbol appears within the yellow caution sign throughout the atlas to emphasize the importance of awareness when working around this engineering component.

2.2 *LEVEL OF SERVICE*

- Erosion control features do not need to be serviced once they are in place unless there is a special provision to do so.

2.3 *MATERIALS*

- As required.

2.4 *EQUIPMENT*

- As required.

2.5 *PROCEDURE*

- Prior to any maintenance work commencing, personnel will consult the maintenance atlas and check for areas that contain erosion control protection measures;
- Any work required within the vicinity of these engineering components must proceed with caution, and every measure must be taken to avoid damage to the erosion control protection measures in place.

2.6 *SCHEDULING*

- Routine inspection of problem area. Identification of area for follow-up maintenance.

2.7 SPECIAL AREAS MAINTENANCE PRESCRIPTIONS

BR015 – Drainage Caution and ECP Caution

- At this site erosion control is reinforced by geotextile. Any maintenance procedure at this site must be very careful not to disturb the geotextile and/or drainage structures in place.

3.0  GT GEOTEXTILE/GRANULAR FILTERS

The general prescription has been developed for the 'notification' level of concern. All Geotextile/Granular Filters (GT) in the mapped area are at the 'notification' level; it was not necessary to develop a special maintenance prescription at this time. A separate prescription should be developed for unique situations as they arise.

3.1 *OBJECTIVE*

- Maintain and/or increase the effectiveness of geotextiles/granular filters through careful maintenance;
- Become aware of the use of geotextiles in the work area to prevent damage to these fabrics;
- Use geotextiles and granular filters to increase the strength and integrity of the road system.

3.2 *LEVEL OF SERVICE*

- Critical deficiencies should be noted and repaired immediately;
- Highway maintenance should be aware of the location of geotextile or granular filter material, so that it is not disturbed as part of maintenance.

3.3 *MATERIAL*

- As required.

3.4 *EQUIPMENT*

- As required.

3.5 *PROCEDURE*

- Before brushing or excavating within the right-of-way, check with as-built drawings to see if there is geotextile present, and how far below the surface they are;
- When brushing or excavating in the right of way, the operator should check their work often to make sure that geotextile is not being exposed or ripped;

- Check Atlas for existing geotextile when undertaking ditch work and brush and weed control;
- Work should begin in early summer for the installation of geotextiles;
- Routine inspection prior to maintenance activities.

4.0 SCHEDULING  IC ICE CONTROL

(YTG Code: 503)

The general prescription has been developed for the 'caution' level of concern. Most Ice Control (IC) components in the mapped area are at the 'caution' level; where there was a higher level of concern associated with Ice Control a special maintenance prescription was developed and is included at the end of this section.

Many of the specifics of ice control, including application rates and procedures, have been taken from **Road Maintenance Standards** of the Yukon Departments of Highways.

4.1 OBJECTIVE

- Loading of trucks and/or snowplows with sand, salt or a combination to apply to the road in order to remove snow and minimize ice;
- To spread sand on road surfaces by truck and spreader;
- To spread salt or calcium chloride on asphalt road surfaces by truck and calibrated spreader;
- To ensure ability of culverts to handle spring high water cresting (in streams where the ice forms from the bottom of the creek upwards).

4.2 *LEVEL OF SERVICE*

Sand Application

Class	Surface Objective	During Storm	After Storm
1	BST	Hills over 5% Curves under 60 KPH	If the surface is slippery, apply sand continuously; Apply sand if it is too cold to salt.
2	Centre Bare	Hills over 5% Curves under 60 KPH	If it is too cold to salt, apply sand on slippery sections. Apply sand during a storm if required.
3	Centre Bare – Snow Road	NIL	Optional for hills over 5%, curves under 40 KPH

∗Note: sanding and salting may be required also during or after storm conditions at school zones and intersections.

4.3 *MATERIALS*

- The sand and salt mixture shall be taken from a pre-mixed stockpile, the salt from a storage shed and the sand from a separate stockpile;
- Sand;
- Sand mixed with salt ($CaCl_2$).

4.4 *EQUIPMENT*

Grader

Graders shall be deployed in the removal of ice/snow pack buildup. Grader comes with ice blades and/or Sandvik blades.

4.5 *PROCEDURE*

Snowplowing and Sanding

In general, truck speeds shall range between 60 and 70 kilometers per hour. Individual truck speed shall be adjusted to meet snow, wind, highway and traffic conditions and the application requirements of the sand, salt or a sand and salt mixture applied.

The angle of the snowplow blade shall be adjusted to remove snow and ice from the roadway in an efficient manner and to the satisfaction of the Foreman.

Plow trucks shall pull over at reasonable intervals to allow traffic to pass. Generally, this interval shall be between 5 and 8 kilometers. However, when traffic is heavy or rear visibility is obscured, this interval shall be shortened. When plow trucks are operating as multiple unit groupings, they shall be spaced so that traffic can safely pass.

Generally the distance between units, on the open highway, shall not be less than 800 meters, but is dependent on snow, weather, and traffic conditions.

Truck speed shall be adjusted to ensure snow is not deposited on the adjacent roadway.

Ensure all truck lights are clear of snow, ice and other materials, which may reduce the illumination ability of the lights.

- *On a Tangent* - Concentrate the placement of ice control materials on the crown area of the road. The crown is designed so that positive surface drainage occurs on both sides of it. If ice control materials are placed on the crown area, then the brine formed by salt and the subsequent melting of snow and ice will drain off the road in two directions.

- *On a Curve* - Place ice control materials on the high side of the curve so that any melting, which may occur, will run down the face of the curve and off the roadway surface.

Method – Sanding

- Spinners should be set to distribute the sand in a band 3-4 metres wide along the centerline of a two lane section. It may be necessary to sand each lane separately to avoid damage to vehicles or reduce excessive spinner shut-down;
- During a storm, sanding should only be done after plowing where hills over 5% and curves under 60 KPH should receive attention. In addition school zones and controlled intersections may also require sanding during, as well as after, a storm;
- Between storms, sand applications should be made as described in 'level of service'. However, recent studies have demonstrated the superior effectiveness, and cost savings of salt over sand under certain conditions which include:
    - Snow or ice buildup and temperature around freezing, or just above -7°C and rising;
    - Just prior to a snowfall or before 1cm has fallen.

Additional comments:

- The spreading of sand should not stop in the middle of a curve, halfway up a hill, or at the location of any other potential roadway hazard;
- Operators must exercise control with oncoming and following traffic to avoid cracked windshields – this may be done by reducing speed and/or shutting off the spinner.

Method – Chemical

- A heavy application of salt is required to melt packed snow and ice after a storm, but a much lighter application is required to prevent and snow accumulation. Therefore attempts should be made to apply salt before snowfall as a preventative measure;
- Chemical applications early in the day can take advantage of the normal warming daytime trend. In addition, the action of the sun and traffic help salt work by increasing the temperature and by mixing actions;
- Calcium is rarely used straight, but when mixed with abrasives or salt (9-19 kgs/cu m) or by liquid pre-wetting it can effectively reduce the material freezing and help it stay on the road. While calcium is effective at temperatures as low as -18°C, its high cost restricts its use in straight application to special low temperature conditions;

- Salting should NOT be attempted under the following circumstances:
    - Temperatures less than -8°C, particularly if the temperature is falling or if the surface temperature is below -6°C;
    - If pavement is dry and snow is drifting or blowing off (salt will simply make it stick).
- Spreaders should be calibrated to supply an application of about 85 kg/pass km under normal circumstances. Additional gate setting should be clearly marked to put out up to 130 kg/pass km for narrow applications (in this instance spinners should not be used);
- Special care should be taken in noting the difference in temperature between the air and paved surface. After prolonged cold spells, surface temperatures may be cooler than air temperatures, lagging the change in air temperature by a day or two.

4.6 *SCHEDULING*

- As required.

4.7 *SPECIAL AREAS MAINTENANCE PRESCRIPTIONS*

HJ005 – Culvert and Icing Control Alert

- There is an abandoned roadway and culvert above the road, which permit ice to build up away from the highway. The special maintenance prescription requires frequent monitoring of the culvert over the course of the winter and icing control whenever required.

HJ042 - Culvert Caution, Icing Control Caution

- Culvert will tend to freeze and build up ice in the winter. This culvert requires careful monitoring and frequent icing control.

HJ047 – Culvert Alert, Icing Control Alert

- This culvert is known to freeze up in the winter and cause icing problems. The special maintenance prescription requires frequent monitoring of the culvert over the course of the winter and icing control whenever required. This is a special maintenance prescription because this culvert will require more frequent monitoring and maintenance than other culverts in the area. Do not disturb in stream ice control weir.

HJ048 – Culvert Notification, Icing Control Caution

- This culvert is known to freeze up in the winter and cause icing problems. The special maintenance prescription requires frequent monitoring of the culvert over the course of the winter and icing control whenever required. This is a special maintenance prescription because this culvert will require more frequent monitoring and maintenance than other culverts in the area. Do not disturb in stream ice control weir.

DB051 – Multiplate Alert, Icing Control Alert

- The multiplate at this location is known to freeze up in the winter and cause icing problems. The special maintenance prescription requires frequent monitoring of the multiplate over the course of the winter and icing control whenever required. This is a special maintenance prescription because this multiplate will require more frequent monitoring and maintenance than other multiplates in the area. Do not disturb in stream ice control weir.

DB056 – Icing Control Alert, Multiplate Notification

- This multiplate requires special monitoring and maintenance over the winter to ensure that it remains ice free and safe for motorists.

DB062 – Icing Control Alert

- Hard Luck Creek tends to ice at this location in winter. Monitor the area for possible stream blockage and associated highway problems.

BC008 – Glacier #5 – Multiplate Alert, Icing Control Alert, Fisheries Alert

- Clean out lower sediment pond as required with eduction truck for lower multiplate maintenance. Icing control carried out on the multiplate may have adverse effects on fish and/or fish habitat. Monitor multiplate for ice/glaciation build up. Do not disturb in stream ice control weir.

BC036 – Culvert Alert, Icing Control Alert

- **Clean out lower sediment pond as required with eduction truck for lower multiplate maintenance. Icing control carried out on the multiplate may have adverse effects on fish and/or fish habitat. Monitor multiplate for ice/glaciation build up. Do not disturb in stream ice control weir;**
- Monitor culvert for ice/glaciation build up. Do not disturb instream ice control weir;
- Clean out lower sediment pond with eduction truck for culvert maintenance.

BC037– Culvert Alert, Icing Control Alert

- **Clean out lower sediment pond as required with eduction truck for lower multiplate maintenance. Icing control carried out on the multiplate may have adverse effects on fish and/or fish habitat. Monitor multiplate for ice/glaciation build up. Do not disturb in stream ice control weir;**
- Monitor culvert for ice/glaciation build up. Do not disturb instream ice control weir;
- Clean out lower sediment pond with eduction truck for culvert maintenance.

BC039– Culvert Alert, Icing Control Alert

- **Clean out lower sediment pond as required with eduction truck for lower multiplate maintenance. Icing control carried out on the multiplate may have adverse effects on fish and/or fish habitat. Monitor multiplate for ice/glaciation build up. Do not disturb in stream ice control weir;**
- Monitor culvert for ice/glaciation build up. Do not disturb instream ice control weir;
- Clean out lower sediment pond with eduction truck for culvert maintenance.

BC040– Multiplate Alert, Icing Control Alert

- **Clean out lower sediment pond as required with eduction truck for lower multiplate maintenance. Icing control carried out on the multiplate may have adverse effects on fish and/or fish habitat. Monitor multiplate for ice/glaciation build up. Do not disturb in stream ice control weir;**
- Monitor culvert for ice/glaciation build up. Do not disturb instream ice control weir;
- Clean out lower sediment pond with eduction truck for culvert maintenance.

BC056 – Culvert caution, Icing control Alert

- Culvert will tend to freeze and build up ice in the winter. This culvert requires careful monitoring and frequent icing control.

BC058 – Multiplate Alert, Icing Control Alert

- Monitor multiplate for ice/glacier build up. Do not disturb instream ice control weir.

5.0  OH OUTHOUSE

The general prescription has been developed for the 'notification' level of concern. All Outhouses (OH) in the mapped area are at the 'notification' level; it was not necessary to develop a special maintenance prescription.

5.1 *OBJECTIVE*

- Maintain sanitary conditions of outhouses at an acceptable level for public use.

5.2 *LEVEL OF SERVICE*

- Outhouses shall be maintained on an 'as required' basis;
- Higher service frequency usually in summer, with increased traffic.

5.3 *MATERIALS*

- Garbage bags;
- Mira-Sol (industrial strength) environmentally friendly chemical or equivalent;
- Toilet tissue;
- Cleaning supplies; and
- Graffiti remover.

5.4 *EQUIPMENT*

- Septic pump/truck;
- High-pressure washer.

5.5 *PROCEDURE*

- Wash the inside of the toilet facility, including the walls, floors and seats;
- Remove graffiti from both the interior and exterior of the toilet;
- Replenish toilet tissue;
- Add approximately 1 litre of chemical each service;
- Seal roof leaks, replace door hinges, replace toilet tissue holders, and other minor repairs;

- Handpick litter around toilets and pathways;
- Mow pathways (at least 2 metres wide) and keep pathways free of obstructions such as holes, trees, brush and snow; and
- Report septic tank levels to the Foreman when they approach full.

5.6 *SCHEDULING*

- The Manager of Highway Maintenance may consider closing or reducing the frequency of maintenance services to some facilities during the winter when use is low;
- Maintenance schedules should reflect use of facilities, i.e. during the summer facilities should be checked much more frequently than during the winter.

6.0  RV REVEGETATION

The general prescription has been developed for the 'notification' level of concern. All Revegetation (RV) concerns in the mapped area are at the 'notification' level; it was not necessary to develop a special maintenance prescription. The entire Right-of-Way has been revegetated as construction has proceeded.

6.1 *OBJECTIVE*

- Promote the establishment of new vegetation and minimize disturbance to existing areas that are undergoing revegetation and reclamation;
- The majority of right-of-ways have been revegetated; care must be taken when brushing and weeding not to destroy desirable vegetation.

6.2 *LEVEL OF SERVICE*

- The re-establishment of vegetation does not require service; these areas require non-disturbance during maintenance activities.

6.3 *MATERIALS*

- As required.

6.4 *EQUIPMENT*

- As required.

6.5 *PROCEDURE*

- Do not disturb revegetated/revegetating areas when performing maintenance work;
- If disturbance required, follow revegetation guidelines for area. Note specific vegetation seed mixture required for various highway segments.

6.6 *SCHEDULING*

- Routine inspection.

7.0  SF SNOW FENCE

The general prescription has been developed for the 'notification' level of concern. All Snow Fences (SF) in the mapped area are at the 'notification' level; it was not necessary to develop a special maintenance prescription.

7.1 *OBJECTIVE*

- Place this engineering feature in areas that will minimize drifting snow across the right of way;
- Timely placement and removal of snow fences.

7.2 *LEVEL OF SERVICE*

- Prior to winter snowfall.

7.3 *MATERIALS*

- Reflection paint;
- Reflective tape;
- Reflection markings.

7.4 *EQUIPMENT*

- Hand tools; stake truck.

7.5 *PROCEDURE*

- Set up the snow fence during the light snow fall of the season, or as prior to the first snow, in areas where there is the potential for drifting snow across the right of way.

7.6 *SCHEDULING*

- Install snow fence prior to winter, fall;
- Routine inspection throughout winter;
- Dismantle snow fence in spring once ground condition permits.

8.0  SR SNOW REMOVAL

(YTG Code 501)

The general prescription has been developed for the 'notification' level of concern. Most Snow Removal (SR) components in the mapped area are at the 'notification' level; where there was a higher level of concern associated with Ice Control a special maintenance prescription was developed and is included at the end of this section.

Many of the specifics of snow removal, including application rates and procedures, have been taken from **Road Maintenance Standards** of the Yukon Departments of Highways.

8.1 *OBJECTIVE*

- Loading of trucks and/or snowplows with sand, salt or a combination to apply to the road in order to remove snow and minimize ice;
- Maintain roads to a standard based on winter road classification, which reflects the priority needs of the community and of the traveling public.

8.2 *LEVEL OF SERVICE*

- The appropriate number of trucks should be provided to apply standard plowing routes**;**
- The roads in each class of service should be plowed before the maximum accumulation depth is reached;
- Where plowing routes involved plowing on different road classes during one circuit, the lower class road would receive a higher level of service than warranted in order to maintain the standard of the higher-class roads.

8.3 *MATERIALS*

- N/A

8.4 *EQUIPMENT*

- Trucks mounted with “under body plows, front plows;
- Graders equipped with snow wings/ice attacking cutting edges.

8.5 *PROCEDURE*

- Begin plowing when snow has accumulated to a depth in the range appropriate for each particular class of road;
- Plowing should continue during and after the storm to insure that snow accumulations remain below the maximum allowable, until the surface objective is reached;
- Plowing speeds posted in YTG Standards must be adhered to;
- Widening out of shoulders should not be attempted until after the storm when all routes have been plowed to their surface objective;
- During a very heavy storm it is unlikely that available resources will be able to meet the allowable accumulation standard. Priority should always be given to the higher class routes in this case;
- Ice blading will be carried out to remove compacted snow;
- Graders are used to wing back excessive snow on the shoulders in order to create additional snow storage capacity.

8.6 *SCHEDULING*

- To maintain roads to the standard based on winter road classification which reflects the priority needs of the community and traveling public;
- In the later winter/spring, shoulder windrows are removed in order to facilitate drainage, drying;
- Ice blading by grader equipped with ice blades (Sandvik teeth) will be done when there is a build-up of ice/snow pack.

9.0  US USER SAFETY

The general prescription has been developed for the 'caution' level of concern. Most User Safety (US) components in the mapped area are at the 'caution' level; where there was a higher level of concern associated with a User Safety component a special maintenance prescription was developed and is included at the end of this section.

9.1 *OBJECTIVE*

- Alert the public to possible safety hazards that may affect user safety on the right of way, e.g. avalanche, wildlife area, slide area;
- Minimize possible adverse affects through notification of maintenance personnel of areas of concern so that appropriate prevention and remediation steps may be taken;
- The User Safety engineering component always appears within the caution icon in the Maintenance Atlas. This is to emphasis the importance of areas identified as User Safety points.

9.2 *LEVEL OF SERVICE*

- User safety indicates a special health or safety concern is associated with the feature. Areas of concern should be monitored closely, and any maintenance requirements should be performed immediately.

9.3 *MATERIALS*

- As required.

9.4 *EQUIPMENT*

- As required.

9.5 *PROCEDURE*

- Routine monitoring of User Safety component. Undertake corrective action as necessary.

9.6 *SCHEDULING*

- Routine highway inspection, with more frequent inspections during spring and fall.

9.7 *SPECIAL AREAS MAINTENANCE PRESCRIPTIONS*

BC010 – RC Alert, User Safety Alert - Raven's Rock

- Monitor rock bolts on Raven's Rock. Monitor rockslide for fallen rock. Remove fallen rock and place on Edith Creek guide bank.

BC016 – Rock Cut Alert, User Safety Alert.

- Remove fallen rock to Edith Creek bank when cleaning out ditch.

10.0  WM WASTE MANAGEMENT

The general prescription has been developed for the 'notification' level of concern. All Waste Management (WM) components in the mapped area are at the 'notification' level; it was not necessary to develop a special maintenance prescription.

10.1 *OBJECTIVE*

- Establish and maintain a garbage-free right of way and rest areas.

10.2 *LEVEL OF SERVICE*

- The level of service will likely vary seasonally with more work being required in the summer when there are higher volumes of traffic;
- Effective waste management may require an annual, intensive clean-up adjacent to highways, and in rest areas with lower intensity measures to follow;
- The need for new signs, facilities and/or services at rest areas will be determined by the Manager of Highway Maintenance.

10.3 *MATERIALS*

- Garbage bags;
- Garbage bins;
- Gloves.

10.4 *EQUIPMENT*

- Gloves, stake truck, litter picker.

10.5 *PROCEDURE*

- After snow has melted, a thorough clean up of rest areas and the right-of-way should be scheduled;
- Waste management of rest areas should be scheduled regularly throughout the year, with garbage runs scheduled more frequently for the summer months than the winter months.

10.6 *SCHEDULING*

- Schedule a thorough clean up annually, and garbage pick up at regular intervals for the remainder of the year.

GENERAL MAINTENANCE and SPECIAL AREAS MAINTENANCE PRESCRIPTIONS

C. ENVIRONMENTAL COMPONENT

1.0  BL BOAT LAUNCH

The general prescription has been developed for the 'notification' level of concern. All Boat Launches (BL) in the mapped area are at the 'notification' level; it was not necessary to develop a special maintenance prescription.

1.1 *OBJECTIVE*

- Ensure the safety of people accessing and using boat launch facilities;
- Minimize the impact that road maintenance activities may have on existing boat launch sites.

1.2 *PROCEDURE*

- Prior to any maintenance activity, personnel must check the maintenance atlas to identify any possible concerns in the vicinity;
- If there is a boat launch in the area, care must be taken not to disturb the site during maintenance activities or degrade access to the boat launch site;
- If seasonal maintenance requirements are needed to repair boat launch, contact Environmental Coordinator prior to conducting any works.

2.0  CU CULTURAL USE

The general prescription has been developed for the 'notification' level of concern. Most Cultural Use (CU) components in the mapped area are at the 'notification' level; where a higher level of concern was identified, a special maintenance prescription has been developed.

2.1 *OBJECTIVE*

- Acknowledge and respect the presence of First Nations' culturally significant sites and artifacts.

2.2 *PROCEDURE*

- The cultural use environmental component does not require a specific maintenance procedure;
- The cultural use symbol indicates an area that is of special interest for identification, not maintenance, purposes;
- Should disturbance of a site be noted, or maintenance needed to use area, contact Environmental Coordinator or local First Nation.

2.3 *SPECIAL AREAS MAINTENANCE PRESCRIPTIONS*

DB027 – Swede Johnson Creek – Water License Number MS99-141 - Multiplate Notification, Fisheries Alert, Heritage Notification, Cultural Use Notification

- Work shall take place outside the wetted perimeter, during the period of July 1 to March 15 during low flow periods wherever possible;
- Grayling spawning near right of way. Contact C&TS Environmental Coordinator prior to conducting in-stream maintenance;
- Traditional fishing locality is currently being used for First Nations purposes.

DB030 – Access Point Notification, Cultural Use Caution, Heritage Caution

3.0  FH FISH AND/OR FISH HABITAT

The general prescription has been developed for the 'caution' level of concern. Most Fisheries (FH) components in the mapped area are at the 'caution' level; where there was a higher level of concern associated with Fish and/or Fish Habitat a special maintenance prescription was developed and is included at the end of this section.

3.1 *OBJECTIVE*

- Minimize or eliminate damage to fish and/or fish habitat due to maintenance practices in and/or around streams;
- The "FH" symbol is generally presented with the caution or alert symbol throughout the maintenance atlas to alert personnel to the importance placed on fisheries resources.

3.2 *PROCEDURE*

- Prior to maintenance work, personnel must check the Maintenance Atlas to identify any concerns in the vicinity in which the work is to take place;
- Determine if an existing or previous water use licence or DFO authorization exists;
- If fisheries are identified as a concern, the reason for that concern must be determined and addressed;
- All bridge cleaning work must use environmentally-friendly agents;
- Contact the C&TS Environmental Coordinator prior to initiating maintenance works within or near a watercourse identified as fish and/or fish habitat;
- Instream works must take place during prescribed times, or when there will be the least disturbance to fish, fish cycles and fish habitat.

3.3 *SPECIAL AREAS MAINTENANCE PRESCRIPTIONS*

BR024 - Seltat Creek – Culvert alert, fisheries caution

- There is a culvert alert because there are fish in the stream and the point is being used as a pull out. The high use of this area and the high value of fisheries necessitates careful surveillance and maintenance of the culvert. Twin concrete box culvert, inspection is required annually to verify structural integrity and fish passage design features.

BR028 – Tina Creek – Multiplate Caution, Fisheries Caution

- Check rip-rap inside pipe for fisheries condition;
- Instream construction to be completed between April 20 and September 01.

BR036 – Multiplate Caution, Fisheries Caution

- Geotextile present under inlet and outlet;
- Instream construction to take place between June 01 and August 15;
- Perforated Pipe in embankment.

BR042 – Five Mile Creek – Bridge Alert, Fisheries Caution

- Bridge cleaning activities may negatively influence fisheries values. Cleaning products must be environmentally friendly, and debris must be swept to the end of the bridge so that it is not washed into the fish habitat;
- Contact Environmental Coordinator prior to conducting in-stream maintenance.

BR060 – Goat Creek - Bridge Caution, Water Quality Caution, Fisheries Alert

- There is a high level of concern associated with Fish and/or Fish Habitat due to the presence of a bridge in a fish-bearing stream. Goat Creek is known to spawning salmon at the bridge, and continued maintenance of the habitat is essential for the health of the system;
- Salmon spawning near highway right of way. Contact C&TS Environmental Coordinator prior to conducting in-stream maintenance.

BR073 – Stanley Creek – Multiplate Notification, Fisheries Alert

- Stanley Creek is a known fish-bearing stream, and the maintenance of the multiplate is essential for the integrity of the system. Special maintenance includes fall inspections to ensure that the multiplate is passable, and that special features that were installed are still in place. These features may include large rocks placed within the multiplate;
- Salmon spawning near highway right of way. Contact C&TS Environmental Coordinator prior to conducting in-stream maintenance.

BR084 – Blanchard River – Bridge Caution, Water Quality and Fisheries Alert

- Bridge cleaning activities may negatively influence water quality and fisheries values. Cleaning products must be environmentally friendly, and debris must be swept to the ends of the bridge so that the debris is not washed into the fish habitat;
- Salmon spawning near highway right of way. Contact C&TS Environmental Coordinator prior to conducting in-stream maintenance.

BR122 – Takhanne River – Bridge Caution, Water Quality Alert and Fisheries Alert

- Bridge cleaning activities may negatively influence water quality and fisheries values. Cleaning products must be environmentally friendly, and debris must be swept to the ends of the bridge so that the debris is not concentrated in one area of the fish habitat;
- Salmon spawning near highway right of way. Contact C&TS Environmental Coordinator prior to conducting in-stream maintenance.

BR160 – Klukshu Creek – Multiplate Caution, Fisheries Alert, Wildlife Caution

- There is a fisheries alert because a multiplate is located in a known fish-bearing stream. Special maintenance is required to ensure that there is no degradation of fish habitat due to the presence of the multiplate. Yearly inspections of the multiplate should take place in the fall to ensure that any special structures that have been put in place are still operating as intended;
- Salmon spawning near highway right of way. Contact C&TS Environmental Coordinator prior to conducting in-stream maintenance.

HJ033 – Kathleen River – Bridge Caution, Fisheries Alert, Water Quality Alert

- Bridge cleaning activities may negatively influence water quality and fisheries values. Cleaning products must be environmentally friendly, and debris must be swept to the ends of the bridge so that the debris is not concentrated in one area of the fish habitat;
- Fish spawning near highway right of way. Contact C&TS Environmental Coordinator prior to conducting in-stream maintenance.

DB005 – Fisheries Alert, Multiplate Notification

- Fish spawning near highway right of way. Contact C&TS Environmental Coordinator prior to conducting in-stream maintenance.

DB009 – Glacier Creek – Water Licence Number MS99-141 – Multiplate Notification, Fisheries Alert

- Work shall take place outside of wetted perimeter, during the period of July 1 to March 15 during low flow periods wherever possible.

DB026 – Swede Johnson Creek – Water Licence Number MS99-141 - Multiplate Notification, Fisheries Alert

- Work shall take place outside the wetted perimeter, during the period of July 1 to March 15 during low flow periods wherever possible;
- Grayling spawning near right of way. Contact C&TS Environmental Coordinator prior to conducting in-stream maintenance.

DB027 – Swede Johnson Creek – Water License Number MS99-141 - Multiplate Notification, Fisheries Alert, Heritage Notification, Cultural Use Notification

- Work shall take place outside the wetted perimeter, during the period of July 1 to March 15 during low flow periods wherever possible;
- Grayling spawning near right of way. Contact C&TS Environmental Coordinator prior to conducting in-stream maintenance;
- Traditional fishing location is currently being used for First Nations purposes.

DB031 – Multiplate Notification, Fisheries Alert

- Geotextile under bed, inlet & outlet

DB041 – Multiplate Notification, Fisheries Alert

- Geotextile under bed, intake and outlet.

DB059 – Donjek River – Water Licence number MS99-141, MS99-143 (Expires 01/09/01) – Bridge caution, Water Quality Caution, Fisheries Alert

- Work shall take place outside the wetted perimeter, during the period of July 1 to March 15 during low flow periods wherever possible;
- Bridge cleaning activities may negatively influence water quality and fisheries values. Cleaning products must be environmentally friendly, and debris must be swept to the ends of the bridge so that the debris is not concentrated in one area of the fish habitat;
- All water supply intakes shall be removed upon completion of the work;
- Water supply intakes shall be screened in accordance with the Licence requirements indicated in Volume I, Section 4, Table 2 of this report.

DB068 – Hard Luck Creek - Water Licence number MS99-143 (Expires 01/09/01) – Multiplate Notification, Fisheries Alert

- All water supply intakes shall be removed upon completion of the work;
- Water supply intakes shall be screened in accordance with the Licence requirements indicated in Volume I, Section 4, Table 2 of this report;
- Grayling spawning near right of way. Contact C&TS Environmental Coordinator prior to conducting in-stream maintenance.

BC002 – Multiplate Notification, Icing Control Caution, Fisheries Alert

- Possible flooding.

BC003 – Multiplate Notification, Icing Control Caution, Fisheries Alert

- Possible flooding.

BC004 – Multiplate Notification, Fisheries Alert

BC008 – Glacier #5 – Multiplate, Icing Control and Fisheries Alert

- Clean out lower sediment pond annually with eduction truck for lower multiplate maintenance. Icing control carried out on the multiplate may have adverse effects on

fish and/or fish habitat. Monitor multiplate for ice/glaciation build up. Do not disturb in stream ice control weir.

BC017 – Edith Creek – Bridge Caution, Water Quality Caution, Fisheries Alert

- Fish in area, minimize sediment in stream except between July and September.

BC032 – Koidern River – Bridge Caution, Water Quality Caution, Fisheries Alert

- Maintain riprap drainage control feature. Contact **C&TS Environmental Coordinator** prior to conducting maintenance work.

BC044 – Longs Creek – Multiplate Notification, Fisheries Alert

- Fisheries maintenance window for stream work (July 1 – September 30); contact **C&TS Environmental Coordinator** to conduct instream maintenance works.

BC061- Koidern River – Bridge Caution, Water Quality Caution, Fisheries Alert

- Bridge cleaning activities may negatively influence water quality and fisheries values. Cleaning products must be environmentally friendly, and debris must be swept to the ends of the bridge so that the debris is not concentrated in one area of the fish habitat.

BC065 – Culvert Notification, Fisheries Alert

- Fisheries maintenance window for stream work (July 1 – September 30); contact **C&TS Environmental Coordinator** to conduct instream maintenance works.

BC073 – White River– Bridge Caution, Water Quality Caution, Fisheries Alert

- Bridge cleaning activities may negatively influence water quality and fisheries values. Cleaning products must be environmentally friendly, and debris must be swept to the ends of the bridge so that the debris is not concentrated in one area of the fish habitat;
- Monitor cut slope north of White River bridge for erosion.

BC092- Moose Creek – Multiplate Notification, Fisheries Alert

- Fisheries maintenance window for stream work (July 1 – September 30); contact **C&TS Environmental Coordinator** to conduct instream maintenance works;
- Monitor Moose Creek channel stability upstream of multiplate annually.

BC096 – Sanpete Creek – Multiplate Caution, Fisheries Alert

- Sanpete Creek subject to flash flooding.

BC097- Sanpete Creek – Multiplate Notification, Fisheries Alert

- Sanpete Creek subject to flash flooding.

BC115 – Dry Creek – Multiplate Notification, Fisheries Alert

- Protected slopes at widened part of highway adjacent to Mud Mountain.

BC143 – Multiplate Notification, Fisheries Alert – Enger Creek

- Fisheries maintenance window for stream work (July 1 – September 30); contact **C&TS Environmental Coordinator** to conduct instream maintenance works.

BC144 – Multiplate Notification, Fisheries Alert – Enger Creek

- Fisheries maintenance window for stream work (July 1 – September 30); contact **C&TS Environmental Coordinator** to conduct instream maintenance works;
- Waste placed upstream for stream channel control;
- Monitor multiplate headwall for structural integrity, damaged bolts.

BC152 – Beaver Creek – Bridge Caution, Water Quality Caution, Fisheries Alert

- Fisheries maintenance window for stream work (July 1 – September 30); contact **C&TS Environmental Coordinator** to conduct instream maintenance works;
- Bridge cleaning activities may negatively influence water quality and fisheries values. Cleaning products must be environmentally friendly, and debris must be swept to the ends of the bridge so that the debris is not concentrated in one area of the fish habitat.

BC167- Snag Creek – Multiplate Notification, Fisheries Alert

- Monitor upstream berm for failure;
- Fisheries maintenance window for stream work (July 1 – September 30); contact **C&TS Environmental Coordinator** to conduct instream maintenance works.

BC169- Mirror Creek – Multiplate Notification, Fisheries Alert

- Fisheries maintenance window for stream work (July 1 – September 30); contact **C&TS Environmental Coordinator** to conduct instream maintenance works.

BC172 – Multiplate Notification, Fisheries Alert

- Fisheries maintenance window for stream work (July 1 – September 30); contact **C&TS Environmental Coordinator** to conduct instream maintenance works.

BC173 – Culvert Notification, Fisheries Alert

- Fisheries maintenance window for stream work (July 1 – September 30); contact **C&TS Environmental Coordinator** to conduct instream maintenance works.

BC190- Little Scottie Creek – Multiplate Notification, Icing Control Caution, Fisheries Alert

- Icing control carried out on the multiplate may have adverse effects on fish and/or fish habitat. Monitor culvert for ice/glaciation build up. Do not disturb instream ice control weir.

BC199 – Multiplate Notification, Fisheries Alert

- Fisheries maintenance window for stream work (July 1 – September 30); contact **C&TS Environmental Coordinator** to conduct instream maintenance works.

Note: while every effort has been made to document fish and/or fish habitat streams, it is important to check with the C&TS Environmental Coordinator before commencing instream maintenance works.

4.0  HTG HERITAGE

The general prescription has been developed for the 'notification' level of concern. Most Heritage (HTG) components in the mapped area are at the 'notification' level; where a higher level of concern was identified, a special maintenance prescription has been developed.

4.1 *OBJECTIVE*

- Acknowledge and respect sites and/or areas that have had special cultural use significance in the past.

4.2 *PROCEDURE*

- The prescription for sites where there is a Heritage code is one of recognition and minimal site degradation;
- Contact Environmental Coordinator or local First Nation should area disturbance be noted, or maintenance activities planned in area.

4.3 *SPECIAL AREAS MAINTENANCE PRESCRIPTIONS*

DB027 – Swede Johnson Creek – Water License Number MS99-141 - Multiplate Notification, Fisheries Alert, Heritage Notification, Cultural Use Notification

- Work shall take place outside the wetted perimeter, during the period of July 1 to March 15 during low flow periods wherever possible;
- Grayling spawning near right of way. Contact C&TS Environmental Coordinator prior to conducting in-stream maintenance;
- Traditional fishing hole is currently being used for First Nations purposes.

DB030 – Access Point Notification, Cultural Use Caution, Heritage Caution

5.0  RCP RESIDENTIAL / COMMERCIAL PROPERTY

The general prescription has been developed for the 'notification' level of concern. All Residential/Commercial Properties (RCP) in the mapped area are at the 'notification' level; it was not necessary to develop a special maintenance prescription.

5.1 *OBJECTIVE*

- Maintenance of safe and easy access to private and commercial property owners from the right of way;
- The RCP icon does not indicate the requirement for any specific maintenance procedure; rather, it denotes the users of a specific access point;
- Alert motorists to the presence of driveways along the right-of-way so that they will reduce their speed and be aware of vehicles entering and exiting traffic flow.

5.2 *PROCEDURE*

- There is no procedure required specifically for residential/commercial property;
- The procedure to be followed is detailed in the access points prescription section, and the objective is to maintain safe and easy access for residential/commercial owners to the right-of-way.

6.0  REC RECREATION

The general prescription has been developed for the 'notification' level of concern. All Recreational (REC) components in the mapped area are at the 'notification' level; it was not necessary to develop a special maintenance prescription.

6.1 *OBJECTIVE*

- Maintenance of access to recreation sites, which may include trail heads, snowmobile paths, and camping sites;
- Ensure that road maintenance activities and/or equipment does not compromise the safety of individuals using recreational sites/facilities.

6.2 *PROCEDURE*

- Use appropriate signage to alert the public to maintenance work/equipment in the vicinity of the recreational site/area;
- Never leave equipment where it may become obscured or concealed by snow and cause injury to skiers, snowmobilers or anyone else using recreational sites/areas.

7.0  SV SCENIC VIEWING

7.1 *OBJECTIVE*

- Maintain the integrity of a location that is used for scenic viewing purposes

7.2 *PROCEDURE*

- Clean up litter;
- Maintain and/or repair interpretive signage as required;
- Brush and weed control as required.

8.0  WH WILDLIFE AND/OR WILDLIFE HABITAT

8.1 *OBJECTIVE*

- Minimize and/or avoid degradation of a point or area that is known wildlife habitat;
- The WH symbol is used in the maintenance atlas interchangeably to indicate both wildlife habitat in an area, and wildlife crossings at specific locations.

8.2 *PROCEDURE*

- Post appropriate signage in wildlife habitat areas and wildlife crossings to alert the public to possible hazards caused by wildlife on the right of way.

8.3 *SPECIAL AREAS MAINTENANCE PRESCRIPTIONS*

BR068 – Culvert Caution, Fisheries Caution, Wildlife Habitat Caution, Fisheries Caution

- Inspect culvert for blockage from beaver activity;
- Instream construction must be performed between June 01 and August 15.

BR160 – Klukshu Creek – Multiplate Caution, Fisheries Alert, Wildlife Caution

- There is a fisheries alert because a multiplate is located in a known fish-bearing stream. Special maintenance is required to ensure that there is no degradation of fish habitat due to the presence of the multiplate. Yearly inspections of the multiplate should take place in the fall to ensure that any special structures that have been put in place are still operating as intended;
- Salmon spawning near highway right of way. Contact C&TS Environmental Coordinator prior to conducting in-stream maintenance.

BR097 – Bears in area

9.0  WQ WATER QUALITY

The general prescription has been developed for the 'caution' level of concern. Most Water Quality (WQ) components in the mapped area are at the 'caution' level; where there was a higher level of concern associated with Water Quality a special maintenance prescription was developed and is included at the end of this section.

9.1 *OBJECTIVE*

- Maintain water quality through responsible, environmentally conscious means of highway maintenance;
- The high level of concern associated with water quality is indicated by the presentation of the water quality symbol within a cautionary Maintenance Advisory Symbol;
- Key activities that may influence water quality include bridge cleaning, snow control and removal as well as the cleaning of culverts. These activities must take place within specified time windows, and with prescribed materials and procedures.

9.2 *PROCEDURE*

- Water quality is a secondary result of maintenance procedures. Procedures for highway features and engineering components include descriptions of how to avoid/minimize impacting water quality;
- Contact the C&TS Environmental Coordinator prior to initiating maintenance works within or near a watercourse identified as fish and/or fish habitat.

9.3 *SPECIAL AREAS MAINTENANCE PRESCRIPTIONS*

BR084 – Blanchard River – Bridge Caution, Fisheries Alert, Water Quality Alert

- Bridge cleaning activities may negatively influence water quality and fisheries values. Cleaning products must be environmentally friendly, and debris must be swept to the ends of the bridge so that the debris is not concentrated in one area of the fish habitat;
- Salmon spawning near highway right of way. Contact C&TS Environmental Coordinator prior to conducting in-stream maintenance.

BR075 – Takhanne River – Bridge Caution, Fisheries Alert, Water Quality Alert

- Bridge cleaning activities may negatively influence water quality and fisheries values. Cleaning products must be environmentally friendly, and debris must be swept to the ends of the bridge so that the debris is not concentrated in fish habitat;
- Salmon spawning near highway right of way. Contact C&TS Environmental Coordinator prior to conducting in-stream maintenance area of the fish habitat.

BR122 – Takhanne River – Bridge Caution, Water Quality Alert, Fisheries Alert

- Bridge cleaning activities may negatively affect water quality and fisheries values. Cleaning products must be environmentally friendly, and debris must be swept to the ends of the bridge so that the debris is not concentrated in fish habitat;
- Salmon spawning near highway right of way. Contact C&TS Environmental Coordinator prior to conducting in-stream maintenance area of the fish habitat.

HJ033 – Kathleen River – Bridge Caution, Fisheries Alert, Water Quality Alert

- Bridge cleaning activities may negatively influence water quality and fisheries values. Cleaning products must be environmentally friendly, and debris must be swept to the ends of the bridge so that the debris is not concentrated in one area of the fish habitat;
- Salmon spawning near highway right of way. Contact C&TS Environmental Coordinator prior to conducting in-stream maintenance.

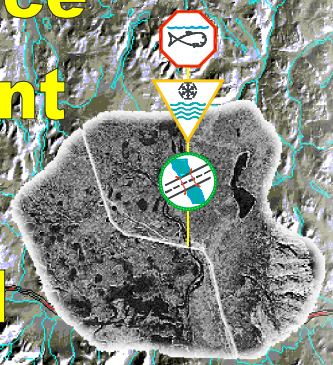
Yukon

Community and Transportation Services

Shakwak Special Areas Maintenance Guidelines Project

Volume II, Section 2
Features & Components Classification Tables for Special Maintenance and/or Management

September, 2001



Prepared By:

ACCESS CONSULTING GROUP

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit (Expiry Date)		Easting	Northing	
BR001	CV								P	762781	6599406	Perforated pipe subdrain
BR002	AC				RCP				P	762655	6599747	Customs water supply adjacent to road; Government of Yukon Highway Maintenance Camp: Pleasant Camp
BR003	CV				FH	WQ			P	762593	6599776	
BR004	CV								P	762367	6600009	
BR005	WX								C	761199	6602132	Wildlife Crossing Hazard between Granite and Five Mile Creek
BR006	DNG		ECP						C	761101	6600751	Perforated pipes along highlighted section
BR007	PO		SR						P	759968	6601407	
BR008	MP								P	760130	6601879	Geotextile under outlet Rip-Rap.
BR009	DNG								P	760125	6602009	Perforated Pipes (3)
BR010	MP								P	760077	6602139	Geotextile under outlet Rip-Rap.
BR011	DNG								P	758924	6603202	Perforated Pipes (3)
BR012	BR				FH				P	758325	6603834	Embankment placed on concrete bridge deck
BR013	AC				REC	CU			P	758300	6603869	
BR014	BP								P	758300	6603869	114-P-05; Consult Volume II, Section I
BR015	DNG		ECP						P	757648	6604626	
BR016	RC								P	757349	6604980	
BR017	CV								P	757143	6605784	Longitudinal Culvert at toe of embankment, monitor for blockage.
BR018	MP								P	756945	6607923	Geotextile under outlet Rip-Rap.
BR019	MP								P	756928	6608044	Geotextile under outlet Rip-Rap.
BR020	MP								P	756527	6609489	Geotextile under outlet Rip-Rap.
BR021	MP								P	756474	6609649	Geotextile under outlet Rip-Rap.
BR022	HTG								P	757041	6610798	Old Dalton Trail
BR023	PO								P	755986	6611888	
BR024	CV				FH				P	756012	6612131	Twin concrete box culvert, inspection required.
BR025	AC								P	756040	6613047	
BR026	PO								P	756040	6613047	
BR027	RC								P	755899	6613782	
BR028	MP				FH				P	755819	6614140	Check Rip-Rap inside pipe for fisheries condition; Instream construction to be completed between 04/20 - 09/21; Geotextile under outlet Rip-Rap.
BR029	CV								P	755903	6614502	Culvert has inlet headwall to cut off ground water seepage.
BR030	AC						REC		P	755961	6614638	
BR031	CV								P	756690	6618018	Culvert has inlet headwall to control water and erosion.
BR032	AC	BP							P	755874	6619612	114-P-04; Consult Volume II, Section I
BR033	MP				FH				P	755620	6619935	Geotextile present under inlet & outlet; Instream construction between 06/01 & 08/15

Blanchard River Highway Maintenance Section (km 71.3 to km 192.6)

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit (Expiry Date)		Easting	Northing	
BR034	MP				FH				P	755256	6620383	Geotextile present under inlet & outlet; Instream construction between 06/01 & 08/15
BR035	MP								P	753652	6621705	Geotextile present under inlet & outlet; Perforated Pipes in Embankment.
BR036	MP				FH				P	752989	6621833	Geotextile present under inlet & outlet; Instream construction between 06/01 & 08/15; Perforated Pipes in Embankment.
BR037	PO		SR						P	750162	6622946	
BR038	PO								P	749320	6623799	Plow at Easter
BR039	MP				FH				P	748088	6625919	Instream construction between 08/15 & 09/30
BR040	MP				FH				P	747263	6626753	Instream construction between 08/15 & 09/30
BR041	CV				FH				P	746983	6627370	Instream construction between 08/15 & 09/30
BR042	AC	BP							P	747037	6628283	114-P-03; Consult Volume II, Section I
BR043	MP				FH				P	747149	6628810	
BRO44	CV				FH				P	747400	6629691	
BRO45	CV								P	747446	6629900	
BRO46	WX								C	748295	6630670	Wildlife crossing hazard between Nadahini Creek and Mule Creek Airstrip.
BRO47	US								P	747810	6630708	Mule Creek dump.
BRO48	CV				FH				P	747506	6632902	Instream construction between 06/01 & 09/01
BRO49	AC				RCP				P	747185	6635978	Government of Yukon Highway Maintenance Camp: Mule Creek.
BRO50	MP				FH				P	746286	6637118	Geotextile under inlet & outlet channels
BRO51	MP								P	746286	6637118	Geotextile under inlet & outlet channels
BRO52	AC				CU				P	746178	6637181	
BRO53	Future BP								P	745978	6637666	FUTURE
BRO54	AC	BP							P	745392	6638019	114-P-01; Consult Volume II, Section I
BRO55	AC				CU				P	745349	6638093	
BRO56	AC				SV				P	744596	6639743	Fox denning area
BRO57			SF						C	744389	6641228	
BRO58			GT						C	744489	6640972	
BRO59			GT						P	744271	6641394	
BRO60	BR				WQ	FH			P	743481	6641898	Instream construction window is 06/01 to 06/30
BRO61					WH				C	742976	6642008	Fox denning area Left Hand Side
BRO62	CV		GT						P	742934	6642647	Geotextile under bed
BRO63			GT						P	742692	6643056	Geotextile under fill
BRO64	MP								P	741317	6644264	Geotextile under bed, inlet & outlet
BRO65	AC				RCP				P	741055	6644529	Cabin: Unknown Owner (However Resident of Whitehorse)
BRO66			GT						C	740135	6645985	Geotextile under fill
BRO67			GT						C	738911	6646614	Geotextile under fill
BRO68	CV				WH	FH			P	738688	6646710	Inspect culvert for blockage from beaver activity; Instream construction must be performed between 06/01 & 08/15
BRO69			GT						C	737336	6647865	Geotextile under fill
BRO70	PO								P	736484	6648492	Plow for Easter
BRO71	MP				FH				P	735857	6648864	Geotextile under outlet & above inlet headwall; Instream construction must be performed between 06/01 & 08/15
BRO72	AC				RCP				P	735241	6649626	Property owner: Jack Goodwin, Outfitter from Atlin, BC

Blanchard River Highway Maintenance Section (km 71.3 to km 192.6)

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit (Expiry Date)		Easting	Northing	
BRO73	MP				FH				P	734806	6650435	Geotextile under inlet & outlet; Instream work mst be performed between 06/01 & 06/30
BRO74	Future BP								P	735060	6650897	FUTURE
BRO75			GT						C	734699	6651403	Geotextile under fill
BRO76	AC				RCP				P	734648	6651669	Former Squatter: Daniel Johnson, now gone, however BC Parks requested that he remove buildings and debris
BRO77			GT						C	734657	6651832	Geotextile under fill
BRO78	AC				RCP				P	734148	6653427	Lance Goodwin, Trappers Cabin
BR079	MP								P	734107	6653544	Geotextile under bedding. Geotextile under fill at: BR075, 077, 083.
BR080	AC				RCP				P	733340	6655894	Lance Goodwin, Trappers Cabin
BR081	AC								P	732894	6656466	
BR082	AC				RCP				P	732463	6656837	Shawn Fitzgerald and Julie Moore, Park Land Lease
BR083			GT						C	732037	6657198	Geotextile under fill
BR084	BR				WQ	FH			P	731747	6657797	
BR085	AC		WM						P	731711	6658072	
BR086	AC		SR						P	731119	6658840	
BR087	YTG Maintenance Camp: Blanchard River								P	731119	6658840	
BR088	DNG		ECP						P	731674	6658344	Perforated pipes
BR089	PO		SR	WM					C	731522	6658675	
BR090	DNG		ECP						C	731501	6658739	Perforated pipes
BR091	DNG		ECP						C	731358	6659080	
BR092	DNG		ECP						C	731172	6659500	Perforated pipes; Geotextile under embankment
BR093	DNG		ECP						C	730999	6659874	
BR094	DNG								P	730958	6659981	Perforated pipes
BR095	DNG		ECP						C	730716	6660425	
BR096			GT						C	730413	6660743	Geotextile under embankment.
BR097	CV								P	730308	6660923	
BR098			GT						C	730089	6661312	Geotextile under embankment.
BR099	DNG		ECP						C	729887	6661692	
BR100	DNG								P	729731	6661993	Perforated pipes
BR101	WX								C	730905	6663923	Wildlife Crossing from Blanchard River camp to granular source 115-A-07
BR102	DNG								C	729596	6662227	Perforated pipes
BR103	DNG		ECP						C	729552	6662320	Perforated pipes
BR104	DNG								P	729459	6662505	Perforated pipes
BR105	DNG		ECP						C	729408	6662598	Perforated pipes; Geotextile under embankment
BR106	PO				SV				P	729244	6663045	
BR107			GT						C	729230	6663316	Geotextile under embankment.
BR108	DNG								P	729181	6663697	Perforated pipes
BR109	DNG								P	729096	6664074	Perforated pipes (3)
BR110			GT						C	729072	6664114	Geotextile under embankment.
BR111	CV		US						P	728855	6664437	Avalanche area
BR112	DNG								P	728565	6664829	Perforated Pipe

Blanchard River Highway Maintenance Section (km 71.3 to km 192.6)

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit (Expiry Date)		Easting	Northing	
BR113			GT						C	728494	6664965	
BR114	DNG								P	728386	6665600	Perforated Pipe
BR115			GT						C	727670	6666661	Geotextile under embankment.
BR116	Avalanche area		US						C	727451	6667043	Avalanche area
BR117	AC	GS						YA6X843, 06/02/86	P	727122	6669065	115-A-07
BR118	DNG		ECP						C	726691	6670306	Geotextile both sides and under road; Perforated pipes both sides.
BR119	AC				REC				P	726455	6670641	
BR120	DNG								C	726341	6670728	Perforated pipes both sides
BR121	DNG		ECP						P	726278	6670734	
BR122	BR				FH	WQ			C	726217	6670795	
BR123	AC								C	725711	6670919	Perforated pipes
BR124	DNG		ECP						P	725711	6670919	Check guard rails
BR125	DNG								C	725248	6670939	Perforated pipes (2)
BR126	DNG								C	724630	6671272	Perforated pipes (3)
BR127	DNG		ECP						P	724488	6671468	
BR128	DNG		ECP						P	724369	6671919	
BR129	AC				RCP				P	724333	6672185	Communication Site: Pringle Tower
BR130	RA		WM	OH	SV				P	724222	6672219	
BR131	PO								P	723585	6673467	
BR132	DNG		ECP						C	723585	6673467	
BR133	AC				CU				P	723323	6674328	Dalton Post Access
BR134	Rock Stockpile								P	723039	6675313	
BR135	PO								P	722591	6676801	
BR136	CV								P	722405	6677948	
BR137	DNG		ECP						C	722081	6678825	Perforated Pipe
BR138	DNG		ECP						C	722152	6679901	
BR139	AC				CU	RCP			P	722467	6680284	Lot 1010 CAFN
BR140	DNG		ECP						C	722770	6680472	
BR141	CV								P	722847	6680533	
BR142	CV								P	722957	6680662	Headwall on culvert inlet.
BR143	DNG		ECP						C	722979	6680700	
BR144	DNG								C	722998	6680758	Perforated Pipes.
BR145	AC	GS						YA6X843, 06/02/86	P	723101	6680955	115-A-08
BR146	DNG		ECP						C	723327	6681345	
BR147	DNG		ECP						C	723458	6681923	
BR148	PO				WH	SV			P	723463	6682317	Swans nesting
BR149	DNG		ECP						C	723461	6682427	Geotextile on both sides.
BR150	CV	WX							P	723669	6683472	
BR151	BP								P	723927	6683728	Decommissioned
BR152	CV								P	723782	6684617	
BR153	DNG		ECP						C	723722	6685698	
BR154	WX				WH				C	723463	6685640	Klukshu Marsh
BR155	DNG		ECP						C	723470	6686369	
BR156	CV								P	722692	6687626	
BR157	DNG		ECP						C	721501	6689163	
BR158	DNG		ECP						C	721358	6689698	Perforated Pipes.
BR159	PO								P	721097	6690116	
BR160	BR				FH	WH			P	721066	6690140	WH, Bears in area; Geotextile under plunge pond, inlet channel, bed & outlet channel Rip-Rap
BR161	AC				CU	RCP			P	719951	6690565	Klukshu Village: Lots 14 & 22 CAFN

Blanchard River Highway Maintenance Section (km 71.3 to km 192.6)

Blanchard Riv

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit (Expiry Date)		Easting	Northing	
BR162	MP								P	718862	6692013	Geotextile under Rip-Rap
BR163	PO				SV				P	718420	6693793	St. Elias Lake Trail
BR164	Decomissioned Dump								P	718228	6695681	
BR165	RS								P	718172	6696385	
BR166	AC	BP							P	718130	6696864	Notify Parks Canada prior to opening access to 115-A-09
BR167	AC				RCP				P	718025	6697260	Access to Lot 1000 & 1001: D & A Papineau
BR168	CV				WH				P	717911	6697507	Inspect beaver control structure
BR169	WX								C	719042	6698235	
BR170	AC				RCP				P	717685	6698689	Access to Lot 48: Mervin Armstrong, Lot1005: Pearl Callaghan, Agricultural Lease: Thomas Eikland
BR171	AC				RCP				P	717522	6698907	Access to Lot 47: C & H Eckervogt
BR172	AC				RCP				P	717367	6699135	Access to Lot 46: G & W Huettman (Germany)
BR173	AC				RCP				P	717309	6699351	Mush and Bates Lakes Trail and Access to Lot 64: Heinz Eckervogt, Lot 91: Crown Land, and Lot 92: Roy and Carol Box (Juneau, AK.)
BR174	DNG								P	717339	6699449	Perforated Pipes

er Highway Maintenance Section (km 71.3 to km 192.6)

Features: AC = Access Points, BP = Borrow Pits, DNG = Drainage (Roadside Ditch, Run-off Control Structures, etc.), Q = Quarries, RA = Rest Area, RC = Rock Cuts/ Slide Areas, PO = Pull Out, CV = Culvert, MP = Multiplate, BR = Bridge, UC = Utility encroachment /Crossing, IS = Insulated Structure, RS = Road Surface, GS = Granular Source / Stockpile, WX = Wildlife Crossing; Engineering Components: US = User Safety (e.g. Avalanche / Wildlife Area), IC = Icing Control, RV = Vegetation (Existing Material, Revegetating & Reclaimed Areas), SF = Snow Fence (drifting control structure), SR = Snow Removal, EC = Erosion Control, ECP = Erosion Control Protected by Geotextile, WM = Waste Management, OH = Outhouse, GT = Geotextile / Granular Filters; Environmental Components: CU = Cultural Use, HTG = Heritage, BL = Boat Launch, FH = Fish and/or Fish Habitat, RCP = Residential / Commercial Property, WQ = Water Quality, REC = Recreation, WH = Wildlife and/or Wildlife Habitat, SV = Scenic Viewing

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit (Expiry Date)		Easting	Northing	
HJ001	PO				SV				P	717648	6700203	
HJ002	AC				RCP				P	717693	6700788	Inge Depner
HJ003			GT						C	717730	6701320	Geotextile under Embankment.
HJ004	AC				REC				P	717693	6702277	Dezadeash Campground
HJ005	CV		IC						P	717611	6702752	
HJ006	DNG		ECP						C	717542	6703178	
HJ007	DNG		ECP						C	717642	6704100	
HJ008	DNG		ECP						C	717186	6705401	
HJ009	CV								P	717185	6707093	Material removed from Flipper Creek to be deposited in Decommissioned Borrow pit across the highway
HJ010	PO								P	716670	6708588	Rock Glacier Trail
HJ011	RS								C	716661	6708810	Surface Undulations.
HJ012	AC				RCP				P	716536	6710829	Desadeash NWTEL Tower and CAFN Settlement Lands
HJ013	AC				RCP				P	716213	6712584	CAFN Settlement Land
HJ014	CV				FH				P	716037	6713070	
HJ015	AC				RCP	BL			P	716025	6713124	Access to Lot 79: Grayling Camp Enterprises, and Lot 80: Dalton Trail Inn Ltd., and YTG Boat Launch
HJ016	IS								C	715413	6713997	
HJ017	DNG								P	715358	6714108	Perforated Pipes.
HJ018	CV				FH				P	715166	6714411	
HJ019	BP								P	714960	6715301	Inactive
HJ020	AC				RCP				P	713961	6716545	Access to Lot 1012: Beat and Eva Glanzmann
HJ021	AC	BP						YA8Q528, 01/10/01	P	711089	6719746	115-A-10
HJ022	AC				RCP					708522	6721708	Access to Lot 97: Elizabeth Weigand and Ranier Russmann
HJ023	RS								P	708326	6721842	Seasonal Frost Heaving
HJ024	AC				RCP				P	707832	6722222	Access to Lot 1011: Lythzoe and Brent Liddle
HJ025	AC								P	707642	6722349	Kathleen Lake Campground
HJ026	AC				RCP				P	707583	6722398	Access to Lot 1004: Scott and Jennifer Fletcher
HJ027	AC				RCP				P	707494	6722463	Access to Commercial Lease Property: Patrick Habielder

Haines Junction Highway Maintenance Section (Haines Road km 192.6 to km 246 & Alaska Hwy. km 1557.9 to km 1694))

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment	
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit (Expiry Date)		Easting	Northing		
HJ028	AC				RCP				P	707451	6722514	Access to Lot 1008: Terry and Brenda Berezan	Haines Junction Highway Maintenance Section (Haines Road km 192.6 to km 246 & Alaska Hwy. km 1557.9 to km 1694))
HJ029	AC				RCP				P	707102	6722759	Access to Lot 1007: Kathleen Lake Lodge	
HJ030	AC				RCP					706899	6722910	CAFN	
HJ031	AC	PO			FH				P	706567	6723124		
HJ032	AC				RCP				P	706535	6723143	Access to Lot 1017: P., C., & S. Sheardown	
HJ033	BR				FH	WQ			P	706375	6723254		
HJ034	AC				RCP				P	705954	6723727	Access to Lot 1009: Sally Kaye	
HJ035	AC				RCP				P	705856	6723747	Access to Lot 1017: P., C., & S. Sheardown	
HJ036	AC				RCP				P-	703451	6727067	Access to Lots on Rainbow Lake	
HJ037	PO								P	703024	6727098		
HJ038	RA				HTG				P	703024	6727098	Parks Canada; Kluane Park World Heritage Site	
HJ039	AC	GS	RV					YA8Q528, 01/10/01	c	699293	6731941	115-A-12	
HJ040	MP				WQ				P	698846	6732270	Land Use Downstream; Twin Multiplates	
HJ041	PO								P	695057	6736648	Auriol Trail	
HJ042	CV		IC						P	694062	6738580		
HJ043	AC				RCP				P	693787	6738825	Access to St Elias Shooting Range	
HJ044	PO								P	693787	6738825		
HJ045	RA		WM		OH				P	693787	6738825		
HJ046	DNG		IC						C	693145	6738983		
HJ047	CV		IC						P	692491	6739095		
HJ048	CV		IC						P	691843	6739183		
HJ049	CV				FH				P	690651	6739369		
HJ050	BR		WQ		FH				P	690469	6739555		
HJ051	BR		WQ		FH				P	690387	6739734		
HJ052			US						P	690369	6739761	Thermistor, collect data periodically at thermistor, community access maintenance (no window)	
HJ053									P	689620	6740254	Parks Canada	
HJ054	DNG		US		WQ				P	687845	6741080	Effluent Control Ditch	
HJ055	AC				RCP				P	687002	6741773	Access to Non-Titled Lot 1085	
HJ056			US						P	686754	6741894	Traffic Counter	
HJ057	AC				RCP				P	686551	6742041	Access to Non-titled Lot 109	Haines Jun
HJ058	MP				FH				P	686279	6742159		
HJ059	AC				RCP				P	686135	6742245	Access to Non-Titled Lot 108 and Lot 1075:CAFN	

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment	
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit (Expiry Date)		Easting	Northing		
HJ060	RA		WM	OH					P	685253	6742349		Junction Highway Maintenance Section (Haines Road km 192.6 to km 246 & Alaska Hwy. km 1557.9 to km 1694))
HJ061	PO		SR							685253	6742349		
HJ062	AC				RCP				P	685069	6742403	Access to Lot 6: Alsek Valley Developments & Lot 1041: E. & L. Kelly and B. O'Neill	
HJ063	AC				RCP				P	684058	6742519	CAFN Settlement Land	
HJ064	AC				RCP				P	683314	6742756	Access to Lot 1048: Will Roy Proudfoot Jones	
HJ065	AC				RCP				P	682285	6743845	Access to Lot 1008-1: R. & D. Hotte	
HJ066	MP				FH				P	681164	6744656	Access to Lots 1003-1007 & 1012-1035	
HJ067	AC				RCP				P	681048	6744644	Alsek Trail and access to Lot 1043: B. Hobman and D. Thomas	
HJ068	AC				RCP				P	680618	6744642		
HJ069	AC	GS	SR					YA8Q528, 01/10/01	P	680422	6744687	115-A-15, MacIntosh Pit	
HJ070	CV								P	679929	6745090	Twin Pipe Culvert	
HJ071	CV		IC						P	677679	6747502	Twin Pipe Culvert	
HJ072	AC				RCP				P	677033	6748075	Access to Non-titled Lot 33; Old Pump Station	
HJ073	DNG		EC						P	676874	6748127	Rip-Rap Stabilization	
HJ074	DNG		EC						P	676166	6748548	Twin Pipe Culvert	
HJ075	CV								P	676131	6748612	Rip-Rap Stabilization	
HJ076	RA		WM	OH					P	675642	6749388		
HJ077	PO				REC				P	675642	6749388	Spruce Beetle Trail; Renewable Resources responsible for maintenance.	
HJ078	CV								P	675396	6749669	Twin Pipe Culvert	
HJ079	MP								P	674284	6750187		
HJ080	AC	BP							P	674255	6750298	115-A-23	
HJ081	PO								P	674255	6750298		
HJ082	PO				REC				P	674190	6750728		
HJ083	CV								P	673991	6751299	Twin Pipe Culvert	Haines Junction Highw (Haines Road km 192.6 km 1557.9
HJ084	CV								P	673903	6751527	Twin Pipe Culvert	
HJ085	BR				WQ	FH			P	668946	6758126		

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment	
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit (Expiry Date)		Easting	Northing		
HJ086	PO		SR						P	668715	6758184		Alaska Highway Maintenance Section (km 0 to km 246 & Alaska Hwy. (km 1694 to km 1694))
HJ087	RA		WM						P	668715	6758184		
HJ088	AC				RCP	CU			P	668675	6758236	Access to Property of Frank Joe, Ruby Range Trail Rides	

Features: **AC** = Access Points, **BP** = Borrow Pits, **DNG** = Drainage (Roadside Ditch, Run-off Control Structures, etc.), **Q** = Quarries, **RA** = Rest Area, **RC** = Rock Cuts/ Slide Areas, **PO** = Pull Out, **CV** = Culvert, **MP** = Multiplate, **BR** = Bridge, **UC** = Utility encroachment /Crossing, **IS** = Insulated Structure, **RS** = Road Surface, **GS** = Granular Source / Stockpile, **WX** = Wildlife Crossing; **Engineering Components:** **US** = User Safety (e.g. Avalanche / Wildlife Area), **IC** = Icing Control, **RV** = Vegetation (Existing Material, Revegetating & Reclaimed Areas), **SF** = Snow Fence (drifting control structure), **SR** = Snow Removal, **EC** = Erosion Control, **ECP** = Erosion Control Protected by Geotextile, **WM** = Waste Management, **OH** = Outhouse, **GT** = Geotextile / Granular Filters; **Environmental Components:** **CU** = Cultural Use, **HTG** = Heritage, **BL** = Boat Launch, **FH** = Fish and/or Fish Habitat, **RCP** = Residential / Commercial Property, **WQ** = Water Quality, **REC** = Recreation, **WH** = Wildlife and/or Wildlife Habitat, **SV** = Scenic Viewing

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment	
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit		Easting	Northing		
DB001	RA		WM	OH	SV				P	590830	6819403		Destruction Bay Highway Maintenance Section (km 1694 to km 1834.2)
DB002	AC				RCP				P	589705	6820587	Access to Industrial Property: All North Resources Ltd.	
DB003	RS								P	589582	6820909	Change from BST to Gravel (Begin 2000 Construction)	
DB004	GT								C	589518	6821081	Geotextile under embankment.	
DB005	MP				FH		MS98-125, 31/12/04		P	589155	6821747	Geotextile under bed, inlet & outlet channels.	
DB006	DNG		ECP	GT					C	589150	6821672	Geotextile under embankment & on both sides of highway	
DB007	AC				CU				P	589120	6821832		
DB008	DNG		GT	ECP					C	588138	6823368	Geotextile under embankment.	
DB009	MP				FH		MS99-142, 31/12/01; MS98-125, 31/12/04; MS99-142, 01/04/05		P	588068	6823929	Geotextile under bed, inlet & outlet channels.	
DB010			GT						C	588068	6824019	Geotextile under embankment.	
DB011	AC				BL				C	588738	6824711		
DB012			GT						C	587521	6826090	Geotextile under embankment.	
DB013			GT						C	587216	6826582	Geotextile under embankment.	
DB014	DNG		ECP						C	587043	6826883	Geotextile on both sides of highway.	
DB015	AC	Q						YA8Q529, 01/10/01	P	586977	6827031	115-G-14	
DB016	RC								C	586953	6827191	Waste area west of Lt. Small Memorial contains treated hydrocarbon contaminated soil	
DB017	AC				BL				C	587300	6827721	Lt. Small Memorial	
DB018			GT						C	586686	6828188	Geotextile under embankment.	
DB019	AC				CU				P	586533	6828542		
DB020	AC	GS						YA8Q529, 01/10/01	P	586318	6828647	115-G-01	
DB021	UC								P	585975	6828773		
DB022	AC				RCP				P	585884	6828862	Access to Lot 1003: John Trout and Joseph Frignon, and Lot 1004: Joan Kieser	
DB023	AC				RCP				P	585784	6828823	Access to Commercial Property:Micheal Yakielashek	

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment	
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit		Easting	Northing		
DB024	AC				CU	HTG			P	585085	6829175		Destruction Bay Highway Maintenance Section (km 1694 to km 1834.2)
DB025	Q								P	584535	6828756	Decommissioned	
DB026	MP				FH		MS99-142, 31/12/01; MS99-141, 01/04/05		P	583739	6829675	Geotextile under bed, inlet & outlet channels.	
DB027	MP				FH	CU/HTG	MS99-142, 31/12/01; MS99-141, 01/04/05		P	583451	6829746	Geotextile under bed, inlet & outlet channels.	
DB028			GT						C	582491	6829924	Geotextile under embankment.	
DB029	AC		WM						P	582220	6829931	John Trout's Garbage Dump	
DB030	AC				CU	HTG			P	581906	6829938		
DB031	MP				FH		MS99-142, 31/12/01; MS99-141, 01/04/05; MS99-143, 01/09/01		P	581833	6829935	Geotextile under bed, inlet & outlet channels.	
DB032			GT						C	581594	6829949	Surface distortions due to differential settlement; Geotextile under embankment.	
DB033									C	577753	6831410	Sharp Tailed Grouse Lekking Area	
DB034			GT						C	576555	6831591	Geotextile under embankment.	
DB035	AC				RCP				P	576189	6831613	Pipeline Pump Station	
DB036	Q								P	576393	6833619	Decommissioned	
DB037			GT						C	572842	6831854	Geotextile under embankment.	
DB038	AC				REC				P	572742	6831898		
DB039			GT						C	572243	6832139	Geotextile under embankment.	
DB040			GT						C	571917	6832501	Geotextile under embankment.	
DB041	MP		GT		FH				p	571804	6832565	Geotextile under intake & outlet Rip-Rap.	
DB042	AC		CU						P	571088	6833151		
DB043	AC				RCP				P	570353	6833578	Access to Lot 6: NWTEL Property	
DB044			GT						C	569871	6833770	Geotextile under embankment.	
DB045	AC				RCP				P	570138	6833661	Access to Lot 3: Lorraine Allen; Geotextile under embankment.	
DB046									P	569238	6834037	Temporary Stockpile Site and Soil Disposal Area	
DB047	RA		WM	OH	SV				P	568826	6834328	Icefield Ranges Lookout	
DB048	PO		SR						P	568826	6834328		
DB049			GT						C	568208	6834662	Geotextile under embankment.	
DB050	AC				RCP				P	567873	6834848	Not Titled	

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment	
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit		Easting	Northing		
DB051	MP		IC						P	567850	6834900	Geotextile under bed, inlet & outlet channels, perforated pipes in inlet channel.	Destruction Bay Highway Maintenance Section (km 1694 to km 1834.2)
DB052			GT						C	567403	6835748	Geotextile under embankment.	
DB053	AC		GS					YA8Q529, 01/10/01	P	567277	6836949	115-G-10	
DB054	CV		IC						P	567310	6836969		
DB055			GT						C	567285	6837066		
DB056	MP		IC						P	567372	6837363	Geotextile under inlet and outlet Rip-Rap.	
DB057	GS	AC						YA8Q529, 01/10/01	P	566371	6838822	115-G-03	
DB058	WX		US						C	566286	6838862	Moose crossing at Donjeck Bridge, brushing control required at bridge approaches	
DB059	BR				WQ	FH	MS99-142, 31/12/01; MS99-141, 01/04/05; MS99-143, 01/09/0; MS98-101, 31/12/02		P	566108	6838953	Donjek Bridge	
DB060	DNG		ECP						C	565728	6839157	Geotextile under embankment.	
DB061	DNG		ECP						C	565078	6839594	Geotextile under embankment.	
DB062			IC						P	565044	6839618		
DB063	DNG		ECP						C	564573	6840126	Geotextile under embankment.	
DB064	DNG		ECP						C	563913	6840680	Geotextile under embankment.	
DB065	DNG		ECP						C	563424	6841366	Geotextile under embankment.	
DB066			GT						C	562829	6842224	Geotextile under embankment.	
DB067	AC				CU				P	561971	6842750		Destruction Ba (kr
DB068	MP				FH		MS97-094, 31/12/03; MS99-143, 01/09/01		P	561824	6842793	Geotextile under bed, inlet & outlet channels; fish baffles within multiplate.	
DB069	DNG		ECP						C	561533	6842887	Geotextile under embankment.	

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment	
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit		Easting	Northing		
DB070	DNG		ECP						C	561149	6843057	Geotextile under embankment.	By Highway Maintenance Section km 1694 to km 1834.2)
DB071	DNG		ECP						C	560961	6843303	Geotextile under embankment.	
DB072			GT						C	560700	6843624	Geotextile under embankment.	
DB073	Q								P	560676	6844143	Decommisioned	
DB074	DNG		ECP						C	560195	6844202	Geotextile under embankment.	
DB075	DNG		ECP						C	559766	6844484	Geotextile under embankment.	

Features: **AC** = Access Points, **BP** = Borrow Pits, **DNG** = Drainage (Roadside Ditch, Run-off Control Structures, etc.), **Q** = Quarries, **RA** = Rest Area, **RC** = Rock Cuts/ Slide Areas, **PO** = Pull Out, **CV** = Culvert, **MP** = Multiplate, **BR** = Bridge, **UC** = Utility encroachment /Crossing, **IS** = Insulated Structure, **RS** = Road Surface, **GS** = Granular Source / Stockpile, **WX** = Wildlife Crossing; **Engineering Components:** **US** = User Safety (e.g. Avalanche / Wildlife Area), **IC** = Icing Control, **RV** = Vegetation (Existing Material, Revegetating & Reclaimed Areas), **SF** = Snow Fence (drifting control structure), **SR** = Snow Removal, **EC** = Erosion Control, **ECP** = Erosion Control Protected by Geotextile, **WM** = Waste Management, **OH** = Outhouse, **GT** = Geotextile / Granular Filters; **Environmental Components:** **CU** = Cultural Use, **HTG** = Heritage, **BL** = Boat Launch, **FH** = Fish and/or Fish Habitat, **RCP** = Residential / Commercial Property, **WQ** = Water Quality, **REC** = Recreation, **WH** = Wildlife and/or Wildlife Habitat, **SV** = Scenic Viewing

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit		Easting	Northing	
BC001	DNG		ECP						C	559342	6844637	Geotextile under embankment.
BC002	MP		IC		FH				P	558963	6844907	Possible flooding; Geotextile under bed, channel inlet & outlet.
BC003	MP		IC		FH				P	557958	6845614	Geotextile under bed, channel inlet & outlet
BC004	MP				FH				P	557645	6845736	Geotextile under bed, channel inlet & outlet
BC005	CV		IC				MS00-147, 31/12/05	YA8Q530, 14/09/01	P	557498	6845784	Clean out sediment pond with eductor truck.
BC006	DNG		ECP						C	556954	6846141	Geotextile under embankment.
BC007	DNG		ECP						C	556520	6846669	Geotextile under embankment.
BC008	MP		IC		FH				P	556327	6846852	Clean out sediment pond with eductor truck; Geotextile under bed, channel inlet & outlet.
BC009	DNG		ECP						C	555116	6848172	Geotextile under embankment; Surface distortions due to differential settlement.
BC010	RC								P	553803	6849056	Monitor rock bolts on Raven's Rock
BC011	RS								C	553628	6849162	Surface distortions due to differential settling
BC012	AC				CU				P	553076	6849641	
BC013	DNG		ECP						C	552740	6849879	
BC014	DNG		ECP						C	551960	6850601	Geotextile under embankment; Discontinuous geotextile on both sides of highway.
BC015	DNG		ECP						C	551347	6851233	Geotextile under embankment.
BC016	RC		US						C	551222	6851382	Remove fallen rock to Edit Creek bank when cleaning out ditch
BC017	BR				WQ	FH	MS94-024, 04/09/96		P	550630	6852442	
BC018	AC								P	550551	6852546	Temporary diking for construction
BC019	AC				RCP				P	550341	6852834	Pine Valley
BC020	MP								P	550230	6852978	Geotextile under bed, inlet rip-rap, and out let channel.
BC021	MP								P	549997	6853290	Geotextile under bed, inlet rip-rap, and out let channel.
BC022	MP								P	549497	6853842	Geotextile under bed, inlet rip-rap, and out let channel.
BC023	AC	GS	RV						P	548702	6854431	115-F-02; contains treated hydrocarbon contaminated soil; 1847 Pit
BC024	MP								P	548035	6855087	Geotextile under bed, inlet rip-rap, and outlet channel.
BC025	AC				REC	CU			P	547751	6855396	
BC026	MP								P	546981	6856109	Geotextile under bed, inlet rip-rap & outlet channel
BC027			GT						P	546633	6856338	Geotextile under embankment.
BC028	MP								P	546416	6856454	Geotextile under bed, inlet & outlet channels.
BC029			GT						P	546051	6856815	Geotextile under embankment.
BC030	DNG				FH				P	545391	6857526	Maintain rip-rap berm; CAUTION, fish habitat

Beaver Creek Highway Maintenance Section (km 1834.2 to km 1965.7)

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment	
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit		Easting	Northing		
BC031	MP								P	545237	6857664	Geotextile under bed, inlet rip-rap, and outlet channel.	Beaver Creek Highway Maintenance Section (km 1834.2 to km 1965.7)
BC032	BR				WQ	FH	MS94-024, 04/09/96		P	545097	6857978		
BC033	AC				REC				P	544804	6858526	Lake Creek Campground	
BC034	DNG		ECP						C	544605	6858814	Geotextile under embankment.	
BC035	DNG		ECP						C	543586	6860268	Geotextile under embankment.	
BC036	CV		IC						P	543480	6860382	Eductor truck clean out lower pipes	
BC037	CV		IC						P	543437	6860457	Eductor truck clean out lower pipes	
BC038	DNG		ECP						C	543198	6860785	Geotextile under embankment.	
BC039	CV		IC						P	542803	6861335	Eductor truck clean out lower pipes	
BC040	CV		IC						P	542762	6861420	Eductor truck clean out lower pipes	
BC041	DNG		ECP						C	542493	6861892	Geotextile under embankment.	
BC042	Q							YA8E514, 14/09/00	P	542572	6862088	Decommissioned	
BC043	DNG		ECP						C	542070	6862256	Geotextile under embankment.	
BC044	MP				FH				P	540730	6863327	Fish in area instream construction window July 1 to Sept 30; Geotextile under bed, inlet and outlet cahnnels & plunge pool in outlet channel; fish in area.	
BC045	PO				CU				P	540662	6863370		
BC046	DNG		ECP						C	538640	6864252	Discontinuous geotextile on both slopes.	
BC047	RS								C	538119	6864694	Surface distortions due to differential settling	
BC048	DNG		REV						C	537795	6864915		
BC049	DNG		ECP						C	537784	6865005	Geotextile under embankment; discontinuous geotextile on both slopes.	
BC050	AC				WH	SV			P	536816	6865556		
BC051	RA		WM	OH					P	536816	6865556		
BC052	DNG		ECP						C	535939	6866236	Geotextile under embankment.	
BC053	Q							YA8E514, 14/09/00	P	535076	6867012	Decommissioned	
BC054	DNG		REV						C	534376	6867183		
BC055	DNG		REV				MS99-143, 01/09/01		C	532512	6868895		
BC056	CV		IC						P	532140	6869319	Perforated Pipes.	
BC057			GT						C	531362	6870132	Geotextile under embankment.	
BC058	MP		IC						P	531056	6870513	Engineering icing control design feature constructed, do not disturb; Geotextile under bed, inlet & outlet channels.	
BC059	AC		SR		RCP				P	530858	6870640	Auxiliary lane taper, Koidern River Lodge	
BC060			GT						C	530750	6870635	Geotextile under embankment.	
BC061	BR				WQ	FH	MS94-024, 04/09/96; MS99-143, 01/09/01		P	530634	6870607	North end of Koidern bridge structure subject to movement due to permafrost.	
BC062			GT						C	529908	6870370	Geotextile under embankment; Surface distortions due to differential settling.	
BC063			GT						C	529276	6870434	Surface distortions due to differential settling; Geotextile under embankment.	
BC064	AC				CU	RCP			P	529021	6870681	Doug Dickson Recreational Property	

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment	
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit		Easting	Northing		
BC065	CV				FH				P	528993	6870710	Window for instream work is June 30 - March 30 annually	Beaver Creek Highway Maintenance Section (km 1834.2 to km 1965.7)
BC066	AC				RCP				P	527369	6872354	Access to Unknown Title	
BC067	AC				RCP				P	526554	6872475	Access to Lot 35: Caulene Beatty and Bear Flats Lodge (Gulfian Resources Ltd.)	
BC068	AC				RCP				P	526358	6872505	Access to Lot 36: Edith Langley, Non-Titled Lot 28, and Lot 29: Harry Versluce	
BC069	AC	GS	REV						P	525886	6872572	115-F-01	
BC070	AC								P	524950	6872625		
BC071	AC				RCP				P	524196	6872624	White River Lodge	
BC072	AC	Q						YA7E292, 31/03/98	P	523583	6872834	Stockpile	
BC073	BR				WQ	FH			P	523209	6872918	Monitor cut slope North of White River bridge for erosion	
BC074	DNG		REV						C	522842	6873074	Revegetate; no clover between White River and Beaver Creek, will attract caribou. Waste area south of Onion Lake contains possible borrow material	
BC075	DNG		EC						P	522541	6873569		
BC076	DNG		ECP						C	522098	6874130	Geotextile under embankment.	
BC077	RS								C	522095	6875228	Surface distortions due to differential settling	
BC078			GT						C	522358	6876368	Geotextile under embankment.	
BC079	DNG		ECP						C	522225	6876840	Access to Lots 38 and 39: NWTEL (Horsecamp Hill Comm. Tower)	
BC080			GT						C	522077	6877096	Geotextile under embankment.	
BC081			GT						C	521096	6878064	Geotextile under embankment.	
BC082	AC				RCP				P	520203	6878461	Access to Lots 38 and 39: NWTEL (Horsecamp Hill Comm. Tower)	
BC083	BP								P	520195	6878611	NWTEL	
BC084	AC				WM				P	519424	6879365		
BC085	DNG		REV						C	519075	6880044	Revegetate; no clover between White River and Beaver Creek, will attract caribou.	
BC086			GT						C	518762	6880510	Geotextile under embankment.	
BC087	Q								P	518821	6880762	Decommissioned	
BC088	DNG		ECP						C	518470	6880979	Geotextile under embankment.	
BC089					FH				P	518001	6881211	Monitor fish compensation feature	

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment	
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit		Easting	Northing		
BC090	AC				HTG				P	518155	6881304		Beaver Creek Highway Maintenance Section (km 1834.2 to km 1965.7)
BC091	DNG		ECP						C	518080	6881716		
BC092	MP				FH				P	517973	6882031	Monitor Moose Creek channel stability upstream of multiplate annually; Geotextile under bed, inlet rip-rap and outlet channel.	
BC093			GT						C	517558	6884107	Geotextile under embankment.	
BC094	AC	GS	REV		RCP				P	517541	6884202	Beat Ledergerber (Commercial Sawmill); 115 - K - 05; Revegetate, no clover between White River and Beaver Creek, will attract caribou.	
BC095	AC				RCP				P	517604	6884272	Unknown Title;Revegetate, no clover between White River and Beaver Creek, will attract caribou.	
BC096	MP				FH		MS97-088, 31/10/22		P	517532	6884273	Sanpete Creek subject to flash-flooding; Geotextile under bed and outlet channel; concrete collar on inlet.	
BC097	MP				FH		MS97-088, 31/10/22		P	517469	6884866	Geotextile under bed inlet and outlet rip-rap & outlet channel; Rip-Rap in outlet channel.	
BC098			GT						C	517485	6885121	Geotextile under embankment.	
BC099	WX				WH				C	516867	6885611		
BC100	DNG		ECP						C	517520	6885776	Geotextile under embankment.	
BC101			GT						C	517231	6887018	Geotextile under embankment.	
BC102	DNG		ECP						C	516994	6887571	Geotextile under embankment.	
BC103			GT						C	516804	6888221	Geotextile under embankment.	
BC104	MP		GT						P	516627	6889204	Geotextil under bed, outlet Rip-Rap; Concrete collar on inlet; Sub-drain both sides; Baffles within multiplate; Getotextile under rock groin Rip-Rap above inlet channel.	
BC105	DNG		REV						C	516665	6889599	Revegetate; no clover between White River and Beaver Creek, will attract caribou. Waste area south of Onion Lake contains possible borrow material	
BC106			GT						C	516552	6889703	Geotextile under embankment.	Destruction
BC107	DNG		REV						C	516203	6891179	Revegetate; no clover between White River and Beaver Creek, will attract caribou. Waste area south of Onion Lake contains possible borrow material	
BC108	RS								C	516348	6891680	Surface distortion due to differential settling	
BC109			GT						C	516390	6891880	Geotextile under embankment.	
BC110	DNG		REV						C	516357	6892374	Revegetate; no clover between White River and Beaver Creek, will attract caribou. Waste area south of Onion Lake contains possible borrow material	
BC111	PO		SR						P	516548	6892473		
BC112	RA		WM	OH					P	516548	6892473		

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment	
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit		Easting	Northing		
BC113	DNG								C	516634	6892662		Bay Highway Maintenance Section (km 1694 to km 1834.2)
BC114			GT						C	516653	6892877	Geotextile under embankment.	
BC115	MP				FH				P	516819	6893531	Geotextile under bed, inlet & outlet channels and plunge pool outlet; backfill inside multiplate.	
BC116	AC				CU				P	516802	6893601	Chisana Trail - Parks Canada	
BC117	DNG		ECP						C	516847	6894950	Geotextile on both slopes; Geotextile under embankment.	
BC118	DNG		ECP						C	516194	6896338	Geotextile under embankment; Protected slopes at widened part of highway adjacent to Mud Mountain.	
BC119			GT						C	515994	6897380	Geotextile under embankment.	
BC120	DNG		ECP						C	516001	6897996	Geotextile on both slopes; Geotextile under embankment.	
BC121			GT						C	515944	6899576	Geotextile under embankment.	
BC122	RS								C	516141	6900424	Surface distortions due to differential settling.	
BC123	AC				CU				P	516148	6900391		
BC124	AC		SR		REC				P	516190	6900520	Auxiliary lane taper at Snag Junction	
BC125	AC				REC				P	516186	6900787	Snag Campground	
BC126			GT						P	516185	6900871	Geotextile under embankment.	
BC127	AC								C	516090	6901931		
BC128	DNG		ECP						C	516403	6902834	Geotextile under embankment; Surface distortion due to differential settling; protected slopes both sides; Old borrow source used for ditch capping.	
BC129	AC	BP							P	516450	6903234		
BC130	AC								P	516365	6903621		Beaver Cre
BC131			GT						C	516048	6903874	Geotextile under embankment.	
BC132			GT						C	515493	6903999	Geotextile under embankment.	
BC133	DNG		REV						C	513906	6904177	Revegetate; no clover between White River and Beaver Creek, will attract caribou.	
BC134	WX								C	512854	6904074	Chisana caribou herd seasonal migration	
BC135		BP								512777	6904736	Material to be used for ditch rehabilitation in areas affected by permafrost induced subsidence.	

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment	
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit		Easting	Northing		
BC136	DNG		REV						C	512748	6904756	Revegetate; no clover between White River and Beaver Creek, will attract caribou.	Beaver Creek Highway Maintenance Section (km 1834.2 to km 1965.7)
BC137			GT						C	511871	6905977	Geotextile under embankment.	
BC138	PO		SR	WM					P	511535	6906245		
BC139			GT						C	511382	6906414	Geotextile under embankment.	
BC140	RS								C	511230	6906775	Surface distortions due to differential settling.	
BC141			GT						C	511284	6907135	Geotextile under embankment.	
BC142			GT						C	511188	6907682	Geotextile under embankment.	
BC143	MP				FH				P	510861	6908032	Geotextile under bed, inlet Rip-Rap and outlet channel; Rock apron in outlet channel.	
BC144	MP				FH				P	509725	6909136	Waste area placed upstream for stream channel control; monitor multiplate headwall for structural integrity, damaged bolts. Geotextile under bed, inlet and outlet channels; Rock apron in outlet channel.	
BC145	DNG		ECP						C	509192	6909923	Geotextile under embankment.	
BC146			GT						C	508652	6911584	Geotextile under embankment.	
BC147	IS								P	508545	6911874	Permafrost monitoring, thermistors installed	
BC148			GT						C	507556	6912867	Geotextile under embankment	
BC149	DNG		REV						C	507570	6912985	Revegetate; no clover between White River and Beaver Creek, will attract caribou.	
BC150			GT						C	507305	6913508	Geotextile under embankment	
BC151			GT						C	507256	6914260	Geotextile under embankment	Beaver Creek Hig
BC152	BR				WQ	FH	MS98-124, 31/12/04		P	506938	6914784		
BC153	AC				RCP					506823	6914911		
BC154	AC	BP	REV						P	506475	6915660	Access provides flood protection - 115-K-08	
BC155	CV								P	506369	6916279	Maintain culverts' integrity for Beaver Creek drainage.	
BC156	RS								P	506281	6916387		
BC157	AC								P	506294	6916510	Thermistor string, manual reading; YTG Highway Maintenance Camp: Beaver Creek	
BC158	CV								P	506580	6917613	Maintain culverts' integrity for Beaver Creek drainage.	

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment	
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit		Easting	Northing		
BC159	AC		SR						P	506772	6918268		Alaska Highway Maintenance Section (km 1834.2 to km 1965.7)
BC160	PO		WM	OH					P	506772	6918268		
BC161	AC		SR						P	507128	6919315	Beaver Creek Airport	
BC162	AC				RCP				P	507265	6919750	Canada Customs	
BC163	UC								P	507422	6920283		
BC164	AC				RCP				P	507490	6920652	Access to Lots 30 & 31: Not Titled	
BC165	AC	GS	WM						P	507519	6921018	115-K-07	
BC166	AC	GS	REV						P	507630	6923068	115-K-01	
BC167	MP				FH				P	506826	6927196	Monitor upstream berm for failure; Concrete collar on inlet; Geotextile under bed, inlet and outlet rip-rap, and channels; Granular drains on both sides; Granular material within multiplate.	
BC168	RS								C	507054	6928044	Surface distortions due to differential settling	
BC169	MP				FH				P	507205	6929171	Geotextile under bed, inlet and outlet channel and rip-rap; Rip-Rap berm in outlet channel.	
BC170	AC				CU	HTG			P	507203	6929651	Sourdough Corner	
BC171	PO		SR	WM					P	507045	6929825		
BC172	MP				FH				P	505766	6930952	Geotextile under bed, inlet and outlet channel and rip-rap; Rip-Rap berm in outlet channel.	
BC173	CV				FH				P	505516	6930970		
BC174	DNG		ECP						C	504357	6930936		
BC175			GT						C	503865	6931412	Geotextile under embankment	
BC176	DNG		REV						C	503909	6931540		
BC177			GT						C	503674	6931811	Geotextile under embankment	Beaver Creek Highway Maintenanc
BC178	DNG		ECP						C	503202	6932068	Geotextile under embankment	
BC179	AC				RCP				P	502920	6932122	Access to Lot 1001: Joseph Ledergerber	
BC180			GT						C	502320	6932409	Geotextile under embankment	
BC181			GT						C	501937	6932716	Geotextile under embankment	
BC182	RS		ECP						C	500999	6933529	Monitor slopes for movement, "km 1955 slide"; Geotextile under embankment.	
BC183			GT						C	501115	6934160	Geotextile under embankment.	
BC184	DNG		ECP						C	501157	6934387	Geotextile under embankment.	
BC185	AC	BP	REV						C	501089	6934957	Decommisioned	
BC186			GT						C	501162	6934997	Geotextile under embankment.	
BC187	DNG		ECP						C	501226	6935488	Geotextile under embankment.	
BC188	DNG		ECP						C	501798	6937008	Geotextile under embankment.	
BC189	DNG		REV						C	501670	6937563		

INVENTORY OF FEATURES and COMPONENTS for THE SHAKWAK SPECIAL AREAS MAINTENANCE GUIDELINES

Feature ID	Highway Feature		Engineering Component		Environmental/Aesthetic Component		Licences		Point or Continuous Feature	X,Y Coordinates (UTM Zone 7 NAD83)		Comment
	Feature 1	Feature 2	Component 1	Component 2	Component 1	Component 2	Water Use Licence	Land Use Permit		Easting	Northing	
BC190	MP		IC		FH		MS93-001, 01/08/94		P	502084	6937994	Slope protection both sides; Geotextile under bed, inlet and outlet channels and rip-rap; Rock apron in outlet channel; Potential flooding at Little Scottie Creek.
BC191	DNG		ECP						C	502281	6938767	Geotextile under embankment; Slope protection both sides.
BC192	DNG		REV						C	502266	6939398	
BC193	DNG		ECP						C	502364	6939478	
BC194	DNG		ECP						C	502207	6939802	Geotextile under embankment.
BC195	AC				RCP				P	501740	6940970	Access to Lot 20: NWTEL
BC196	AC				RCP				P	501625	6941256	Indian and Inuit Affairs Residential Reserve
BC197			GT						C	501582	6941374	Geotextile under embankment.
BC198	AC								P	501313	6941677	
BC199	MP				FH				P	501191	6941797	Geo textile under bed, inlet and outlet channels and Rip-Rap; Rock apron in outlet channel.
BC200	PO				HTG				P	499937	6942715	

ce Section (km 1834.2 to km 1965.7)

Features: **AC** = Access Points, **BP** = Borrow Pits, **DNG** = Drainage (Roadside Ditch, Run-off Control Structures, etc.), **Q** = Quarries, **RA** = Rest Area, **RC** = Rock Cuts/ Slide Areas, **PO** = Pull Out, **CV** = Culvert, **MP** = Multiplate, **BR** = Bridge, **UC** = Utility encroachment /Crossing, **IS** = Insulated Structure, **RS** = Road Surface, **GS** = Granular Source / Stockpile, **WX** = Wildlife Crossing; **Engineering Components:** **US** = User Safety (e.g. Avalanche / Wildlife Area), **IC** = Icing Control, **RV** = Vegetation (Existing Material, Revegetating & Reclaimed Areas), **SF** = Snow Fence (drifting control structure), **SR** = Snow Removal, **EC** = Erosion Control, **ECP** = Erosion Control Protected by Geotextile, **WM** = Waste Management, **OH** = Outhouse, **GT** = Geotextile / Granular Filters; **Environmental Components:** **CU** = Cultural Use, **HTG** = Heritage, **BL** = Boat Launch, **FH** = Fish and/or Fish Habitat, **RCP** = Residential / Commercial Property, **WQ** = Water Quality, **REC** = Recreation, **WH** = Wildlife and/or Wildlife Habitat, **SV** = Scenic Viewing