



Authorization No: 10-HPAC-PA6-00046

**FISHERIES ACT SUBSECTION 35(2) AUTHORIZATION FOR WORKS OR UNDERTAKINGS
AFFECTING FISH HABITAT**

Authorization issued to:

Name: Emergency Management BC, Ministry of Public Safety and Solicitor General
Attention: Ann Griffin, Project Manager
Address: 2nd Floor, 525 Fort Street, Victoria, BC, V8W 9J1
Telephone: (250) 953-4098
FAX: (250) 953-4081

Herein referred to as the "Proponent"

Location of Project

The work is located within Fraser River at Tranmer Bar, 5 km upstream of the Highway 9 bridge at Agassiz, BC.

Latitude and longitude: 49° 13' 24" N - 121° 43' 06" W

Valid Authorization Period

The valid authorization period for the harmful alteration, disruption and destruction of fish habitat associated with the works and activities is:

From: January xx, 2011 To: March 15, 2011

The valid Authorization periods for other conditions of this Authorization are as set out below as Conditions of Authorization.

Description of Work

The harmful alteration, disruption and destruction of fish habitat hereby Authorized is:

- the removal of 167,000 ± 10% cubic metres of riverbed sediment affecting 260,000 square metres of fish habitat on Tranmer Bar in the Fraser River;
- the construction, operation and decommissioning of a temporary borrow pit affecting 2,500 square metres of fish habitat on Spaeti Bar in the Fraser River;
- the placement and removal of a temporary eastern abutment for a bridge affecting up to 50 square metres of high bar fish habitat on the margin of the Tranmer Bar side channel;



Authorization No: 10-HPAC-PA6-00046

**FISHERIES ACT SUBSECTION 35(2) AUTHORIZATION FOR WORKS OR UNDERTAKINGS
AFFECTING FISH HABITAT**

- the placement and removal of a temporary western abutment for a bridge affecting up to 440 square metres of in-stream fish habitat in the Tranmer Bar side channel;
- the placement and removal of 2 sets of 2 x 18" diameter piles to support the bridge decks and affecting up to 2 square metres of in-stream fish habitat in the Tranmer Bar side channel; and
- the construction, operation and decommissioning of a temporary haul road affecting up to 14,000 square metres of fish habitat on Spaeti and Tranmer Bars.

The authorized works and activities are described in the following documents:

- drawing package titled "*Temporary Bridge Crossing Over Fraser River Near Chilliwack, B.C. Tranmer Bar Bridge*", dated January 23, 2009 and including engineering drawings 08-GC-0174-1/Sheet 1 Rev'0, Sheet 2 Rev'0, Sheet 3 Rev'0, Sheet 4 Rev'1 and Sheet 5 Rev'0 prepared by All North Consulting Engineers & Surveyors referencing engineering drawings 3751-SK-511 Rev'2, 3751-SK-512 Rev'3, 3751-SK-513 Rev'3 and 3751-SK-514 Rev'1 prepared by Associated Engineering (**Schedule 1**);
- drawing package titled "*Emergency Management British Columbia 2011 Fraser River Sediment Removal Tranmer Bar Site Plan*" dated January 10, 2011 and including engineering drawings SW7 Rev'3 and SW9 Rev'3, and site plan drawing SW8 Rev'1 showing the access route (dated October 7, 2010), all prepared by Kerr Wood Leidal Associated Ltd (**Schedule 2**).

Conditions of Authorization

1. The conditions of this Authorization notwithstanding, should the above works or undertaking, due to weather conditions, different soil or other natural conditions, or for any other reason, appear, in the opinion of Fisheries and Oceans Canada ("DFO") likely to cause greater impacts than the parties previously contemplated, then DFO may direct the Proponent, and its agents, and contractors, to suspend or alter works and activities associated with the project, to avoid or mitigate adverse impacts to fisheries resources. DFO may also direct the Proponent and its agents, and contractors, to carry out at the Proponents' expense any works or activities deemed necessary by DFO to avoid or mitigate further adverse impacts to fisheries resources. In circumstances where DFO is of the view that greater impacts may occur than were contemplated by the parties, DFO may also modify or rescind this Authorization. If the authorization is to be changed the Proponent will be given an opportunity to discuss any proposed modifications or rescission.
2. Conditions that relate to the **Proponent's plan**:



**FISHERIES ACT SUBSECTION 35(2) AUTHORIZATION FOR WORKS OR UNDERTAKINGS
AFFECTING FISH HABITAT**

- 2.1. The Proponent confirms that all plans and specifications relating to this Authorization have been duly prepared and reviewed by appropriate professionals working on behalf of the Proponent. The Proponent acknowledges that they are solely responsible for all design, safety and workmanship aspects of all of the works associated with this Authorization.
 - 2.2. The construction must comply with those criteria as identified within this Authorization. Harmful alteration, disruption or destruction of fish habitat other than that specifically identified within this Authorization is not permitted.
 - 2.3. This Authorization does not permit the destruction of fish. Section 32 of the *Fisheries Act* prohibits the destruction of fish unless specifically authorized by the Minister of Fisheries and Oceans Canada.
 - 2.4. This Authorization does not permit the blockage of fish migration or passage. Access for fish must be maintained between areas upstream and downstream of the works authorized herein.
 - 2.5. Works will be conducted following environmental protection measures outlined in the following document:
 - 2.5.1. "*Fish Habitat Assessment Mitigation Plan and Monitoring Program – Tranmer Bar, Fraser River*", Section 4.6 'General Mitigation Measures' and Section 4.5.2 'Bridge', prepared by Scott Resource Services and dated November 9, 2010 (**Schedule 3**).
3. Conditions that relate to the **mitigation** of potential harmful alteration, disruption or destruction of fish habitat. The following measures shall be implemented:
- 3.1. In-stream work is limited to the construction and de-commissioning of the western bridge abutment. Machinery shall be operated according to best management practices so as to minimize disturbance to in-stream fish habitat. This includes appropriate sediment control measures to prevent fine sediment from smothering downstream fish habitat.
 - 3.2. A fish salvage will be carried out prior to in-stream works for construction of the western bridge abutment, and the work area remain isolated from fish access for the duration of the works.
 - 3.3. The haul road shall be constructed and maintained along a route that minimizes the area of disruption to fish habitat. If the haul road must cross any residual channels, culverts installed following best management practices must be used to maintain connectivity with downstream habitat.
 - 3.4. The borrow pit on Spaeti Bar, required for haul road construction, shall not exceed 2,500 square metres in area. The borrow pit shall be fully replenished during project de-commissioning with riverbed sediment of similar grain size distribution as the surrounding



Authorization No: 10-HPAC-PA6-00046

**FISHERIES ACT SUBSECTION 35(2) AUTHORIZATION FOR WORKS OR UNDERTAKINGS
AFFECTING FISH HABITAT**

- bar, which includes a layer of clean and coarse sediment being replaced on the bar surface. The site shall be contoured to match with the existing bar surface.
- 3.5. The outer limits of the excavation area, as shown on the detailed plans in **Schedule 2**, must be clearly staked on the gravel bar prior to commencement of work and remain marked until all work is completed. Fluctuating water levels should be anticipated and an adequate setback (minimum 10 m) from the water's edge is required in consideration of the low angle bar surface. Gravel removal shall be limited to the extent and elevations described herein unless approved in writing in advance by DFO staff.
 - 3.6. The excavation must tie into the existing bar elevation along the main channel and downstream removal boundaries to ensure flow conveyance during freshet and prevent fish stranding.
 - 3.7. The excavation design shall include morphologic features that function as rearing fish habitat over a range of flows. At a minimum, these features will include 3 bays and 7 open nooks along the inner edge of the removal area, and 3 topographic steps oriented crosswise to the river flow, as described in **Schedule 2**.
 - 3.8. Equipment or machinery shall not operate within 10 m of the wetted perimeter of Fraser River during gravel extraction, except as authorized herein for the construction and de-commissioning of the bridge crossing. Should the water level rise during the valid authorization period and risk flooding any work area, all equipment must be moved to higher ground and works within wetted areas ceased until water levels recede.
 - 3.9. A contingency plan, agreed upon by the contractor and environmental monitor, shall be communicated to DFO at the start of the works to prepare for the possibility of works being terminated prior to completion of the project (i.e., due to an early spring freshet or unforeseen operational delays). The plan shall describe measures to ensure the work site is de-commissioned according to conditions stated herein and *Fisheries Act* requirements.
 - 3.10. Any operations within the high water perimeter of the Fraser River must not result in the deposition of fine sediment (sand and silt) on the bar surface (e.g., sediment screener).
 - 3.11. Best management practices to contain fine sediment shall be applied and maintained during all project activities. It is the Proponent's responsibility to ensure that fine sediment does not smother fish habitat.
 - 3.12. Large woody debris occurring within the excavation boundary shall be stockpiled and then replaced on the bar surface following the excavation as directed by the environmental monitor or DFO staff.
 - 3.13. Riprap placed around the abutments of the bridge crossing shall be removed on completion of the excavation and the affected channel bank stabilized and contoured to match the natural bankline.



Authorization No: 10-HPAC-PA6-00046

**FISHERIES ACT SUBSECTION 35(2) AUTHORIZATION FOR WORKS OR UNDERTAKINGS
AFFECTING FISH HABITAT**

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- 3.14. All material and debris resulting from the works shall be removed from the site within the valid Authorization period. On completion of the work and no later than March 15, 2011, all haul roads shall be scarified and contoured to match the surrounding bar topography and the entire project area shall be returned to as natural a condition as possible.
4. Conditions that relate to the **compensation** for the loss of 260,000 square metres of fish habitat.
- 4.1. Sediment replenishment to the site in subsequent freshets is expected to facilitate habitat recovery. The Proponent shall complete post-excavation monitoring, as described below in condition 5.10, to evaluate habitat conditions and track habitat recovery over time. Repeated hydraulic habitat surveys are required specifically to evaluate the recovery of suitable habitat for select fish species within the excavation boundary. The results of this monitoring will be used to calculate an overall habitat balance resulting from the works and DFO will require fish habitat compensation of the Proponent in order to offset a negative habitat balance based on the magnitude and duration of the negative effect.
5. Conditions that relate to the **monitoring** of the *Project Plan*, the mitigation and the compensation, the "Monitoring Program":
- 5.1. All works, undertakings or activities associated with the project that have the potential to result in adverse impacts to fish, fish habitat and water quality shall be monitored by an appropriately qualified individual(s), deemed satisfactory by DFO (the "environmental monitor"), according to the standards outlined in **Schedule 4**.
- 5.2. A pre-commencement meeting shall occur between the Environmental Monitor and DFO to review the terms and conditions of the Authorization.
- 5.3. Any issues or concerns related to fish, fish habitat or compliance with this Authorization must be reported to DFO immediately, regardless of whether the environmental monitor determines that the issue has been resolved.
- 5.4. The environmental monitor shall, in consultation with, and at the discretion of DFO, monitor compliance of the work pursuant to the *Fisheries Act* and with the terms and conditions of this Authorization. The foregoing notwithstanding, the authority of the environmental monitor is subject always to the discretion of DFO. DFO does not delegate any authority under the *Fisheries Act* to the environmental monitor. The environmental monitor does not have the authority to change, modify, or revise, either the project or the terms and conditions of this Authorization.
- 5.5. The environmental monitor shall be provided the authority from the Proponent, in writing, to direct or stop any project activity and apply mitigation as required to avoid unauthorized



Authorization No: 10-HPAC-PA6-00046

**FISHERIES ACT SUBSECTION 35(2) AUTHORIZATION FOR WORKS OR UNDERTAKINGS
AFFECTING FISH HABITAT**

impacts to fish and fish habitat, and achieve compliance with the *Fisheries Act* and the terms and conditions of this Authorization.

- 5.6. The Proponent shall provide the environmental monitor and contractors working at the project site with a copy of this Authorization. A copy of this Authorization shall be retained onsite at all times.
- 5.7. An appropriately qualified individual shall monitor in-water pile driving with a hydrophone. As feasible, pressure levels will be recorded at a range of depths in the water column and at various distances and directions from the pile being driven. Pile driving must be halted should peak pressure exceed 30 kPa or if dead or injured fish are observed. Pile driving shall not resume until appropriate mitigation measures are implemented to ensure fish mortality or injury is prevented and peak pressure levels do not exceed 30 kPa.
- 5.8. The environmental monitor shall submit, by email to DFO, daily work updates during sensitive operations, and otherwise updates at a minimum 3-day interval, which include a tally of sediment removed to date, photographs, a summary of activities carried out, and identification of any environmental issues or incidents.
- 5.9. The Proponent shall, within 60 days of project completion, provide DFO with a detailed report that includes, but not be limited to, the following information:
 - 5.9.1. Details of the works and activities carried out, including photographs of the project area before, during, and after completion of the works.
 - 5.9.2. Results of the post-excavation topographic survey, including the total volume of sediment removed, total footprint area of the excavation, and comparative assessment of the site topography against that which was authorized herein (**Schedule 2**).
 - 5.9.3. Commentary on the works and activities conducted at the project site from an environmental perspective (e.g., fish observations in proximity to the site, changes in river water level, dust or noise issues associated with the sediment screeners, fine sediment deposition associated with the sediment screeners, efficacy of replacing a coarse sediment surface layer over the borrow pit, description of habitat compensation features constructed within the excavation area, etc).
 - 5.9.4. Identification of any environmental incidents or impacts that occurred (e.g., fuel spill, hydraulic fluid leak, machinery operation beyond the project boundary, sediment release into Fraser River) and details of specific mitigation measures put in place to address them.
- 5.10. The Proponent shall conduct a monitoring program (the "Monitoring Program") at the excavation site and appropriately selected reference sites. The Monitoring Program shall be conducted by an appropriately qualified individual(s) deemed satisfactory by DFO, and



**FISHERIES ACT SUBSECTION 35(2) AUTHORIZATION FOR WORKS OR UNDERTAKINGS
AFFECTING FISH HABITAT**

overseen by a Registered Professional Biologist. The Monitoring Program includes pre-excavation monitoring that was required for the environmental assessment prior to issuing of this Authorization. The Monitoring Program shall consist of the following:

5.10.1. One topographic survey has been completed prior to sediment removal on December 2, 2010 for the purpose of engineering construction design. Two topographic shall be conducted following sediment removal: 1) immediately following sediment removal prior to freshet; and 2) following the earlier of either a freshet with a peak daily flow of over 8,766 cubic metres per second (m^3/s , major freshet) or the freshet of 2013. Post-removal surveys are intended to assess the volume of gravel removed, footprint area disturbed, post-excavation profile of the site, and overall morphological impacts of the removal; therefore, the survey area shall be chosen in consultation with DFO to extend beyond the removal area to cover the area of potential morphological impact.

Within 60 days of completing each survey, the surveyor shall provide DFO with an appropriately scaled contour drawing of the survey area, including survey point locations and survey boundary, and the calculated volumetric change between survey periods.

5.10.2. Hydraulic surveys of the excavation area shall be conducted post-freshet in 2011 at a summer rearing flow of $\sim 4,000 m^3/s$ ($\pm 20\%$) to provide depth and velocity information sufficient for habitat modelling. The weighted usable area for select species shall be calculated within the excavation area using habitat suitability indices developed and available from DFO. A qualified professional will then compare these data to pre-excavation data to evaluate habitat recovery and calculate a habitat balance. The survey shall be repeated at a comparable discharge in 2011, then following the earlier of either a major freshet ($8,766 m^3/s$) or the freshet of 2013, and then every two years thereafter until habitat recovery at the site has been demonstrated to DFO or, if channel alignment has shifted, it is no longer relevant.

5.10.3. Surface sediment sampling using the Wolman or photographic method shall be conducted within all sedimentary units of the excavation area (Tranmer Bar), the borrow pit site (Spaeti Bar), and comparable reference areas. Sampling at all locations has occurred before commencement of the project, and shall be completed after the first freshet following gravel excavation, and after the first of either a major freshet ($>8,766 m^3/s$) or the freshet of 2013. One additional sampling episode is required at the borrow pit site prior to freshet in 2011.

5.10.4. Surface sediment sampling using the bulk sample method shall be conducted at locations where the sediment screener operates in order to evaluate the potential for fine sediment (sand and silt) impacts. Samples shall be collected from within the area of screener operation where fine sediment deposition is most likely to occur. A minimum of 5 screener locations shall be sampled, resulting in a minimum of 5



**FISHERIES ACT SUBSECTION 35(2) AUTHORIZATION FOR WORKS OR UNDERTAKINGS
AFFECTING FISH HABITAT**

replicate screener samples. An equivalent number of samples shall be collected from non-screener sites to represent the background sub-surface sediment size composition. All samples shall be a minimum of 5 kg to provide approximately 0.5% precision (based on Rood and Church (1994) and a d_{95} of <40 mm)¹. Samples will be dry-sieved by a qualified technician to determine size fraction weights down to <0.063 mm (silt) according to the Wentworth Scale.

- 5.10.5. Replicate benthic invertebrate sampling for baseline data was conducted on November 10, 2010 and is scheduled to take place once prior in removal in January 2011. Sampling shall be repeated three times following sediment removal for the purpose of impact assessment. The three sampling episodes shall occur: 1) in 2011/12 and in the same calendar month of the first pre-removal sampling episode, 2) in 2011/12 and in the same calendar month as the second sampling episode pre-removal, and 3) in the same calendar month of the first sampling episode after the earlier of either a major freshet (>8,766 m³/s) or the freshet of 2013. Sampling is to occur at four locations each time: within, or as proximal as possible to the excavation area, and at three appropriately chosen reference areas.
- 5.10.6. Habitat mapping was carried out according to classification methods of Church et al. (2000)² at two discharges (5,000 and 2,500 m³/s) before sediment removal on the declining limb of the hydrograph in 2010. Mapping shall be repeated in 2011 after completion of project activities and shall include engineered habitat features constructed as compensation for the project, as well as extend beyond the project boundary to evaluate channel nook habitats on lower Tranmer Bar.
- 5.10.7. Post-excavation white sturgeon sampling shall be carried out as described in a document prepared by BC Ministry of Environment titled Lower Fraser White Sturgeon Spawning and Early Juvenile Habitat Assessment, Mitigation and Monitoring Methodology, dated September 22, 2009 (**Schedule 5**).
- 5.10.8. Annual results of the Monitoring Program shall be submitted in electronic format to DFO by December 15th in each year of the Monitoring Program. The report shall include, but not be limited to, observations of fish habitat characteristics and availability, analyses of invertebrate density and community composition, observations and quantification of sediment replenishment and habitat recovery, site and aerial photographs, raw data as appendices, monitoring results and data analyses, and recommendations. Surface sediment photographs shall be provided to DFO in electronic format. A final report of the Monitoring Program shall be submitted to DFO by March 1st following the year of final monitoring (after either a major freshet >8,766 m³/s or the freshet of 2013).

¹ Rood, K. and M. Church. 1994. Modified freeze-core technique for sampling the permanently wetted streambed. North American Journal of Fisheries Management 14:852-861.

² Church, M., L. Rempel, and S. Rice. 2000. Morphological and habitat classification of the Lower Fraser River gravel-bed reach. UBC Dept of Geography, Vancouver, BC. 81 p.



Authorization No: 10-HPAC-PA6-00046

**FISHERIES ACT SUBSECTION 35(2) AUTHORIZATION FOR WORKS OR UNDERTAKINGS
AFFECTING FISH HABITAT**

5.11. All monitoring reports will be submitted to Laura Rempel, DFO Habitat Biologist, and to Rachael Eedy, BC Ministry of Natural Resource Operations Water Officer, by the dates specified within this Authorization.

5.12. If it is determined that compensation is required, DFO will determine in consultation with the Proponent appropriate compensation and monitoring conditions.

6. Conditions that relate to notification.

6.1. Written notification of the commencement of the work shall be provided to Laura Rempel, DFO Habitat Biologist (laura.rempel@dfo-mpo.gc.ca), at least 1 day prior to the start of work and again two days before its completion. Verbal notification at least 1 day prior to the start of work shall be provided to the DFO Mission field office (604-814-1055) and Chilliwack field office (604-824-3300).

6.2. DFO Fishery Officers and Habitat staff shall be allowed access to the entire work site for the purpose of observation and/or inspection during the work period of this Authorization, and the monitoring period related to this Authorization.

The holder of this Authorization is hereby authorized under the authority of subsection 35(2) of the *Fisheries Act*, R.S.C., 1985, c. F. 14, to carry out the work or undertaking described herein.

This authorization is valid only with respect to fish habitat and for no other purposes. It does not purport to release the Proponent from any obligation to obtain permission from or to comply with the requirements of any other regulatory agencies.

This Authorization does not permit the deposit of a deleterious substance in water frequented by fish. Subsection 36(3) of the *Fisheries Act* prohibits the deposit of any deleterious substances into waters frequented by fish except under conditions authorized by regulations made by Governor in Council.

Failure to comply with any condition of this Authorization may result in charges under the *Fisheries Act*.

This authorization form should be held on site and work crews should be made familiar with the conditions attached.



Authorization No: 10-HPAC-PA6-00046

**FISHERIES ACT SUBSECTION 35(2) AUTHORIZATION FOR WORKS OR UNDERTAKINGS
AFFECTING FISH HABITAT**

Date of issuance: January __, 2011

Approved by: _____
Jason Hwang

Title: Area Manager, BC Interior
Oceans, Habitat and Enhancement Branch
Fisheries and Oceans Canada

Emergency Management BC acknowledges that DFO has consulted with it regarding the terms of this Authorization, and confirms that it has reviewed and understands the terms of this Authorization, and it will comply with them.

Executed by an authorized signatory of
Emergency Management BC on
the 2 day of January, 2011 in the
presence of:



Witness (signature)

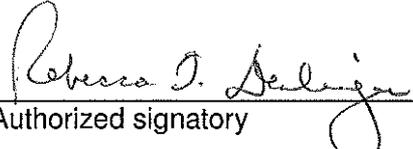
Dwaine Meredith

Name (print)

Manager

Title

Emergency Management BC

Per: 

Authorized signatory

Rebecca F. Denlinger

Name (print)

Fire & Emergency Management

Title
Commissioner / ADM



Authorization No: 10-HPAC-PA6-00046

**FISHERIES ACT SUBSECTION 35(2) AUTHORIZATION FOR WORKS OR UNDERTAKINGS
AFFECTING FISH HABITAT**

SCHEDULE 1

Drawing package titled "*Temporary Bridge Crossing Over Fraser River Near Chilliwack, B.C. Tranmer Bar Bridge*", dated January 23, 2009 and including engineering drawings 08-GC-0174-1/Sheet 1 Rev'0, Sheet 2 Rev'0, Sheet 3 Rev'0, Sheet 4 Rev'1 and Sheet 5 Rev'0 prepared by All North Consulting Engineers & Surveyors referencing engineering drawings 3751-SK-511 Rev'2, 3751-SK-512 Rev'3, 3751-SK-513 Rev'3 and 3751-SK-514 Rev'1 prepared by Associated Engineering (11 p.)

Authorization No: 10-HPAC-PA6-00046

FISHERIES ACT SUBSECTION 35(2) AUTHORIZATION FOR WORKS OR UNDERTAKINGS AFFECTING FISH HABITAT

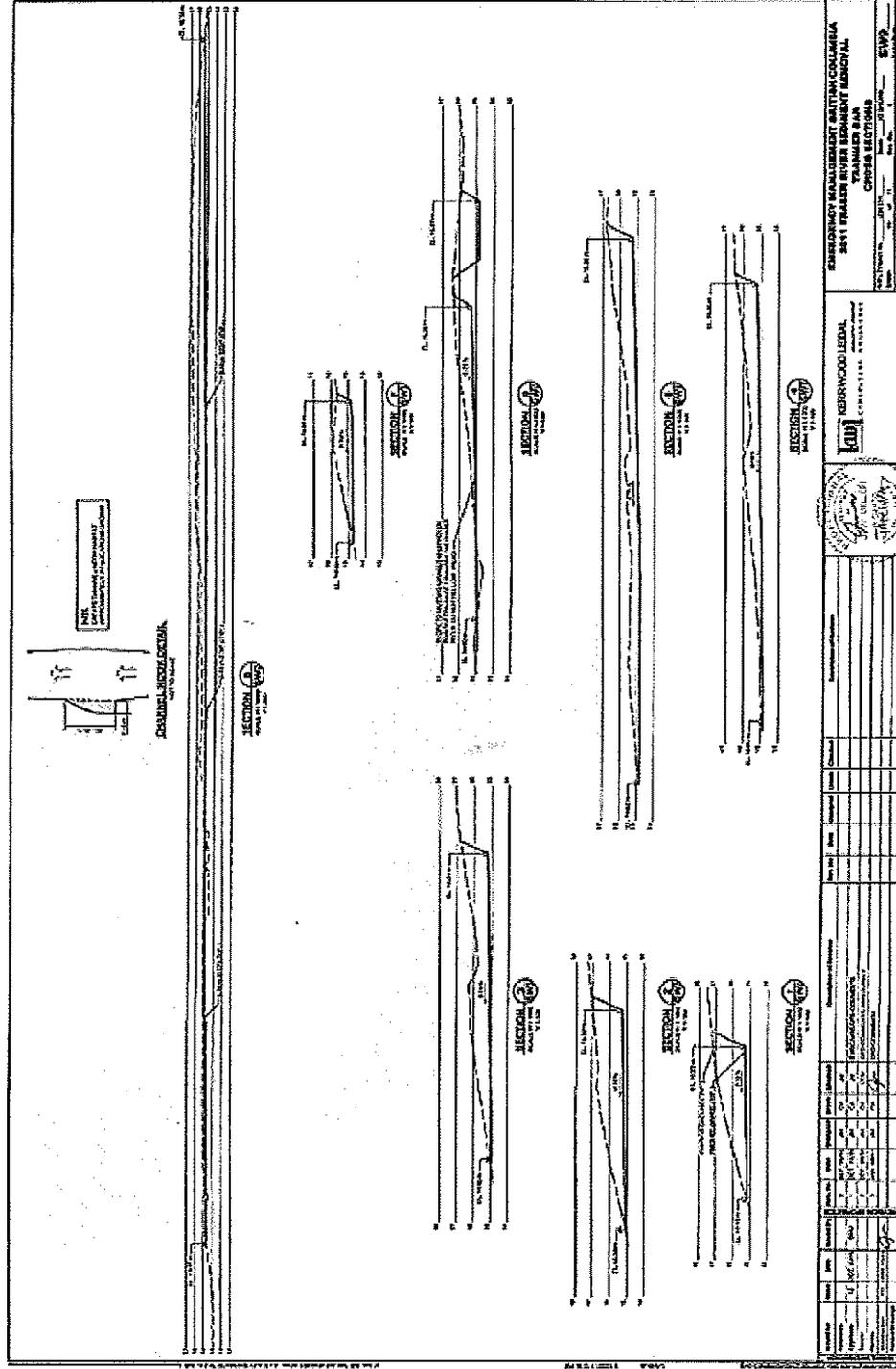
SCHEDULE 2-A





FISHERIES ACT SUBSECTION 35(2) AUTHORIZATION FOR WORKS OR UNDERTAKINGS AFFECTING FISH HABITAT

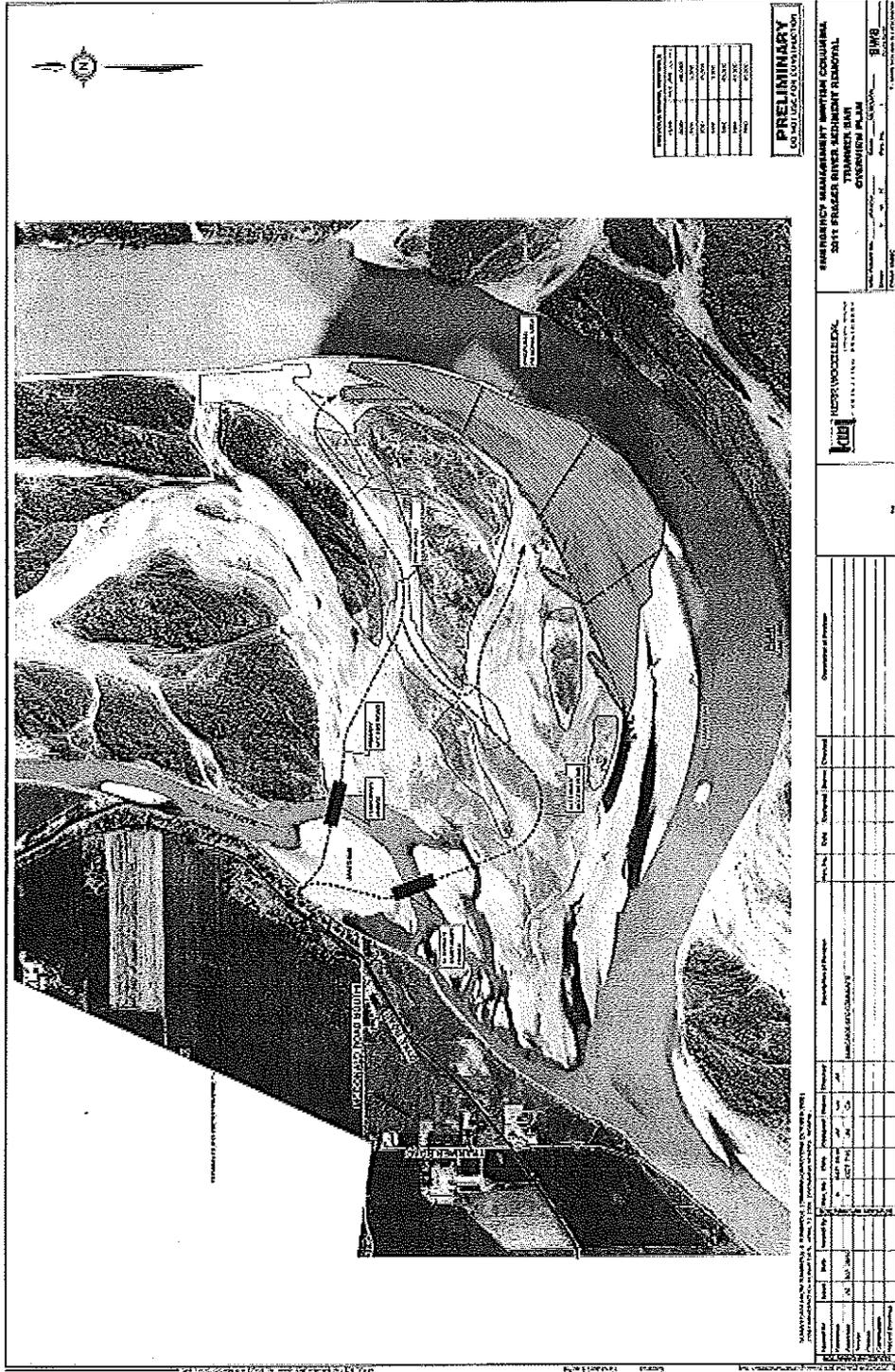
SCHEDULE 2-B



| SECTION 1 | | SECTION 2 | | SECTION 3 | | SECTION 4 | | SECTION 5 | | SECTION 6 | |
|-----------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|
| Station | Depth |
| 10+00 | 1.5 | 10+00 | 1.5 | 10+00 | 1.5 | 10+00 | 1.5 | 10+00 | 1.5 | 10+00 | 1.5 |
| 10+10 | 1.5 | 10+10 | 1.5 | 10+10 | 1.5 | 10+10 | 1.5 | 10+10 | 1.5 | 10+10 | 1.5 |
| 10+20 | 1.5 | 10+20 | 1.5 | 10+20 | 1.5 | 10+20 | 1.5 | 10+20 | 1.5 | 10+20 | 1.5 |
| 10+30 | 1.5 | 10+30 | 1.5 | 10+30 | 1.5 | 10+30 | 1.5 | 10+30 | 1.5 | 10+30 | 1.5 |
| 10+40 | 1.5 | 10+40 | 1.5 | 10+40 | 1.5 | 10+40 | 1.5 | 10+40 | 1.5 | 10+40 | 1.5 |
| 10+50 | 1.5 | 10+50 | 1.5 | 10+50 | 1.5 | 10+50 | 1.5 | 10+50 | 1.5 | 10+50 | 1.5 |
| 10+60 | 1.5 | 10+60 | 1.5 | 10+60 | 1.5 | 10+60 | 1.5 | 10+60 | 1.5 | 10+60 | 1.5 |
| 10+70 | 1.5 | 10+70 | 1.5 | 10+70 | 1.5 | 10+70 | 1.5 | 10+70 | 1.5 | 10+70 | 1.5 |
| 10+80 | 1.5 | 10+80 | 1.5 | 10+80 | 1.5 | 10+80 | 1.5 | 10+80 | 1.5 | 10+80 | 1.5 |
| 10+90 | 1.5 | 10+90 | 1.5 | 10+90 | 1.5 | 10+90 | 1.5 | 10+90 | 1.5 | 10+90 | 1.5 |
| 11+00 | 1.5 | 11+00 | 1.5 | 11+00 | 1.5 | 11+00 | 1.5 | 11+00 | 1.5 | 11+00 | 1.5 |

FISHERIES ACT SUBSECTION 35(2) AUTHORIZATION FOR WORKS OR UNDERTAKINGS AFFECTING FISH HABITAT

SCHEDULE 2-C





Authorization No: 10-HPAC-PA6-00046

**FISHERIES ACT SUBSECTION 35(2) AUTHORIZATION FOR WORKS OR UNDERTAKINGS
AFFECTING FISH HABITAT**

SCHEDULE 3

*"Fish Habitat Assessment Mitigation Plan and Monitoring Program – Tranmer Bar, Fraser River",
Section 4.6 'General Mitigation Measures' and Section 4.5.2 'Bridge',
prepared by Scott Resource Services and dated November 9, 2010*



**FISHERIES ACT SUBSECTION 35(2) AUTHORIZATION FOR WORKS OR UNDERTAKINGS
AFFECTING FISH HABITAT**

SCHEDULE 4-A

Specifications for On-site Environmental Monitoring of Active Sediment Removal Projects

Sediment removal for flood protection purposes is one component of a provincial flood protection strategy. Emergency Management BC (EMBC) contracts registered professional biologists to conduct on-site environmental monitoring of all sediment removal projects. The purpose of this document is to articulate standard practices acceptable to Federal Fisheries and Oceans Canada (DFO), the Ministry of Environment (MoE) and EMBC regarding the environmental monitoring of active sediment removal projects. All works at each permitted location that has, in the opinion of DFO or MoE, the potential for adverse impacts to fish or fish habitat resources, shall be monitored by appropriately qualified individual(s), deemed to be satisfactory for the project. The Environmental Monitor (the Monitor) shall monitor and direct all works on the project to ensure compliance with the Fisheries Act and the Water Act, and the conditions of all permitting authorizations. Prior to the beginning of sediment removal, the Monitor will meet with the sediment removal contractor (the Contractor) for a pre-start up meeting. At this meeting the Contractor will provide the Monitor with a detailed schedule of work outlining hours of operation, key timelines for the various elements of work, confirmed times for daily communication (in person and/or by telephone) and any other pertinent information. The Contractor will update this schedule as often as necessary to keep it current. Sediment removal projects typically occur between January 1 and March 15. The length of day can be up to 24 hours. The Monitor must be prepared to provide on-site environmental monitoring whenever sediment is being removed or when equipment is on site. This could include twenty-four hours a day, seven days a week. Ultimately it is at the discretion of the registered professional to objectively determine when it is necessary to be on site, but generally the following standards shall serve to guide those decisions.

- The Monitor will be on site at all times during mobilization and site layout (when crews are working or equipment is being transported to the site). This period will last approximately 5 days and possibly longer if a complex access structure is being installed.
- The Monitor will be on site at all times when an access structure or causeways is being installed or decommissioned and for all wet crossings
- The Environmental monitor will be on site at all times when work is occurring within any wetted areas of the river, or when work is occurring in proximity to sensitive fish or riparian habitat, or when the work is within 15m of any wetted areas of the river channel.
- Once the project is progressing smoothly it is at the discretion of the Monitor whether an on-site presence is required, and if so for how long.
- At a minimum the Monitor will be on site once per day to assess progress and worksite conditions.
- The Monitor and the Contractor will be in daily discussion to review and agree upon the day's activities.
- The Monitor will notify MoE, DFO and EMBC of incidents potentially resulting in negative environmental impacts within two hours of occurrence. Contact can be initiated through e-mail or by telephone call to the key contacts at each agency. The key contacts for MOE, DFO and EMBC for incidents reporting will be specified and communicated to the Monitor by EMBC prior to the commencement of work on any given project.



**FISHERIES ACT SUBSECTION 35(2) AUTHORIZATION FOR WORKS OR UNDERTAKINGS
AFFECTING FISH HABITAT**

SCHEDULE 4-B

Specifications for On-site Environmental Monitoring of Active Sediment Removal Projects (cont)

The monitor will have the authority to take immediate action to address activities that are perceived to be non-compliant with the environmental monitoring program or and are perceived to be harmful or pose a risk to fish or fish habitat. The Monitor shall be responsible for:

- Monitoring of works or undertakings associated with the Project, ensuring that all works are in compliance with the conditions laid out in the authorizations and all other applicable legislation;
- Ensuring that all works are in accordance with acceptable practices;
- Maintaining a daily journal which shall be submitted daily (for the first seven days and weekly thereafter) to EMBC
- Maintaining a daily accurate tally of the sediment that has been removed;
- Monitoring daily water level records, information of activities occurring on the site, and record of any site visits by outside agencies or persons;
- Notifying the Agencies of potentially environmentally damaging events;
- Preparing post-construction monitoring reports.
- The Monitor has the authority to stop any or all work at his/her discretion. Neither DFO nor MoE delegate any authority under the Fisheries Act or the Water Act to the Monitor. The Monitor does not have the authority to change, modify or revise either the project or the terms and conditions of any authorization.



Fisheries and Oceans
Canada

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Authorization No: 10-HPAC-PA6-00046

**FISHERIES ACT SUBSECTION 35(2) AUTHORIZATION FOR WORKS OR UNDERTAKINGS
AFFECTING FISH HABITAT**

SCHEDULE 5

"Lower Fraser White Sturgeon Spawning and early Juvenile Habitat Assessment, Mitigation and Monitoring Methodology" prepared by the British Columbia Ministry of Environment, dated September 22, 2009 (working version, 14 p.)