Public Works and Government Services Canada

Requisition No. E0276-171348/A

MERX I.D. No. _____

SPECIFICATIONS
for

Steveston Wingdam No. 1 Deconstruction

FRASER RIVER, B.C.

Project No. R.074582.002 April, 2016

APPROVED BY:

_____ Aug. 22/2016.
Regional Manager A&E Date

_____ 2016-08-22
Construction Safety Coordinator Date

TENDER:

_____ Aug 23, 2016
Project Manager Date

Real Property Services Branch, Professional and Technical Services, Pacific Region
#641 – 800 Burrard Street, Vancouver, B.C. V6Z 2V8

SPECIFICATIONS

Division 1

Division 35

APPENDIX A – BOUND WITH SPECIFICATIONS

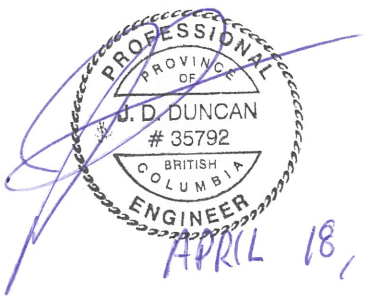
APPENDIX B – BOUND WITH SPECIFICATIONS

Appendix C – Bound with Specifications

APPENDIX D – BOUND WITH SPECIFICATIONS

DRAWINGS – BOUND SEPARATELY

01 of 04	Steveston Wingdam No.1 Deconstruction – Title Sheet
02 of 04	Steveston Wingdam No.1 Deconstruction – Extents & Survey Tie-in
03 of 04	Steveston Wingdam No.1 Deconstruction – Removal Details
04 of 04	Steveston Wingdam No.1 Deconstruction – Exposed Pile Layout



APRIL 18, 2016.

PART 1 GENERAL

1.1 Section Includes

.1 Location of site.
.2 Site conditions.
.3 Work covered by contract documents.
.4 Time of completion.
.5 Use of site.

1.2 Precedence

.1 Division 1 Sections take precedence over technical specification sections in other Divisions of these Project Specifications.

1.3 Related Sections

.1 Section 35 05 51 - Marine General Sitework.

1.4 Site Conditions

.1 Visit site before submitting tender. Make inquiries or investigations necessary to become thoroughly acquainted with site, soil, climatic, tidal conditions, and site access along with the nature and extent of the work.
.2 Submission of a tender will be deemed confirmation that the Contractor is familiar with the site and is conversant with all relevant conditions.
.3 All known discrepancies are to be brought to the attention of the Departmental Representative and are to be accounted for in the Contractor's Bid Price.

1.5 Location of Site

.1 The work is located on the south shore of Lulu Island roughly 2.5 km southeast from Steveston Village as shown on the drawings. The approximate co-ordinates of the site are 49° 06.7' N, 123° 09' W.
.2 The only structure on the site is the Steveston Wingdam No. 1 that is to be decommissioned.
.3 The site is adjacent to the City of Richmond Flood Control Dyke. No alterations are allowed to be made to this dyke.
.4 The site extends approximately from the upland area where there is some vegetation and a collection of driftwood debris, through a tidal marsh and into the submerged portion of the Fraser River;

coordinates of the work area boundaries are shown on the drawings.

1.6 Work Covered by Contract Documents

.1 The principal works to be executed and for which all materials, plant and labour are to be supplied by the Contractor as shown on the plans and in the specifications:

- .1 Remove/Dispose of those components of the structure within the removal boundary specified, including:
  - .1 Untreated timber piles
  - .2 Untreated timber walers
  - .3 Rock blanket scour protection
  - .4 Timber debris

1.7 References

.1 National Research Council of Canada (NRC):

- .1 National Building Code of Canada (NBC) 2015.

.2 See Section 01 35 33 for additional references.

1.8 Codes and Standards

.1 Perform work in accordance with the National Building Code, the Workers' Compensation Board of B.C., the Canada Labour Code, and any other code of provincial or local application provided that, in any case of conflict or discrepancy, the most stringent requirements shall apply.

.2 Meet or exceed requirements of specified standards, codes and referenced documents.

1.9 Documents Required

.1 Maintain at job site one copy of the following:

- .1 Contract drawings
- .2 Specifications
- .3 Addenda
- .4 Change orders
- .5 Other modifications to contract
- .6 Copy of approved work schedule
- .7 Health and Safety Plan and Fire Safety plan
- .8 Environmental Emergency Response Plan (including Spill Response Plan)

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

1.10 Review of Submittals

.1 In accordance with Section 013300, submit the requested submittals.

.2 Allow sufficient time for the following:

.1 Review of submittal.

.2 Review of re-submission.

.3 Ordering of approved material and/or products.

1.11 Geotechnical Data

.1 A preliminary Geotechnical report was prepared for this project. A site investigation was completed by AMEC in January 2010 and was followed with a letter report. The letter indicated that excavation slopes are likely to flatten to 1V:5H and remain open for a period of several days.

1.12 Time of Completion

.1 Complete work within 8 weeks of contract award.

1.13 Timing Window

.1 All on-site work is to be carried out within the DFO Pacific Region Marine / Estuarine Timing Windows of July 16 to February 28 for all species.

.1 Contact the local DFO office prior to the commencement of work to confirm any variability in the timing window.

.2 No in-water work will be permitted during the period from March 1 to July 15.

1.14 Work Schedule

.1 Within 7 days of Contract award, provide a schedule of work. Observe the following requirements:

.1 Whenever a variation from the schedule in excess of 5 working days occurs or is expected to occur, notify Departmental Representative of the change.

.2 Provide information as indicated below:

.1 Notify DFO no less than 5 days before start and

completion of operations. Contacts as listed below:

.1 Fisheries Protection Program - XPAC Referrals Pacific ReferralsPacific@dfo-mpo.gc.ca, include DFO file number. An automatic confirmation email should be provided as a response. If confirmation email is not received within one day of submission, follow up with contact below to request confirmation of receipt.
Christina Gulbransen
Fisheries Protection Biologist, Fisheries Protection Program
Fisheries and Oceans Canada/Government of Canada
Christina.Gulbransen@dfo-mpo.gc.ca /Tel: 604-666-2057

.2 DFO Steveston Office - 604-664-9255

.3 Notify Canadian Coast Guard, Regional Marine Information Centre no less than 5 days before start and completion of proposed activities at the site in order that they may issue Notices to Shipping. Contact information is:

.1 Website: http://www.ccg-gcc.gc.ca/e0003905

.2 Mailing Address:

.1 Canadian Coast Guard
Victoria MCTS Centre
Officer-in-Charge
Institute of Ocean Sciences
P.O.Box 6000
9860 West Saanich Road
Sidney, BC V8L 4B2

.3 Telephone Numbers:

.1 Officer in Charge: 250-363-6818

.2 Administration: 250-363-6836

.3 Shift Supervisor:250-363-6333

.4 Operations:250-363-6611

.5 Toll Free MCTS Operations:1-800-661-9202

.6 CMB - Mount Helmcken:250-363-6880

.7 CMB - Bowen Island/Mount Parke:250-363-6492

.8 Facsimile:250-363-6556

.4 Email:

.1 mctsvictoria@pac.dfo-mpo.gc.ca

1.15 Assistance by the Contractor

.1 A small work vessel and operator is to be available to the Departmental Representative's as required to perform his duties.

1.16 Use of Site

.1 Hours of work:

.1 Perform work in accordance with City of Richmond bylaws.

.2 Work may be performed after working hours, on weekends and holidays as approved by Departmental Representative.

.2 Navigational safety shall be maintained during the deconstruction work to avoid interactions between construction vessels and other potential users of the area.

.1 Marker buoys with appropriate signage shall be used to warn vessels as appropriate.

.2 Any materials or equipment used shall be marked in accordance with the Collision Regulations of *The Canada Shipping Act* if located in or on the waterway.

.3 All work must comply with the Navigation Protection Act.

.4 Access to Site:

.1 Overland access to the site through City of Richmond property has not been coordinated by PWGSC.

.2 The Contractor is responsible to obtain all approvals/permits necessary.

.3 Submit copies of approvals/permits for access to the Departmental Representative not less than 5 days prior to the start of such access.

1.17 Project Meetings

.1 The Departmental Representative will arrange project meetings and assume responsibility for setting times. Contractor is responsible for recording and distributing minutes.

1.18 Construction Equipment:

.1 On request, prove to the satisfaction of Departmental Representative that the construction equipment is adequate to

finish work to quality and production rates specified. If inadequate, replace or provide additional equipment as directed.

.2 Maintain construction equipment in good operating order.

1.19 Interpretation

.1 In interpreting the Contract, in the event of discrepancies or conflicts refer to the hierarchy specified in the General Conditions.

.2 Additionally, in the event of discrepancies or conflicts between the Specifications and Appendices, the Specifications govern.

PART 2 PRODUCTS

Not applicable.

PART 3 EXECUTION

Not applicable

-END OF SECTION-

PART 1 GENERAL

1.1 Approvals

.1 Approval of shop drawings and samples: refer to Section 011105.

1.2 General

.1 This Section specifies general requirements and procedures for the Contractor's submissions of shop drawings, product data, samples, health and safety plans, environmental documents and other specified and requested submittals to Departmental Representative for review.

.2 Present shop drawings and product data in SI Metric units.

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

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

.5 Notify Departmental Representative in writing at time of submission, identifying deviations from requirements of Contract documents and stating reasons for deviations.

.6 Contractor's responsibility for deviations in submission from requirements of Contract documents is not relieved by Departmental Representative's review of submission unless Departmental Representative gives written acceptance of specific deviations.

.7 Make any changes in submissions which Departmental Representative may require consistent with Contract documents and resubmit as directed by Departmental Representative.

.8 Notify Departmental Representative in writing, when resubmitting, of any revisions other than those requested by Departmental Representative.

.9 Do not proceed with work until relevant submissions are reviewed and approved by the Departmental Representative.

1.3 Submission Requirements

.1 Coordinate each submission with the requirements of the work and the Contract documents. Individual submissions will not be reviewed until all related information is available.

.2 Allow (5) five days for Departmental Representative's review of each submission, unless noted otherwise.

.3 Accompany submissions with transmittal letter, in duplicate, containing:

.1 Date.

.2 Project title and number.

.3 Contractor's name and address.

.4 Identification and quantity of each shop drawing.

.5 Other pertinent data.

.4 Submissions shall include:

.1 Date and revision dates.

.2 Project title and number.

.3 Name and address of:

.1 Subcontractor.

.2 Supplier.

.3 Manufacturer.

.4 Contractor's stamp, signed by Contractor's authorized representative, certifying approval of submissions, verification of field measurements and compliance with Contract documents.

.5 Details of appropriate portions of work as applicable.

.1 Fabrication.

.2 Layout, showing dimensions (including identified field dimensions) and clearances.

.3 Setting or erection details.

.4 Capacities.

.5 Performance characteristics.

.6 Standards.

.7 Operating weight.

.8 Wiring diagrams.

.9 Single line and schematic diagrams.

.10 Relationship to adjacent work.

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

1.4 Submittals

.1 Maximum sheet size: 850 x 1050 mm.

.2 Submit one (1) PDF copy of submittals for each requirement requested in the specification sections and/or as requested by the Departmental Representative.

.3 Printed copies of submittals are not required unless specified otherwise.

.4 Cross-reference submittal information to applicable portions of

the Contract documents.

1.5 Review of Submittals

.1 Review of submittals by Public Works and Government Services Canada is for the sole purpose of ascertaining conformance with the general concept.

.2 This review shall not mean that Public Works and Government Services Canada approves the detail design inherent in the submittals, responsibility for which shall remain with Contractor submitting same.

.3 This review shall not relieve the Contractor of responsibility for errors or omissions in the submittals or of responsibility for meeting all requirements of the construction and Contract documents.

.4 Without restricting the generality of the foregoing, the Contractor is responsible for:

.1 Dimensions to be confirmed and correlated at the job site.

.2 Information that pertains solely to fabrication processes or to techniques of construction and installation.

.3 Coordination of the work of all sub-trades.

1.6 Progress Schedule

.1 Submit work schedule as required in Section 011105.

-END OF SECTION-

PART 1 GENERAL

1.1 References

.1 Government of Canada

.1 Canada Labour Code, Part II

.2 Canada Occupational Health and Safety Regulations.

.2 National Building Code of Canada (NBC):

.1 Part 8, Safety Measures at Construction and Demolition Sites.

.3 Canadian Standards Association (CSA):

.1 CSA-S350-M1980 (R2003), Code of Practice for Safety in Demolition of Structures.

.4 National Fire Code of Canada 2010 (as amended)

.1 Part 5 – Hazardous Processes and Operations and Division B as applicable and required.

.2 FCC No. 301, Standard for Construction Operations

.3 FCC No. 302, Standard for Welding and Cutting,

.4 HRSDC website: http://www.hrsdc.gc.ca/eng/labour/fire_protection/policies_standards/commissioner/index.shtml

.5 Province of British Columbia:

.1 Workers Compensation Act. Part 3 Occupational Health and Safety.

.2 Occupational Health and Safety Regulation.

1.2 Related Sections

.1 Refer to the following sections as required:

.1 Marine General Instructions: Section 01 11 05.

.2 Marine General Sitework: Section 35 05 51.

1.3 Workers' Compensation Board Coverage

.1 Comply fully with the Workers' Compensation Act, regulations and orders made pursuant thereto, and any amendments up to the completion of the work.

.2 Maintain Workers' Compensation Board coverage during the term of the Contract, until and including the date that the Certificate of Final Completion is issued.

1.4 Compliance with Regulations

.1 PWGSC may terminate the Contract without liability to PWGSC where the Contractor, in the opinion of PWGSC, refuses to comply with a requirement of the Workers' Compensation Act or the Occupational Health and Safety Regulations.

.2 It is the Contractor's responsibility to ensure that all workers are qualified, competent and certified to perform the work as required by the Workers' Compensation Act or the Occupational Health and Safety Regulations.

.3 All work must comply with the requirements of the *Navigation Protection Act*.

1.5 Navigation

.1 Navigational safety shall be maintained during the decommissioning process to avoid interactions between construction vessels and other potential users of the area. Marker buoys with appropriate signage shall be used to warn vessels as appropriate.

.2 Any materials or equipment used shall be marked in accordance with the Collision Regulations of *The Canada Shipping Act* if locate in or on the waterway.

1.6 Submittals

.1 Submit to Departmental Representative submittals for review.

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

.3 Submit the following prior to start of work (unless noted otherwise):

.1 Health and Safety Plan.

.2 Complete set of Material Safety Data Sheets (MSDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.

.3 Emergency procedures.

.4 Copies of reports or directions issued by federal and provincial health and safety inspectors, report within one week of receipt.

.5 Copies of incident and accident reports, report within one week of incident.

.6 Signed copy of Job Hazard Analysis form.

.4 The Departmental Representative will review the Contractor's site-specific project Health and Safety Plan and emergency procedures, and provide comments to the Contractor within 5 days after receipt of the plan. Revise the plan as appropriate and resubmit to Departmental Representative for review upon request.

.5 Medical surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of work, and submit additional certifications for any new site personnel to Departmental Representative.

.6 Submission of the Health and Safety Plan, and any revised version, to the Departmental Representative is for information and reference purposes only. It shall not:

.1 Be construed to imply approval by the Departmental Representative.

.2 Be interpreted as a warranty of being complete, accurate and legislatively compliant.

.3 Relieve the Contractor of his legal obligations for the provision of health and safety on the project.

1.7 Responsibility

.1 Assume responsibility as the Prime Contractor under this contract.

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

.3 Comply with and enforce compliance by employees with safety requirements of the specification, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.8 General Conditions

.1 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site.

.1 Provide appropriate means by use of barricades, fences, and warning signs as required.

1.9 Project/Site Conditions

.1 Work at site will involve:

.1 Demolition of a potentially unstable structure

.2 Crane lifting/overhead work

.3 Cutting of timbers

.4 Work within river currents

.5 Work adjacent to an active shipping channel

1.10 Regulatory Requirements

.1 Comply with specified codes, acts, bylaws, standards and regulations to ensure safe operations at site.

.2 In event of conflict between any provisions of the above authorities, the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, the Departmental Representative will advise on the course of action to be followed.

1.11 Filing of Notice

.1 The Contractor is to complete and submit a Notice of Project as required by provincial authorities, at least two weeks prior to commencing work.

.1 Provide the Departmental Representative with a copy of all notices, at least two weeks prior to commencing work.

1.12 Health and Safety Plan

.1 Conduct a site-specific hazard assessment based on review of the specifications, required work, and project site. Identify any known and potential health risks and safety hazards.

.2 Prepare and comply with a site-specific project Health and Safety Plan based on hazard assessment, including, but not limited to, the following:

.1 Primary requirements:

.1 Contractor's safety policy.

.2 Identification of applicable compliance obligations.

.3 Definition of responsibilities for project Safety/ Organization chart for project.

.4 General safety rules for project.

.5 Job-specific safe work procedures.

.6 Inspection policy and procedures.

.7 Incident reporting and investigation policy and procedures.

.8 Occupational Health and Safety Committee/Representative procedures.

.9 Occupational Health and Safety meetings.

.10 Occupational Health and Safety communications and recordkeeping procedures.

.2 Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of the work.

.3 List hazardous materials to be brought on site as required by work.

.4 Indicate engineering and administrative control measures to be implemented at the site for managing identified risks and hazards.

.5 Identify personal protective equipment (PPE) to be used by workers.

.6 Identify personnel and alternates responsible for site safety and health.

.7 Identify personnel training requirements and training plan, including site orientation for new workers.

.3 Develop the plan in collaboration with all subcontractors. Ensure that work/activities of subcontractors are included in the hazard assessment and are reflected in the plan.

.4 Revise and update Health and Safety Plan as required, and re-submit to the Departmental Representative.

.5 Departmental Representative review: the review of Health and Safety Plan by Public Works and Government Services Canada (PWGSC) shall not relieve the Contractor of responsibility of errors and omissions in the Final Health and Safety Plan or of responsibility for meeting all requirements of construction and the specifications.

1.13 Emergency Procedures

.1 List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (i.e. names/telephone numbers) of:

.1 Designated personnel from own company.

.2 Regulatory agencies applicable to work and as per legislated regulations.

.3 Local emergency resources.

.4 Department Representative.

.2 Include the following provisions in the emergency procedures:

.1 Notify workers and the first-aid attendant, of the nature and location of the emergency.

.2 Evacuate all workers safely.

.3 Check and confirm the safe evacuation of all workers.

.4 Notify the fire department or other emergency responders.

.5 Notify adjacent workplaces or residences which may be affected if the risk extends beyond the workplace.

.6 Notify Department Representative.

.3 Provide written rescue/evacuation procedures as required for, but not limited to:

.1 Work with hazardous substances.

.2 Work on, over, under and adjacent to water.

.4 Revise and update emergency procedures as required, and re-submit to the Departmental Representative.

1.14 Hazardous Products

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials, and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to the Departmental Representative and in accordance with the Canada Labour Code.

.2 Where use of hazardous and toxic products cannot be avoided:

.1 Advise Departmental Representative beforehand of the product(s) intended for use. Submit applicable MSDS and WHMIS documents.

1.15 Fire Safety Requirements

.1 Store oily/paint-soaked rags, waste products, empty containers

and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

.2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

1.16 Unforeseen Hazards

.1 Should any unforeseen or peculiar safety-related factor, hazard or condition become evident during performance of the work, immediately stop work and advise the Departmental Representative verbally and in writing.

1.17 Posted Documents

.1 Post legible versions of the following documents on site:

.1 Health and Safety Plan.

.2 Emergency procedures.

.3 Notice of Project.

.4 Notice as to where a copy of the Workers' Compensation Act and Regulations are available on the work site for review by employees and workers.

.5 Workplace Hazardous Materials Information System (WHMIS) documents.

.6 Material Safety Data Sheets (MSDS).

.2 Post all Material Safety Data Sheets (MSDS) on site, in a common area, protected from inclimate weather, visible to all workers and in locations accessible to users of the facility when work of this Contract includes construction activities adjacent to occupied areas.

1.18 Meetings

.1 Attend health and safety pre-construction meeting and all subsequent meetings called by the Departmental Representative.

1.19 Correction of Non-Compliance

.1 Immediately address health and safety non-compliance issues identified by the Departmental Representative.

.2 Provide Departmental Representative with written report of action taken to correct non-compliance with health and safety issues identified.

.3 The Departmental Representative may issue a "stop work order" if non-compliance of health and safety regulations is not corrected immediately or within posted time. The Prime Contractor/subcontractors will be responsible for any costs arising from such a "stop work order".

PART 2 PRODUCTS

2.1 Not Applicable

PART 3 EXECUTION

3.1 Not Applicable

-END OF SECTION-

PART 1 GENERAL

1.1 Environmental Factors

.1 All work must comply with the requirements of the Fisheries Act, the Species at Risk Act, the Migratory Birds Convention Act, and all other applicable laws, legislation, and best management practices including Best Management Practices for Raptor Conservation During Urban and Rural Land Development in BC and BC MOE Environmental Objectives, Best Management Practices and Requirements for Land Developments and BC MOE "Standards and Best Practices for In-stream Works".

.2 Comply with Ministry of Forests, Lands and Natural Resource Operations, Water Sustainability Act Approval. A copy of the Approval must be available for inspection, upon request at the site and if requested by the Regional Water Manager.

.3 Comply with mitigation requirements as noted in the plans and specifications and in the DFO Best Management Practices for Pile Driving document found in Appendix A.

1.2 Vessels/Equipment

.1 Vessels and floating equipment must not come to rest below the high water mark.

.2 Minimize noise whenever possible. Vessels will move at slow speeds (0.5 to 2 knots) within the work area, minimizing the potential for collision with marine mammals. If marine mammals come close to work area (within 100 m), halt loud work until they move away.

.3 Equipment and machinery used in or near the water must be in good operating condition and free of leaks, excess oil and grease. All equipment operating in the water must use biodegradable hydraulic oil in order to minimize potential impacts to the environment.

.4 A spill containment kit must be readily accessible on-site and no equipment or machinery refuelling shall take place within 30 meters of any watercourse.

.5 Marine vessels and other construction equipment shall use the

lowest sulphur content fuel commercially available, where reasonable.

.6 At no time shall any portion of the vessel be permitted to ground on the foreshore or near shore areas except through the use of spuds as required to secure the vessel in position.

1.3 Fires

.1 Fires and burning of rubbish on site not permitted.

1.4 Disposal of Wastes

.1 Do not bury rubbish and waste materials on site.

.2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

1.5 Work Adjacent to Waterways

.1 All works and activities shall be carried out in a manner that minimizes induced turbidity of local waters and the release of sediment, sediment-impacted, and turbid waters to the aquatic environment.

.2 Works shall comply with the following water quality criteria at all times during work activities:

.1 Change from background of 8 NTU at any one time for a duration of 24 hours in all waters during clear flows or in clear water.

.2 Change from background of 2 NTU at any one time for a duration of 30 days in all waters during clear flows or in clear waters.

.3 Change of 5 NTU at any time when background is 8-50 NTU during high flows or in turbid waters.

.4 Change from background of 10% when background is > 50 NTU at any time during high flows or in turbid waters.

.5 Water quality shall be compliant with the above standard at a distance of 100 metres upstream and downstream of the sediment control measures, and throughout the water column.

.3 All components on the seabed are to be removed by lifting

vertically. Under no circumstance shall any component be dragged along the seabed.

.4 Do not operate land based construction equipment in the water; land based equipment may only be used in the dry.

.5 Do not use waterway beds for borrow material.

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

.7 All excavated rock and debris excavated shall be removed from site and disposed of at an appropriate upland site.

.8 Care must be taken during all phases of work to prevent the release of silt, sediment, sediment-laden water, raw concrete, concrete leachate or any deleterious substances.

.9 Isolation measures to prevent the release of silt, sediment or sediment-laden water must be in place before starting work that may result in sediment mobilization.

.10 Contractor to develop methodology such that no serious harm to fish occurs as defined by the Fisheries Act. The contractor is to devise and implement a method such that fish are present inside the isolated area when work occurs.

.11 Excavated river sediments may be returned to the site if handled in conformance with contract documents. Alternately, excavated river sediments may be placed in a stable area above the high water mark of the stream and mitigative measures to protect the excavated material and debris from erosion and reintroduction into the water course shall be used, such as but not limited to, covering the material with erosion blankets or seeding and planting with native vegetation.

.1 Contractor is to obtain agreement with the owner of the area and all approvals for such use.

.2 A copy of the agreement and approvals are to be provided to the Departmental Representative for review 5 days before such use starts.

.12 Design and construct temporary works to minimize erosion to waterways. All temporary works shall be removed on completion of the project, and the site restored to its natural condition.

.1 Submit proposed procedure for replanting, including species proposed, method of planting, and method with

duration for post planting monitoring to ensure effectiveness.

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

.14 Avoid indicated spawning beds when constructing temporary works.

.15 Avoid disturbance to upper intertidal marsh.

.16 Conduct work activities in a careful manner that limits the generation of deconstruction waste. Develop and implement site-specific mitigation measures which ensure that the water column and seabed are not used as a receiving environment.

1.6 Pollution Control

.1 Maintain temporary erosion and pollution control features installed under this contract.

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

.3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

.4 Spill kits and containment are to be maintained on site and ready for deployment in case of spills.

.1 Spill kits are to contain sufficient quantities of absorbent material on site in close proximity to working machinery.

.2 During the work there are to be trained and qualified personnel on site that are ready to deploy spill kits when necessary.

1.7 Documentation

.1 The Contractor must produce and maintain on site copies of an Environmental Protection Plan, and Spill Response Plan.

.2 Environmental Protection Plan and Spill Response Plan are to be submitted to the Department Representative for review at least two (2) weeks prior to construction.

.3 Construction may not commence until the plans have been approved.

1.8 Protection of Wildlife

.1 Make every effort to minimize disturbance to the benthic and upland wildlife communities.

.2 Do not disturb native vegetation, aquatic or otherwise.

.3 Remove all non-sessile organisms (sea stars, crabs, etc.) from structures prior to decommissioning activities. Organisms must be relocated to suitable tidal habitat nearby in a manner that promotes their survival.

1.9 Archaeological Monitoring

.1 Closely observe the worksite prior to pile extraction, excavation activities, and other activities which may disturb the current condition of the land for evidence of archaeological or heritage objects.

.2 Protect any archaeological or heritage objects discovered and report the discovery to the Departmental Representative. Protection of archaeological or heritage objects may require rescheduling of work activities or relocation of resources.

.3 If an archaeological site is encountered, stop work and notify Departmental Representative immediately. PWGSC will assign an archaeologist to determine measure to be followed (recording and potential retrieval).

1.10 Site Access

.1 Land Access

.1 For access to site from land, clearly delineate allowable access path and do not allow equipment to stray from delineated area.

.2 Use swamp pads throughout delineated access area to minimize damage to intertidal marsh and other plants.

1.11 Restoration

.1 Any damage to plants in the intertidal marsh area is to be mitigated by replanting. Contractor is to submit a proposal for re-planting including monitoring, for acceptance.

PART 2 PRODUCTS

2.1 Not Applicable

PART 3 EXECUTION

3.1 Not Applicable

-END OF SECTION-

PART 1 GENERAL

1.1 References

.1 Federal Legislation

.1 Canadian Environmental Protection Act, 1999, c. 33 (CEPA).

.2 Canadian Environmental Assessment Act, 1992, c. 37 (CEAA).

.3 Transportation of Dangerous Goods Act 1992, c. 34 (TDGA).

.4 Motor Vehicle Safety Act 1993, c. 16 (MVSA).

1.2 Definitions

.1 Alternate Disposal: reuse and recycling of materials by designated facility, user or receiving organization which has valid Certificate of Approval to operate. Alternative to landfill disposal.

.2 Deconstruction: systematic dismantling of structure to salvage materials for reuse. What cannot be reused is considered subsequently for recycling. Ultimate objective is to recover potentially valuable resources while diverting from landfill what has traditionally been significant portion of waste stream.

.3 Demolition: rapid destruction of structure with or without prior removal of hazardous materials.

.4 Disassembly: physical detachment of materials from structure and may include: prying, pulling, cutting, and unscrewing.

.5 Hauler: company (possessing appropriate and valid Certificate of Approval) contracted to transport waste, reusable or recyclable materials off site to designated facility, user or receiving organization.

.6 Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, may include but not limited to: poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other material that can endanger human health or well being or environment if handled improperly.

.7 Processing: tasks which are subsequent to disassembly and may include: moving materials, denailing, cleaning, separating and stacking.

.8 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse by others.

.9 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.

.10 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

.11 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:

.1 Salvaging reusable materials from remodelling projects before the demolition stage, for resale, reuse on current project or for storage for use on future projects.

.2 Returning reusable items may include pallets and unused products to vendors.

.12 Salvage: removal of structural and non-structural structure materials from industrial, commercial and institutional structure deconstruction/disassembly projects for purpose of reuse or recycling.

.13 Source Separation: acts of keeping different types of waste materials separate beginning from first time they become waste.

.14 Used Building Material Receipt: receipt issued at end destination for materials designated for alternate disposal.

.15 Weigh Bill: receipt received from recycling facility indicating weight and content of each load/bin of material.

1.3 Submittals

.1 Submissions to be submitted to Department Representative for approval. Work influenced by submissions is not to proceed until approval has been granted.

.2 Prior to start of Work on site; submit descriptions of and anticipated quantities of materials to be reused, recycled and land-filled.

1.4 Deconstruction Drawings

.1 Where required by authorities having jurisdiction, submit for approval drawings, diagrams and details showing sequence of deconstruction work, materials designated for salvage and support of structures and underpinning.

.2 Submit drawings stamped and signed by qualified professional Engineer registered or licensed in Province of British Columbia, Canada.

1.5 Quality Assurance

.1 Qualifications: provide adequate workforce training through meetings and demonstrations. Have someone on site with deconstruction experience throughout project for consultation and supervision purposes.

1.6 Site Conditions

.1 Existing Conditions:

.1 Base structures to be deconstructed on their condition at time of site visit during Bid period. Be responsible for provision of services required for deconstruction.

1.7 Environmental Protection

.1 Ensure Work is done in accordance with Section 01 35 43 - Environmental Procedures.

.2 Ensure deconstruction work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air or noise pollution.

.3 Do not dispose of waste or volatile materials into watercourses, storm or sanitary sewers.

.1 Ensure proper disposal procedures in accordance with applicable Provincial/Territorial regulations.

.4 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties in accordance with authorities having jurisdiction.

.5 Use natural lighting to do Work where possible.

.1 Shut off lighting except those required for security purposes at end of each day.

PART 2 PRODUCTS

Not Applicable

PART 3 EXECUTION

3.1 Site Verification of Conditions

.1 Develop strategy for deconstruction to facilitate optimum salvage of reusable and recyclable materials.

3.2 Preparation

.1 The following permits/documentation will be completed by Canada:

.1 NPA Permit
.2 DFO Concurrence with work
.3 Vancouver Fraser Port Authority Permit
.4 B.C. Ministry of Forests, Lands, and Natural Resource Operations, Water Sustainability Act Approval

.2 The following permits/documents must be completed by the Contractor:

.1 Any necessary disposal permits
.2 All required notices of work
.3 Site access permits
.4 Work hour extension approvals from City of Richmond if required.

.3 The Contractor must advise the Departmental Representative in writing of any other permits they believe are applicable.

3.3 Removal from Site

.1 Transport material designated for disposal using approved haulers in accordance with applicable regulations.

.2 For any material removed from site by barge, the contractor will provide the department representative with certified barge loading tables and cooperate with the Departmental

Representative to take measurements of barges so that weight of materials on the barges may be determined.

END OF SECTION

PART 1 GENERAL

1.1 References

.1 Environment Canada:

.1 General Water Quality Guidelines for Construction Work in and Around Water.

.2 Pacific and Yukon Interim Guidance for Addressing Water Quality for Work in and around Water (Feb 2007).

.2 Fisheries and Oceans:

.1 Guidelines to Protect Fish and Fish Habitat from Treated Wood Used in Aquatic Environments in the Pacific Region.

.2 DFO Best Management Practices for Pile Driving and Related Operations.

1.2 Mobilization and Demobilization

.1 Mobilization and demobilization will include all work required to supply the material, plant and labour to the site of the work, unless specified otherwise.

1.3 Method of Measurement

.1 The method of measurement for the classes of labour, plant or material constituting the work will be as follows:

.1 Item No. 1, Mobilization and Demobilization

.1 Unit: a single lump sum for all mobilization and de-mobilization work.

.2 Any minor items not measured separately are to be included in the cost of this item.

.2 Item No. 2, Removal and Disposal of Trapped Debris

.1 Unit: each tonne of trapped debris excavated, removed, and disposed of as specified, as confirmed by certified weigh slips.

.3 Item No. 3, Removal and Disposal of Exposed Piles

.1 Unit: a unit price for each exposed pile removed and disposed of as specified.

.4 Item No. 4, Removal and Disposal of Seaward Buried Piles

.1 Unit: a unit price for each pile buried seaward of the marsh that is removed and disposed of as specified.

.5 Item No. 5, Removal and Disposal of Walers

.1 Unit: each linear meter of timber waler removed and disposed of as specified.

.6 Item No. 6, Removal and Disposal of Rip Rap

.1 Unit: each tonne of rip rap excavated, removed, and disposed of as specified, as confirmed by certified weigh slips.

.7 Item No. 7, Backfilling of Pile Holes

.1 Unit: each pile hole backfilled as specified, including the supply of appropriate material.

.2 "Certified Weigh Slip" refers to weigh slip as provided by a certified scale. Barge Load certificates will not be accepted for payment.

PART 2 PRODUCT

2.1 Imported Backfill

.1 The following refers only to backfill required to fill pile holes as specified in Part 3.

.2 The expected total volume of backfill required to fill all the pile holes is 22 cubic metres. At a minimum, an additional 3 cubic metres of backfill is to be provided to site, which will only be used and payment made in the event of additional quantity under Item 7.

.3 All backfill placed within the project area must meet the following criteria:

.1 Clean Backfill – coming from an upland aggregate source, not containing acid producing rock, and being free of anthropogenic chemical contamination.

.2 Backfill to meet requirements of CCME Interim Sediment Quality Guidelines, Contaminated Sites Regulation.

.3 Material is generally considered as washed single sized pea gravel. Gradations must be within limits specified when tested to ASTM C136. Sieve sizes to CAN/CGSB-8.1 and CAN/CGSB-8.2.

Sieve Designation	% Passing
25 mm	-
19 mm	-
12.5 mm	-
9.5 mm	[100]
4.75 mm	[3-8]
2.00 mm	[3-8]
0.425 mm	[3-8]
0.180 mm	[3-8]
0.075 mm	[3-8]

.4 In accordance with Section 01 33 00, submit to the Departmental Representative the proposed source(s) and gradation of backfill material.

2.2 Rock and Debris

.1 All rock and debris is to be removed and disposed of at an appropriate upland site.

2.3 Native Backfill

.1 Excavated river sediment material being returned to site must be handled in conformance with Section 01 35 43.

PART 3 EXECUTION

3.1 General

.1 Delineate the least damaging access route for the tug and barge/scow prior to mobilization. Minimize tug and barge movement that may impact sediments.

.2 All components on the seabed in the intertidal zone are to be removed during a period when the location is not inundated by the tide if possible. Whether inundated or not silt control measures must be implemented as per Section 01 35 43.

.3 Work within the marsh area must not take place while the marsh is inundated by the tide.

3.2 Removal/Disposal of Trapped Debris

.1 It is expected that over time, debris carried by the current has become trapped against the structure and fully or partially

buried. This debris is most likely organic matter such as logs and tree limbs.

.2 Excavate, remove, and appropriately dispose of any debris that has accumulated against the structure that becomes exposed during any excavation.

.3 Dispose of debris as specified.

3.3 Removal/Disposal of Piles

.1 In lieu of detailed records it is assumed that piles have been driven to a depth of 5m below the mud line at the time of installation. The typical expected length of piles is indicated on the Drawings.

.2 All piles to be removed: fully extract from ground. Full extraction of the piles governs over recommendations included in Appendix A.

.3 Expected level of effort for full extraction is the use of a vibratory hammer and straight-line pull along the axis of the pile.

.4 Minimum characteristics of vibratory hammer are to include the following:

.1 Line pull 450 kN minimum.

.2 Bare hammer weight 2,000 kg.

.3 Adjustable frequency between 0 – 2,300 vibrations per minute.

.4 Equipped with end suitable for removal of timber piles.

.5 Specifications for the equipment to be used must be submitted.

.6 Contractor may choose alternate extraction method but if full extraction is not achieved, Contractor is to change methods to achieve full extraction. Such changes are at no expense to Canada unless Contractor shows that the equipment identified in Clause 3.3.4 fails to full extract the piles..

.7 Failure of the equipment identified in subclause 3.3.4 to fully extract the piles will be considered as a change in ground conditions.

.8 If any piles are not able to be fully removed Department Representative is to be contacted for further instruction.

.9 Shoreward piles have been sampled and no signs of preservative treatment were found.

.10 Dispose of piles as specified.

3.4 Removal/Disposal of Exposed Piles

.1 A dive survey was conducted to locate exposed piles. The approximate locations of the piles found are indicated on the Drawings.

3.5 Removal/Disposal of Seaward Buried Piles

.1 Assumptions have been made regarding the location of buried piles as shown on the Drawings. It is required that the expected length of the structure is excavated to a minimum of 1m and that any piles encountered are removed in their entirety.

.2 As the exact position of the seaward extent of the structure is not known, the Contractor must excavate to a depth of 1m along the expected length of the structure to the potential seaward end indicated on the drawings. If piles are found within the last 10m of this alignment, Contractor must extend excavations at least 10m past the most seaward pile found to confirm that the actual end of the structure has been found.

.3 Following the removal of any piles found, the excavated trench must be filled with the side-cast material as specified in Part 2.

3.6 Removal/Disposal of Walers

.1 Remove all walers encountered while searching for or removing piles, including any excavation required.

.2 No additional exploratory excavation is required beyond what is specified to search for piles, except where removed piles indicate that the presence of walers is likely (movement in adjacent piles during pull, fresh damage to side of pile where waler was likely torn out, etc.).

.3 Shoreward walers have been sampled and no signs of preservative treatment were found.

.4 Dispose of walers as specified.

3.7 Removal/Disposal of Rip Rap

.1 All rip rap exposed or within 1m of the current mud line elevation must be excavated and removed. The Drawings indicate the expected locations where rip rap will be present within 1m of the mud line

.2 Dispose of rip rap as specified.

3.8 Placing Backfilling in Pile Holes

.1 Fill all holes resulting from piles pulled above the marsh vegetation line, and those within 20m seaward of the marsh vegetation line.

.2 Holes specified to be filled must be filled prior to the hole becoming submerged by the rising tide.

.3 Fill the specified holes in a manner that minimizes the spill of backfill material onto the immediately adjacent riverbed.

.1 The expected volume of backfill required for each pile hole is 0.4 m^3.

.2 Place backfill in a way that minimizes induced turbidity.

.4 Use only clean backfill meeting the requirements of clause 2.1.

3.9 Material Disposal

.1 General:

.1 Items specified to be removed and disposed of becomes the property of the Contractor. Disposal of the items shall be performed in an environmentally sensitive manner at upland site(s) approved by the Ministry of Water, Land and Air Protection under the B.C. Waste Management Act, and by other agencies having jurisdiction, including municipal authorities.

.2 All disposal sites must be operating with up-to-date permits and licences.

.3 The Contractor shall submit proof of approval(s), copies of current permits and licences to the Departmental Representative 10 days before the initial disposal.

.2 Certificates of Disposal:

.1 Provide Departmental Representative with certificates of disposal from the disposal site, noting the dates, quantities, weights and general description of the debris received and proof of payment of all disposal fees.

.2 Provide certificates within 5 days of disposal.

.3 The Contract work will not be accepted until all certificates have been received by the Departmental Representative.

-END OF SECTION-

APPENDIX A

DFO Best Management Practices for Pile Driving and Related Operations

DFO Best Management Practices for Pile Driving and Related Operations

This document is intended to provide guidance to industry contractors and their clients regarding the protection of fish and fish habitat during pile driving operations in the South Coast Area. The notification form attached to this document must be submitted to the Central Nanaimo office (250-756-7325) no less than 5 working days prior to the commencement of any pile driving works.

Most types of pile driving will result in a level of underwater noise that will at least cause changes to fish behavior. While extensive data on pile driving impacts is not yet available, it is apparent that driving of steel pipe piles with large, high energy hammers can produce underwater sound levels capable of killing fish. Sublethal injuries may also occur, resulting in reduced survival or delayed mortality. Even when sound levels are not high enough to kill or injure fish, the underwater noise caused by pile driving may cause behavioral changes such as avoidance of preferred habitat, changes to migration, reduced feeding, or reduced schooling that in turn can result in increased predation. Although beyond the scope of this BMP, underwater noise may also impact other aquatic organisms such as invertebrates, diving birds, and marine mammals.

The *Fisheries Act* prohibits the harmful alteration, disruption or destruction of fish habitat (Section 35) and the destruction of fish (i.e., killing of fish) by means other than fishing (Section 32). Without implementation of appropriate mitigation measures, certain pile driving activities can harm fish habitat and kill fish. It is the responsibility of the proponent and contractors to ensure that appropriate mitigation measures are employed and that their project does not contravene the *Fisheries Act*.

Standard BMP's applicable to all pile driving works/undertakings within the marine environment

1. Project proponents and their contractors must ensure that the pile driving project does not adversely affect fish habitat. For example, where the pile driving project is intended to provide support for proposed docks/floats, an assessment of the marine environment that is located underneath these structures must be undertaken. Projects that include docks or floats may result in adverse shading impacts on marine fish habitat if they are poorly located over eelgrass or other marine vegetation.
2. With respect to existing piles that are redundant and have been treated with creosote or other preservatives or coatings, every effort must be made to extract the entire length of the pile from the ground or seabed. Methods such as pile vibrating, jetting or other appropriate technique must be utilized to remove the pile intact. Where it is not technically feasible to remove the pile intact or where the pile has broken off, every effort must be made to remove the stub in a way that is consistent with safety and the conservation of fish and fish habitat. All debris from pile removal must be disposed of at an appropriate upland disposal site in accordance with all applicable legislation, guidelines and BMP's.
3. New timber piles will comply with the DFO document "Guidelines to Protect Fish and Fish Habitat from Treated Wood Used in Aquatic Environments in the Pacific Region" (http://www.dfo-mpo.gc.ca/Library/245973.pdf).
4. Re-used pilings will not normally be subject to any additional treatments. However, pilings with excessive creosote must be avoided. Freshly treated creosote pilings must stand (weather) in an appropriate upland storage area for a minimum period of 45 days prior to installation. Piles with creosote may not be an appropriate for use in some areas or situations. DFO may require the use of concrete or steel piles in sensitive areas, or may require that creosote piles be covered or wrapped to provide a barrier between the creosote and non-target organisms that attach to the pile (i.e. herring spawn).
5. Creosote timber piles must be protected with rub strips wherever contact with docks or vessels is expected.
6. Contractors must position their vessels and water borne equipment associated with pile driving activities in a manner that will prevent damage to fish habitat (e.g. eelgrass, kelp beds, shellfish beds, salt marshes, etc.). In the event that fish habitat is damaged, the incident must be reported to DFO and appropriate remedial actions should be taken under the direction of DFO.
7. When cleaning out pipe piles (i.e., air lifting), sediment contained in the pipe will be pumped to the surface and processed through an approved containment system and disposed of at an approved landfill site.
8. Pipe piles must be capped or otherwise treated to prevent birds from being trapped inside the piles.
9. All equipment will be maintained in good proper running order to prevent leaking or spilling of potentially hazardous or toxic products. This includes, but is not limited to, hydraulic fluid, diesel, gasoline and other petroleum products.

10. All hydrocarbon products (fuel, oil, hydraulic fuel, lubricants), fueling equipment, and deleterious substances must be stored and handled in accordance with all applicable legislation, guidelines and BMP's. An appropriate spill prevention, containment and cleanup contingency plan for hydrocarbon products and any other deleterious substances that may be used or transported to the project site, must be in place prior to work commencing on the project to ensure that spills are contained and prevented from entering the marine environment.

11. Contractors will have emergency spill equipment available whenever working near or on the water. The emergency spill equipment should be appropriate for the specific operation (e.g., pouring concrete, refueling, etc.) and environmental conditions (e.g., marine, riverine, etc.) and equipment operators should be trained in their deployment and use.

12. All work areas must be adequately contained to prevent the release of demolition and construction debris and materials and any deleterious substances to the marine environment. All construction/demolition debris must be contained, collected and disposed of in an appropriate upland facility in accordance with existing legislation, guidelines and best management practices. Demolition operations should be monitored to determine whether the works are resulting in any adverse effects on fish or fish habitat. Any adverse effects should be reported to DFO.

13. Uncured concrete, cement, mortars and other Portland cement or lime-containing construction materials are considered deleterious substances. The proponent and all contractors must ensure that all work involving the use of concrete, cement, mortars, and other Portland cement or lime-containing construction materials must be conducted so as to ensure that sediments, debris, concrete, and concrete fines are not deposited, either directly or indirectly into any aquatic environment (e.g. any ditch, watercourse, wetland, ravine, storm sewer system, or the sea, including foreshore). Any water contacting uncured or partly cured concrete or Portland cement or lime-containing construction materials, such as the water that may be used for exposed aggregate wash-off, wet curing, equipment washing, etc., must be prevented from entering, directly or indirectly into a watercourse or a storm collection system, unless this water has been tested (to an accuracy of within +/- 0.2 pH units) and found to have a pH of between 6.5 and 9.0 pH units and a turbidity of less than 25 nephelometric turbidity units (NTU). The proponent and all contractors must ensure that suitable containment and treatment facilities are provided at the project site for the wash-down water from concrete delivery trucks, concrete pumping equipment, concrete mixing equipment, and other tools and equipment as required.

14. Wherever concrete work is proposed in or near aquatic areas, the work must be monitored by a qualified environmental consultant to ensure that all applicable BMP's are followed and the habitat provisions of the *Fisheries Act* are upheld.

15. If concrete is being placed with a concrete pump, all hose and pipe connections must be sealed and locked properly to ensure the lines will not leak or uncouple. Contractors/crews must ensure that concrete forms are not filled to overflowing.

16. All concrete forms will be constructed in a manner that will prevent fresh concrete or cement-laden water from leaking into the surrounding water.

17. All work must be undertaken and completed in such a manner as to prevent the discharge or introduction, either direct or indirect, of soils, sediment or sediment-laden water, turbid water or any other deleterious substances into the marine environment.

18. Without restricting the generality of the foregoing paragraph, with respect to the discharge or introduction of sediment, sediment-laden water, and turbid water into the marine environment, the following criteria must be complied with:

    Total Suspended Solids (TSS):

    - TSS should not exceed 25 mg/L

    Turbidity:

    Turbidity should not exceed 2 nephelometric units (NTU) when background is less than 8 NTU.

    - Turbidity should not exceed 8 NTU when background is between 8 and 80 NTU.
    - Turbidity should not exceed background by more than 10% when background is greater than or equal to 80 NTU.
    - "Background" is defined as the level at an appropriate adjacent reference site, that is satisfactory to DFO, and is affected neither by works or activities associated with the project or the works site, nor by sediment-laden water,

- induced suspended sediments, or induced turbidity resulting from works or activities associated with the project or the work site.
- Should the project result in TSS or NTU levels in excess of the criteria outlined above, then those works and activities that might be contributing to these conditions must be halted until measures that will ensure compliance with the criteria outlined above are put in place.
- Where the suspended solids and turbidity criteria outlined above cannot be practicably achieved, work areas and those works and activities that might be contributing to these conditions must be contained and isolated from tidal and flowing waters such that fish are prevented from accessing the work areas, and sediments, sediment-laden water, and turbid water are contained and prevented from leaving the work areas.

Timing Windows

Timing windows are a very effective BMP with respect to mitigating possible adverse effects on fish. Timing windows are intended to ensure that a project is scheduled during periods of reduced marine sensitivity. Although fish are always present in most BC waters, there are certain periods when nearshore areas are heavily utilized by fish. For example, herring move into shallow coastal areas to spawn in late winter or early spring, and high numbers of juvenile salmon migrate along coastal shorelines in the spring and early summer. Where works are proposed close to a river mouth or estuary, project proponents/contractors should also consider the timing of adult salmon migration to ensure conflicts are avoided. Site specific timing windows may be required if a project is proposed near an estuary or mouth of a fish stream.

19. The preferred timing window (time of reduced sensitivity) for pile driving activities is from July 1st to February 15th. Further restrictions may apply during the fall and winter if the project has the potential to effect adult salmon migration.

Special BMP's for pile driving projects that may create high underwater sound

Some types of pile driving are expected to results in sound levels that require special mitigation. For example, installation of steel piles by means of a drop, diesel, or air hammer are expected to produce high sound pressure levels capable of injuring or killing fish. Accordingly, project proponents and their contractors/consultants are responsible to ensure that pile driving associated with the project does not result in underwater noise or increases in underwater peak pressures that would adversely affect fish. Increase in underwater peak pressures in excess of 30 kilopascals (kPa) are likely to adversely effect fish.

20. Any proposed pile driving activity that may result in pressure effects of greater than 30 kPa (e.g. steel piles and power hammer) must incorporate mitigation measures specifically intended to prevent increases in underwater peak pressures in excess of 30 kPa anywhere greater than 1 metre from the pile being driven from adversely affecting fish. Mitigatory measures that might be appropriate include:

    - The use of smaller diameter pipe pile.
    - The use of a vibrating hammer or non-power drop hammer.
    - Scheduling the works outside of periods of heightened sensitivity with respect to fish (e.g., periods of juvenile salmon seaward migration, periods of adult salmon upstream migration to local watercourses; periods of herring spawning)
    - The deployment of netting, or "silt curtains" to isolate the work area and prevent fish from entering any area where the pile driving shock wave might exceed 30 kPa.
    - The deployment of a "bubble curtain" of sufficient design to surround the entire length of each pile being driven and attenuate shock waves radiating out from the pile so that overpressures outside the bubble curtain do not exceed 30 kPa.

21. To ensure that mitigation measures are effective, a hydrophone can be deployed to measure in-water pressure changes resulting from pile driving, monitor the effectiveness of mitigatory measures in use (e.g., isolation curtains, bubble curtains), and to determine the need for further mitigatory measures

22. The deployment of a hydrophone to measure in-water pressure changes resulting from pile driving. Hydrophone measurements should be carried out over the entire course of pile driving, particularly during driving to resistance or seating in bedrock. Hydrophone measurements should include depth profiles taken at a range of distances radiating out from the pile being driven. Each hydrophone depth profile should include measurements taken near the water surface, near the seabed, and at mid water column. The range of distances for hydrophone depth profiles should include a depth profile within 2 metres of

the pile. The continual monitoring of shock wave pressure during pile driving is necessary to monitor the effectiveness of mitigatory measures in use (e.g., isolation curtains, bubble curtains), and to determine the need for further mitigatory measures.

23. Any proposed pile driving activity that may result in pressure effects of greater than 30 kPa (e.g. steel piles and power hammer) must be monitored by an appropriately qualified professional who is familiar with pile driving activities (including the potential affects on fish and the measures required to mitigate these affects) to ensure that effective measures are applied to mitigate adverse affects to fish and that all activities are conducted in accordance with the Fisheries Act. Monitoring must utilize hydrophones operated by appropriately qualified professionals. Pressure levels should be recorded at a range of depths throughout the water column and at varying distances and directions form the driven pile. Monitoring should be carried out throughout the pile driving from beginning to end for various piles and soil conditions and particularly during periods of heavy pile driving or pile refusal.
24. The hydrophone monitoring may be discontinued if the experience with the first 4 or 5 piles shows that the particular pile installation method in use does not result in overpressure of 30 kiloPascals (kPa), when readings are taken 1 metre from the pile being driven, and there have not been any observations of distressed or injured fish. This would only be applicable in situations where future pile driving associated with the project will use the same equipment, methods, type of piles, size of piles and the substrate that the piles are being driven into has the same characteristics as the substrate the test piles were driven into.
25. All work must be suspended and further mitigation measures need to be employed to reduce the pressure wave (e.g. bubble curtain) if pile driving activities result in hydrophone readings in excess of 30 kPa, measured 1 metre or further from the pile being driven or should there be any sign of dead or injured fish within the work area. DFO must be consulted prior to proceeding with pile driving activities.
26. Where pile driving is to occur in intertidal or shallow subtidal areas, it should be conducted during times of low water.
27. Vibratory hammer must be used wherever feasible, particularly when driving steel piles.

Project Monitoring:

28. The project must be appropriately monitored for adverse effects on fish and fish habitat by an appropriately qualified environmental monitor (EM) provided by the project proponents at their own expense. In addition, the EM must ensure that contractors/workers understand the conditions in this BMP document. The EM must have experience and knowledge in local marine biology, pile driving techniques and methods to mitigation any adverse impacts to fish and fish habitat.
29. Project proponents must empower the EM in writing to suspend works that may be harmful to fish or fish habitat, or to direct work so that it is compliant with the Fisheries Act and all other applicable legislation, guidelines and BMP's including this document.
30. The EM must be on site at all times during the course of the project whenever there is the potential for adverse effects or fish or fish habitat.
31. Upon completion of the project, the EM must provide DFO with a monitoring report summarizing the project and describing any environmental issues that arose during the project. Monitoring results should be forwarded to the appropriate contact at DFO's Oceans, Habitat and Enhancement Branch.
32. The monitoring reports should include:

    - Location of the works.
    - Contact information for the owner, contractor and monitor.
    - Documentation of any adverse effects on water quality (including suspended sediment, turbidity, pH, hydrocarbons etc) or other fish habitat impacts.
    - Suspended sediment, turbidity, pH, and hydrophone readings.
    - Distance the reading was taken from the pile or mitigation measure.
    - Depth the reading was taken.
    - Description of any pile driving activity that resulted in hydrophone readings in excess of 30 kPa.

- Description of mitigation measures applied.
- Documentation of any observations of distressed, injured or killed fish.
- Pphotographs.

33. If contractors are working and a herring (or other fish) spawning occurs or if they become aware of any negative impacts to fish or fish habitat, the work will be suspended until the appropriate DFO contact has been notified and has provided direction.

Prior to the commencement of any pile driving activity it is requested that, the proponent with advice from a Qualified Environmental Professional submit DFOs Project Notification and Review Application Form found at the website http://www.pac.dfo-mpo.gc.ca/habitat/index-eng.htm to referralsnanaimo@dfo-mpo.gc.ca. The proponent must indicate either "Notification to DFO', "Request a Project Review" or "Request a Fisheries Act Authorization" by way of submission of this form. If project proponents, QEP or consultants have indicated "Notification to DFO", this indicates that they understand the conditions of this BMP document and agree to comply with all conditions. DFO does not formally respond to Notifications. Notifications are subject to monitoring and auditing by DFO.

The conditions of this BMP document notwithstanding, DFO may at any time and at their sole discretion, direct the project proponents and their agents/contractors/workers to suspend or alter the project, or to implement mitigation measures that avoid adverse impacts to fish or fish habitat.

This BMP document is valid only with respect to the mandate of DFO pursuant to the Fisheries Act, and for no other purposes. It does not purport to release the project proponent from any obligation to obtain permission from or to comply with the requirements of any other regulatory agencies. Any works seaward of higher high water (HHW) might be subject to review by the Canadian Coast Guard (CCG) Navigable Waters Protection Division pursuant to the Navigable Waters Project Act. Any works seaward of HHW may also be of interest to Land & Water BC as the provincial government has jurisdiction over the seabed of *inland waters.*

APPENDIX B

Site Investigation Report by AMEC– 2010/03/19

19 March 2010

AMEC File:VG07681

Public Works and Government Services Canada
Professional and Technical Services
800 Burrard Street, 12th Floor
Vancouver, British Columbia, V6Z 2V8

Attention: **Mr. Richard Preston, P.Eng.**

Dear Sir,

Reference: **Site Investigation**
Steveston Wingdam No. 1, Richmond, BC

1.0 INTRODUCTION

AMEC Earth & Environmental, a division of AMEC Americas Limited (AMEC) was requested to attend a site investigation conducted on 29 and 30 January 2010 to assist in evaluating soil and groundwater conditions for the proposed removal of the Steveston Wingdam No. 1 located in Richmond, BC.

The Steveston Wingdam No. 1 is located on the north side of the south arm of the Fraser River and consists of two rows of vertical timber piles with connecting walers (the location of the structure is shown on Figures 1 and 2). Based on information provided by Public Works and Government Services Canada (PWGSC), the length of the structure could be approximately 160 m. The Steveston Wingdam No. 1 was built together with Steveston Wingdams No. 2 and No. 3.

It is understood that PWGSC is investigating options to dispose of its surplus marine assets and one of these is the Steveston Wingdam No. 1. One of the options for disposal is the removal of the structure. In order to evaluate the environmental conditions of the structure and surrounding site, an environmental consultant (Hemmera) was engaged by PWGSC to conduct a test pit site investigation. AMEC was requested to attend the site investigation to observe soil and groundwater conditions for geotechnical purposes and to provide very preliminary comments on excavation conditions for possible removal of materials.

2.0 SITE INVESTIGATION

The test pit site investigation commenced on 29 January 2010 at about 9:00 pm using a track mounted excavator owned and operated by Quantum Murray Contractors. Two test pits were advanced beside the existing timber piles to depths between approximately 2.0 m to 3.5 m below the existing ground surface. The two test pits were excavated at approximately 12 m and 13 m south of the vegetated area located to the north of the timber piles (the approximate locations of the test pits are shown on Figure 3).

AMEC Earth & Environmental
a division of AMEC Americas Limited
2227 Douglas Road, Burnaby, BC
Canada V5C 5A9
Tel +1 (604) 294-3811
Fax +1 (604) 294-4664
www.amec.com

An AMEC representative attended the test pit investigation and logged the encountered soil and groundwater conditions in accordance with the modified unified soil classification system. Test pits were backfilled with excavated material as directed by a representative from PWGSC and the investigation was concluded on 30 January 2010 at about 1:30 am.

3.0 SUBSURFACE CONDITIONS

Detailed descriptions of the soil and groundwater conditions are shown on the test pit logs (attached). The detailed soil descriptions on these logs should be referred to in preference to the generalized descriptions provided below.

TP10-01

The first test pit (TP10-01) was excavated on the west side of the structure at about 13 m south of the vegetated area located to the north of the structure. The test pit was started at about 11:00 pm on 29 January 2010 and was excavated next to the timber piles and down to a depth of about 3.5 m below the existing ground surface. Sand with trace silt and occasional river rock and pieces of wood were observed up to a depth of 2 m below ground surface. Below a depth of 2 m, sand with trace silt and some riprap and wood debris was observed. The size of the riprap ranged from approximately 200 mm to 400 mm in diameter. Below the depth of 2 m, the excavation began to fill up with water and sand slurry (containing sand, wood debris, and riprap).

The depth of the observed groundwater was at about 2 m below the ground surface at the start of test pit excavation and the water level rose to a depth of about 1 m within 30 minutes. The test pit began to slough and cave-in from the beginning of the excavation and was about 8 m to 9 m in diameter when the excavation terminated. The bottom of the test pit was not visible and the test pit was filled with slurry. The depth of the water level was observed to be at a depth of about 1 m below the ground surface at the end of the test pit excavation.

TP10-02

The second test pit (TP10-02) was excavated on the east side of the timber piles at about 12 m south from the vegetated area. The test pit was started at about 12:00 am on 30 January 2010 and was excavated to a depth of 2 m below the ground surface. The test pit was approximately 4 m long by 3 m wide. Sand with trace silt was observed in the excavator bucket to a depth of about 1 m. From a depth of 1 m to 2 m a noticeable amount of wood debris with some riprap was observed. The wood debris observed contained pieces of wood from timber logs. Timber logs were also visible on the surface of the ground and were scattered in the vicinity of the area. The groundwater was at a depth of about 1 m below the ground surface when backfilling of the test pit began. To allow time for the movement of equipment to a safe location before high tide, the test pit had to be backfilled at about 12:30 am on 30 January 2010.

It should be noted that the observed groundwater conditions are largely influenced by tidal fluctuations and are anticipated to be variable. However, it was not possible to determine from observations during the site investigation if there was a direct correlation between the elevation of the groundwater and that of the tidal water level.

4.0 DISCUSSION

Results from the site investigation indicate subsurface conditions consisting predominantly of sand with trace silt. Below a depth of approximately 1.0 m to 2.0 m, there was some riprap and wood debris. This noticeable riprap is likely indicative of a layer of material placed after the installation of the timber piles to protect the existing structure from erosion. However, due to sloughing and caving of the test pit excavation during the investigation, it was difficult to discern the thickness and extent of the materials and whether or not the materials formed a continuous layer.

Based on the soil conditions observed during the site investigation, it is anticipated that removal of the timber piles using vibratory removal techniques should be feasible. However, it may be necessary to assess the condition of the timber piles above the ground elevation (including above the groundwater elevation and above the riverbed) to determine if the upper sections of the timber are in a satisfactory condition to allow for vibratory removal. If the exposed sections of the piles are decayed or mechanically damaged, it may be necessary to utilize the unexposed sections of the piles for removal.

If required, the removal of the riprap and wood debris would likely require a combination of excavating above the tidal elevation and dredging with a barge in areas below the tidal elevation. Temporary excavation slopes would likely be inundated with water and the majority of the excavation would likely be underwater.

Based on conversations with a dredging contractor and for preliminary excavation volume estimates, it is expected that temporary underwater excavation slopes would tend to flatten on their own to approximately 5H:1V. It is anticipated that the slopes should remain open for a period of a few days depending on the amount of current, tidal influence and seepage. Periodic re-grading of the slopes would likely be necessary and temporary excavation slopes should be further evaluated in the detailed design phase and confirmed during actual construction.

It may be possible to achieve steeper slopes than those outlined in the paragraph above. However, this would be dependent on the proposed removal techniques and construction methods. An option for achieving steeper excavation slopes would be the installation of sheet piling and/or construction of a small cofferdam. However, considerations should be made to the observed riprap materials regarding groundwater seepage. Should the observed materials form a continuous layer, the layer could act as a seepage conduit for groundwater making for the construction and dewatering of a cofferdam more difficult. Sheet piling could be done through or outside of the riprap area. Dewatering would need to be evaluated for these options.

Based on existing information, it is believed that the structure could be approximately 160 m in length and it is anticipated that a portion of the structure could be buried underneath the vegetated area located to the north. During the preliminary investigation, the structure could be seen to extend out south into the water.

It is recommended that once a disposal option has been decided for the Steveston Wingdam No. 1, a detailed design for decommissioning of the structure can be developed at that phase of the project to address project objectives. This could include further investigation of the extent of the riprap, the condition of the timber piles, and subsurface conditions using boreholes and/or geophysics methods such as sub-bottom profiling. The effectiveness of sub-bottom profiling in the identification of riprap in sand would need to be further evaluated.

5.0 CLOSURE

Recommendations presented herein are based on a geotechnical evaluation of the findings of the previous information and site investigation noted above. If conditions other than those reported are noted during subsequent phases of the project, AMEC should be notified and be given the opportunity to review and revise the current recommendations, if necessary.

This report has been prepared for the exclusive use of Public Works and Government Services Canada for specific application to the area within this report. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibility of such third parties. AMEC accepts no responsibility for damages, suffered by any third party as a result of decisions made or actions based on this report. It has been prepared in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.

Respectfully submitted,

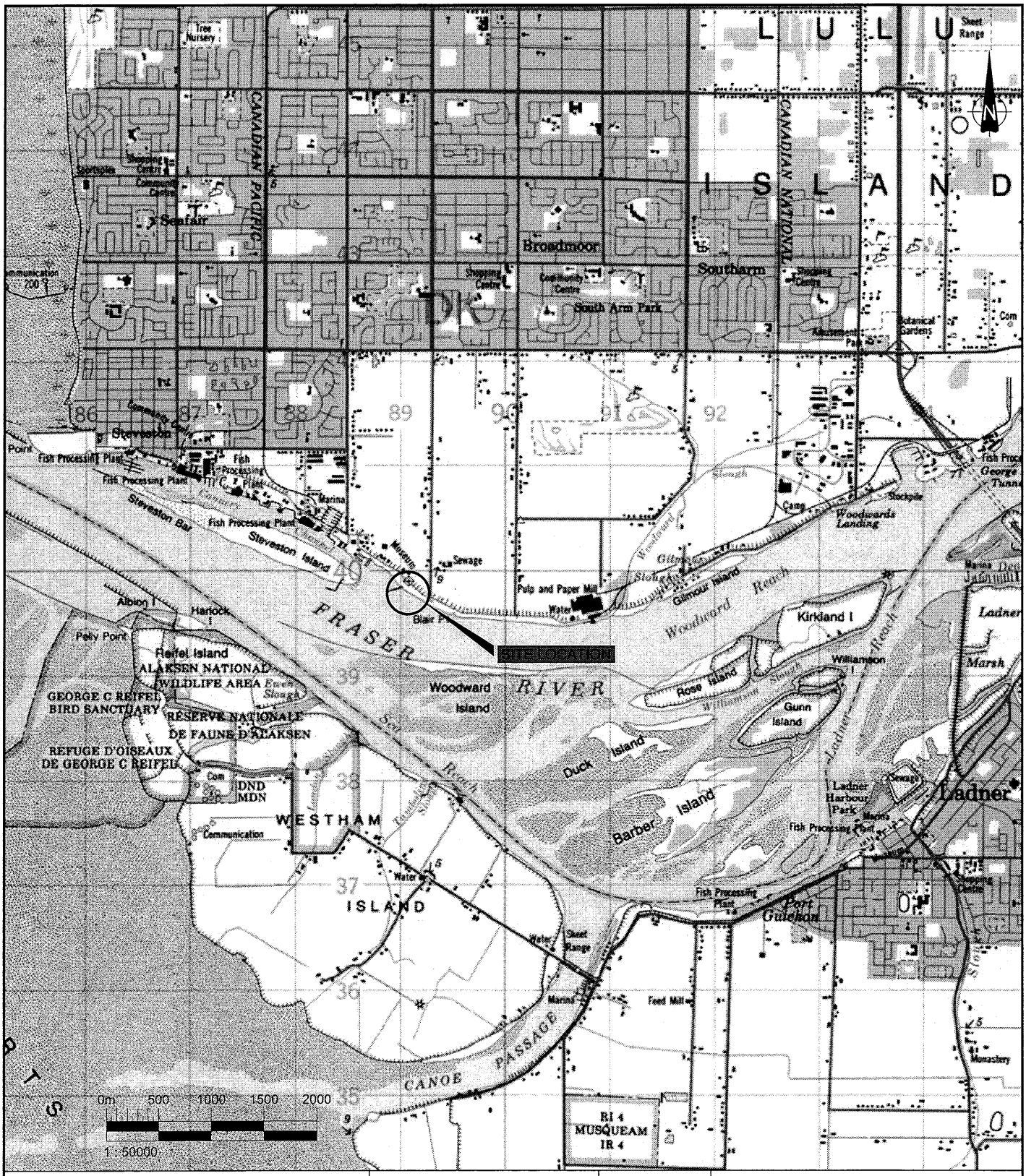
AMEC Earth & Environmental,
A division of AMEC Americas Limited

Gavin Lee, P.Eng.
Geotechnical Engineer

Reviewed by,

John D. Laxdal, P.Eng.
Regional Manager
Southwest British Columbia

FIGURES
TEST PIT LOGS



AMEC Earth & Environmental
2227 Douglas Road, Burnaby, B.C., V5C 5A9
Tel. 604-294-3811 Fax 604-294-4664

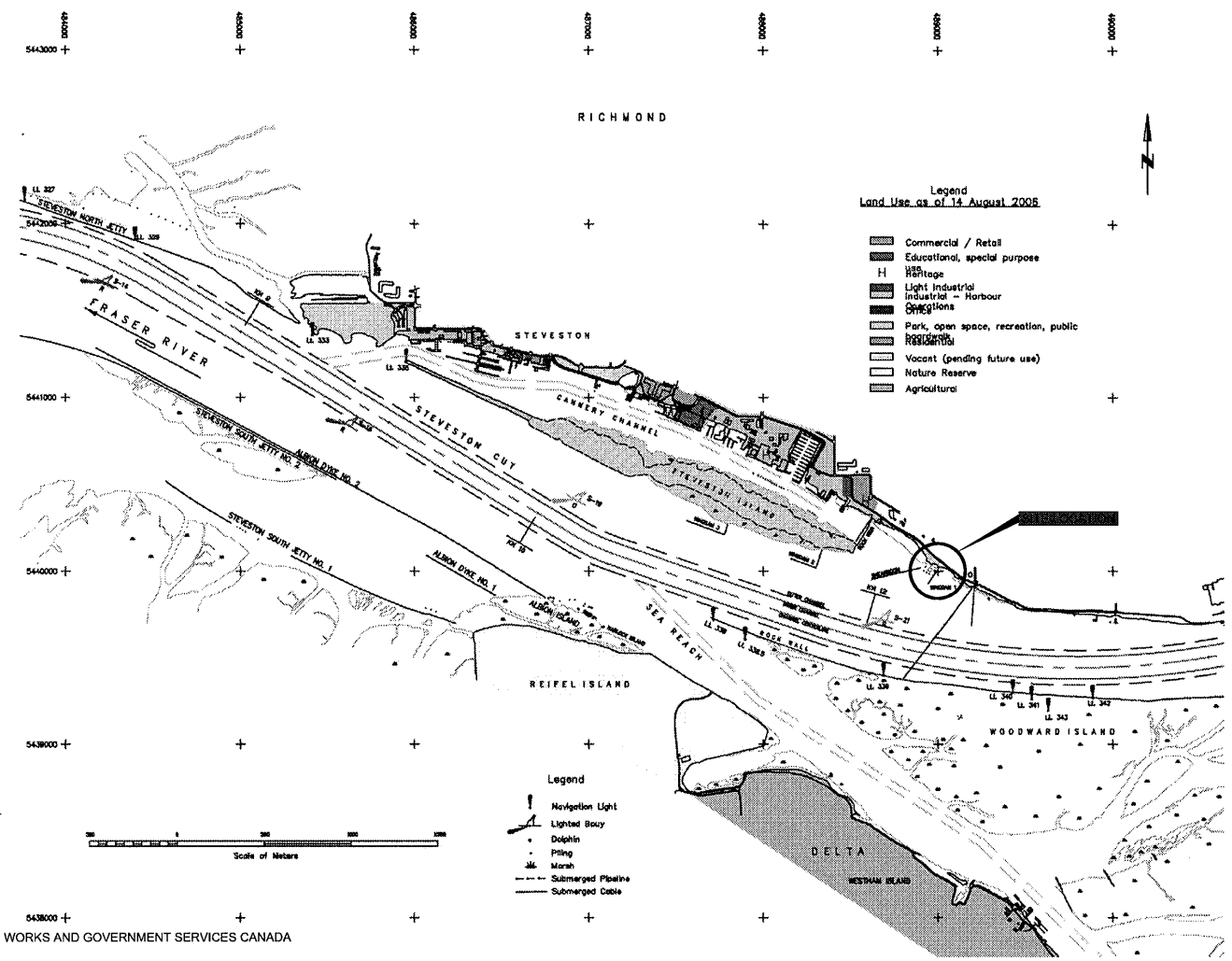
amec

CLIENT LOGO: Canada

CLIENT: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

PROJECT: SITE INVESTIGATION STEVESTON WINGDAM No. 1 RICHMOND, BC	DWN BY: MW	DATUM: NAD 83	DATE: FEBRUARY 2010
	CHK'D BY: GL	REV. NO.: A	PROJECT NO: VG07681
TITLE: LOCATION PLAN	PROJECTION: UTM Zone 10	SCALE: AS SHOWN	FIGURE No. 001

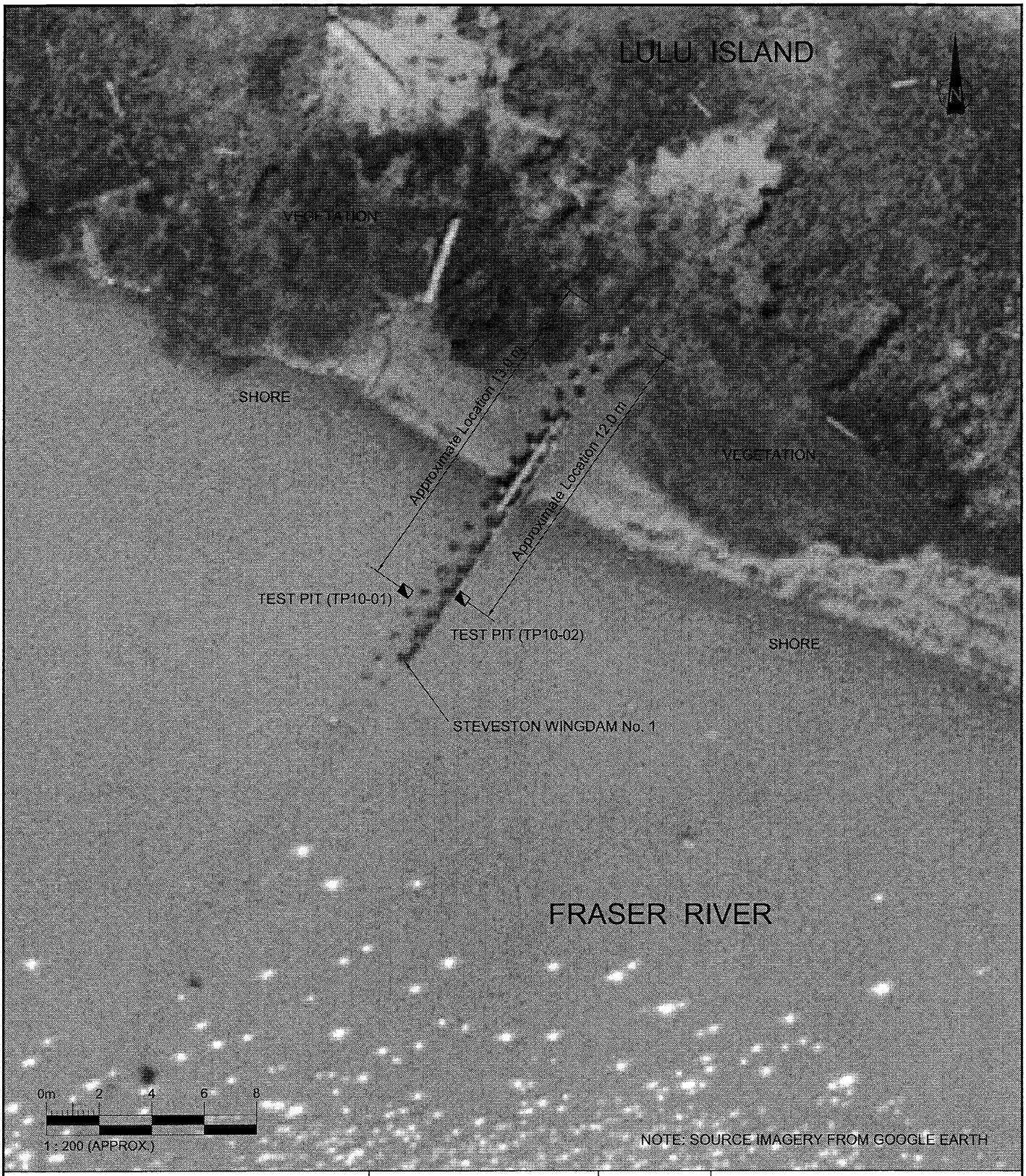
G:\PROJECTS\7000\VG07681 - PWGSC - Steveston Wingdam No. 1\Drawings\VG07681-001.dwg - 001 - Feb. 24, 2010 9:05am - michael.m.wong



NOTE: SOURCE DRAWING FROM PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
(EDRM DOCUMENT No. 158962)

	CLIENT LOGO: Government of Canada / Gouvernement du Canada — Canada	CLIENT: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	DWN BY: MW CHK'D BY: GL DATUM: NAD83 PROJECTION: UTM Zone 10 SCALE: AS SHOWN	PROJECT: SITE INVESTIGATION STEVESTON WINGDAM No. 1 RICHMOND, BC	DATE: FEBRUARY 2010 PROJECT NO: VG07681
		AMEC Earth & Environmental 2227 Douglas Road, Burnaby, B.C., V5C 5A9 Tel. 604-294-3811 Fax 604-294-4664		TITLE: SITE PLAN	REV. NO.: A FIGURE No. 002

G:\PROJECTS\7000\VG07681 - PWGSC - Steveston Wingdam No. 1\Drawings\VG07681-001.dwg - 002 - Feb. 24, 2010 9:02am - michael.m.wong



AMEC Earth & Environmental
2227 Douglas Road, Burnaby, B.C., V5C 5A9
Tel. 604-294-3811 Fax 604-294-4664

CLIENT LOGO: Canada

CLIENT: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

PROJECT: SITE INVESTIGATION
STEVESTON WINGDAM No. 1
RICHMOND, BC

TITLE: AERIAL SITE LOCATION

DWN BY:	DATUM:	DATE:
MW	NAD 83	FEBRUARY 2010
CHK'D BY:	REV. NO.:	PROJECT NO:
GL	A	VG07681
PROJECTION:	SCALE:	FIGURE No.
UTM Zone 10	AS SHOWN	003

C:\PROJECTS\7000\VG07681 – PWGSC – Steveston Wingdam No. 1\Drawings\VG07681-001.dwg – 003 – Feb. 24, 2010 9:01am – michael.m.wong

TESTPIT TP10-01

STARTED: 1/29/2010 **FINISHED:** 1/29/2010

METHOD: Excavator

TESTPIT LOCATION: Richmond, BC

DEPTH (m)	SPT BLOWS PER 0.3 m	% Fines < No. 200	SAMPLE TYPE AND NUMBER	SYMBOL	DEPTH EL.	DESCRIPTION OF MATERIALS	WELL INSTALLTION DETAILS
						SAND, trace silt, trace river rock, trace wood debris, fine to medium grained sand, wet, grey.	
					2.0		
					-2.0	SAND, trace silt, some riprap, some wood debris, wet (slurry), grey.	
					3.5		
					-3.5	Test pit excavation terminated at a depth of about 3.5 m as directed by a representative from PWGSC to complete the investigation before high tide. The test pit was filled with slurry (containing sand, riprap, and wood debris) below a depth of about 2 m. The bottom of the test pit was not visible. Groundwater was at a depth of about 2 m below the ground surface at the start of the test pit excavation and rose to a depth of about 1 m below the ground surface after approximately 30 minutes, when backfilling began.	

Su (kPa)
20 60 100 140 180
FIELD VANE P PEN/2 ⊙
PEAK ▲
REMOULDED △
● SPT N ◆ DCPT N Blows/0.3 m
W_P% W% W_L%
10 30 50 70 90

AMEC Earth & Environmental
2227 Douglas Road
Burnaby, B.C. V5C 5A9

PROJECT NO.: VG07681
PROJECT: Steveston Wingdam No. 1
LOCATION: Richmond, BC
LOGGED BY: SA **REVIEWED BY:** GL
SHEET 1 OF 1 **TESTPIT No. TP10-01**

TESTPIT TP10-02

STARTED: 1/29/2010 **FINISHED:** 1/30/2010

METHOD: Excavator

TESTPIT LOCATION: Richmond, BC

DEPTH (m)	SPT BLOWS PER 0.3 m	% Fines < No. 200	SAMPLE TYPE AND NUMBER	SYMBOL	DEPTH EL.	DESCRIPTION OF MATERIALS	WELL INSTALLTION DETAILS
						SAND, trace silt, trace river rock, trace wood debris, fine to medium grained sand, wet, grey.	
					1.0 -1.0	SAND, trace silt, trace river rock, some wood debris, wet, grey.	
					2.0 -2.0	Test pit excavation terminated at a depth of about 2.0 m as directed by a representative from PWGSC to complete the investigation before high tide and to allow time for the movement of equipment to a safe location. The bottom of the test pit was not visible. Groundwater was at a depth of about 2 m below the ground surface and the test pit was backfilled immediately after reaching a depth of about 2 m.	

Su (kPa)
20 60 100 140 180
FIELD VANE P PEN/2 ⊙
PEAK ▲
REMOULDED △
● SPT N ◆ DCPT N
Blows/0.3 m
W_P% W% W_L%
10 30 50 70 90

AMEC Earth & Environmental
2227 Douglas Road
Burnaby, B.C. V5C 5A9

PROJECT NO.: VG07681
PROJECT: Steveston Wingdam No. 1
LOCATION: Richmond, BC
LOGGED BY: SA **REVIEWED BY:** GL
SHEET 1 OF 1 **TESTPIT No. TP10-02**

APPENDIX C

BC Ministry of Forests, Lands and Natural Resource Operations, Water Act Approval

BRITISH
COLUMBIA

October 22, 2015 Approval File: 2003794

Public Works and Government Services Canada
40-1230 Government Street
Victoria, BC V8W3X4

Attention: Katrina Johnson

Re: Application for Approval to make changes in and about Fraser River

An approval for the proposed changes in and about Fraser River has been granted, subject to the conditions noted on the attached Approval document A2003794.

Please be advised that applications for an approval can take up to 140 days to process. To improve our ability to review your application in a timely manner, please consider submitting information outlined in the South Coast Approval Guidelines available at: http://www.env.gov.bc.ca/wsd/water_rights/licence_application/section9/approval_application_guidance_water_act_sec-9-south_coast_feb-2013.pdf.

The holder of this Approval shall retain an independent, appropriately qualified professional to conduct environmental monitoring of all in-stream works authorized under this Approval. The Environmental Monitor is responsible and accountable for ensuring that all the works approved under this Approval are conducted according to all applicable legislations and Best Management Practices. The Environmental Monitor is to seek advice from FLNR, or any other agency, when appropriate.

If you have any questions or concerns please contact the Water Information Technician at 604-586-4400.

Yours truly,

Remko Rosenboom, M.Sc., A.Ag.
Regional Water Manager

Enclosure

pc: Cowichan Tribes
Halalt First Nation
Hul'qumi'num Treaty Group
Lake Cowichan First Nation

Ministry of Forests, Lands and Natural Resource Operations
Surface Water Authorizations
South Coast Natural Resource Region
Website: http://www.env.gov.bc.ca/wsd/
Suite 200, 10428 153rd Street
Surrey, BC V3R 1E1
Phone: (604) 586-4600
Fax: (604) 586-4444

Lyackson First Nation
Musqueam Nation
Seabird Island Band
Semiahmoo First Nation
Shxw'owhamel First Nation
Skawahlook First Nation
Soowahlie First Nation
Sto:lo Nation
Sto:lo Tribal Council
Tsawwassen First Nation
Tsleil-Waututh Nation

HM / klj

BRITISH COLUMBIA

Water Act

File: A2003794

APPROVAL

WATER ACT - Subsection 9(1), Clauses (a), (b) and (c)
(Changes in and about a stream)

Public Works and Government Services Canada

is hereby authorized to make changes in and about a stream as follows:

(a) The name of the stream is Fraser River, herein referred to as "the stream".

(b) The changes to be made in and about the stream are:

The removal of Steveston Wingdam No 1 from the unsurveyed foreshore or land being part of the bed of the Fraser River in the vicinity of Lot 9, Plan 3166 and Lot 24, Plan 56635, both within Block 3 North, Range 6 West, New Westminster District.

(c) This Approval does not authorize entry on privately held land or Crown land.

(d) This Approval does not constitute authority of any other agency. The holder of this Approval shall have the necessary permits from other agencies concerned prior to the commencement of the works authorized herein.

(e) The holder of this Approval must have permits or other written consent from any affected right-of-way holders before commencing work that could affect utilities or other structures within the right-of-ways.

(f) This Approval does not authorize the alteration or removal of any works held under a water licence.

(g) The holder of this Approval shall take reasonable care to avoid damaging any land, works, trees, or other property and shall make full compensation to the owners for any damage or loss resulting from the exercise of rights granted hereunder.

(h) The work authorized shall be completed on or before December 31, 2016, and the holder of this Approval shall advise the Water Information Technician (604-586-4400) when the changes have been completed.

(i) Work in the stream channel shall occur only during the period of July 16 to February 28, so that the fisheries interests are protected.

(j) All works shall comply with the construction, mitigation and compensation measures as listed in the application package associated with this authorization, unless otherwise specified by the conditions of this Approval.

(k) The holder of this Approval must hire an appropriately Qualified Professional (QP) to conduct Environmental Monitoring on all in-stream works authorized under this Approval. The Environmental Monitor (EM) is responsible for observing the methods of construction and preparing information and reports on the compliance of the construction activities. The EM will assist in the isolation of the stream, erosion and sediment control measures and environmental monitoring to ensure there is minimal environmental impact on the land and potentially fish and fish habitat of the stream.

(l) The EM should attend the site prior to conducting any instream works to complete salvages, and to ensure environmental protection measures are constructed, installed and maintained appropriately.

(m) The EM will supervise all in-stream works authorized under this Approval. In the event of an environmental incident or non-compliance with any of the terms or conditions of this Approval, the EM shall notify the Regional Water Manager (604-586-4400), within 24 hours.

(n) The EM is hereby granted authority to stop the work authorized under this Approval if deemed necessary by the EM to address risks to the environment.

(o) All work shall be carried out in accordance with the Ministry of Environment's "Standards and Best Practices for In-stream Works". The Ministry's guidance can be found at the following link: http://www.env.gov.bc.ca/lower-mainland/electronic_documents/iswstdsbpsmarch2004.pdf.

(p) Upon commencement of the project, the work shall be pursued to completion as quickly as possible.

(q) Equipment and machinery used in or near the stream channel must be in good operating condition and free of leaks, excess oil and grease.

(r) Care shall be exercised during all phases of the work to prevent the release of silt, sediment, sediment-laden water, raw concrete, concrete leachate or any deleterious substances.

(s) Control measures to prevent the release of silt, sediment or sediment-laden water must be in place before starting works that may result in sediment mobilization.

(t) All excavated material and debris shall be removed from the site or placed in a stable area above the high water mark of the stream and mitigative measures to protect the excavated material and debris from erosion and reintroduction into the watercourse shall be used, such as, but not limited to, covering the material with erosion blankets or seeding and planting with native vegetation.

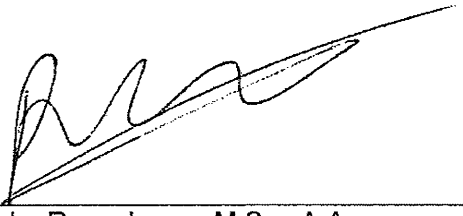
(u) All temporary works (including a ford, stream crossing, and flow bypass) shall be removed on completion of the project, and the stream channel restored to its natural condition.

(v) A spill containment kit must be readily accessible on-site and no equipment or machinery refueling shall take place within 30 meters of any watercourse.

(w) Archeological sites (both recorded and unrecorded) are protected under the Heritage Conservation Act and must not be altered or damaged without a permit from the Archeology Branch. The holder of this Approval must advise everyone who will be involved in ground-disturbance and construction that if archeological materials are encountered, activities must be halted and the Archeology Branch contacted at 250-953-3334 for direction.

(x) The advice of the EM on construction timing and mitigation measures, as well as the timing of construction and EM presence, must be documented in writing. This report should also include whether or not they observed or were otherwise aware of any non-compliance with the terms and conditions of this Approval; and a description of any environmental incidents, non-compliance or other difficulties, and how these were addressed and reported. This documentation must be retained for at least 2 years following construction, and if requested by the Regional Water Manager, provided for our review.

(y) A copy of this Approval (and associated plans/drawings listed on this Approval) must be available for inspection, upon request, at any location where the authorized changes in and about a stream are being undertaken.



Remko Rosenboom, M.Sc., A.Ag.
Regional Water Manager

APPENDIX D

Preliminary Hazard Assessment Form

Public Works and Government Services Canada | Travaux publics et Services gouvernementaux Canada

PRELIMINARY HAZARD ASSESSMENT FORM

Project Number:	**R. 074582.002 – SWD#1 Deconstruction**
Location:	**PWGSC Marine Facility, Steveston Wingdam #1, Fraser River, B.C.**
Date:	**12 April 2016**
Name of Departmental Representative:	**Jerry Chen**
Name of Client:	**PWGSC**
Name of Client Project Co-ordinator	PH: ( )- -

Site Specific Orientation Provided at Project Location Yes ☐ No ☐

Notice of Project Required Yes ☒

NOTE:
PWGSC REQUIRES A Notice of Project FOR ALL CONSTRUCTION WORK RELATED ACTIVITIES

NOTE:
OHS law is made up of many municipal, provincial, and federal acts, regulations, bylaws and codes. There are also many other pieces of legislation in British Columbia that impose OHS obligations.

Important Notice: This hazard assessment has been prepared by PWGSC for its own project planning process, and to inform the service provider of actual and potential hazards that may be encountered in performance of the work. PWGSC does not warrant the completeness or adequacy of this hazard assessment for the project and the paramount responsibility for project hazard assessment rests with the service provider.

TYPES OF HAZARDS TO CONSIDER	Potential Risk for:				COMMENTS
Examples: Chemical, Biological, Natural, Physical, and Ergonomic	PWGSC, OGD's, or tenants		General Public or other contractors		Note: When thinking about this pre-construction hazard assessment, remember a **hazard** is anything that may cause harm, such as chemicals, electricity, working from heights, etc; the **risk** is the chance, high or low, that somebody could be harmed by these and other hazards, together with an indication of how serious the harm could be.
Listed below are common construction related hazards. Your project may include pre-existing hazards that are not listed. Contact the Regional Construction Safety Coordinator for assistance should this issue arise.	**Yes**	**No**	**Yes**	**No**	

Typical Construction Hazards					
Concealed/Buried Services (electrical, gas, water, sewer etc)	yes				
Slip Hazards or Unsound Footing	yes				
Working at Heights		no			
Working Over or Around Water	yes				
Heavy overhead lifting operations, mobile cranes etc.	yes				

Canada

Marine and/or Vehicular Traffic (site vehicles, public vehicles, etc.	yes				
Fire and Explosion Hazards	yes				
High Noise Levels	yes				
Excavations	yes				
Blasting		no			
Construction Equipment	yes				
Pedestrian Traffic (site personnel, tenants, visitors, public)	yes				
Multiple Employer Worksite	yes				Example: Contractor working in an occupied Federal Employee space.

Electrical Hazards					**Comments**
Contact With Overhead Wires		no			
Live Electrical Systems or Equipment		no			
Other:					
Physical Hazards					
Equipment Slippage Due To Slopes/Ground Conditions	yes				
Earthquake	yes				
Tsunami	yes				
Avalanche		no			
Forest Fires		no			
Fire and Explosion Hazards	yes				
Working in Isolation	yes				
Working Alone	yes				
Violence in the Workplace	yes				
High Noise Levels	yes				
Inclement weather	yes				
High Pressure Systems		no			
Other:	yes				Exposed to sea water – tides, currents, waves. Maximum currents at site about 3.5 m/sec.
Hazardous Work Environments					
Confined Spaces / Restricted Spaces		no			
Suspended / Mobile Work Platforms	yes				
Other:	yes				Operation of heavy equipment
Biological Hazards					
Mould Proliferations		no			
Accumulation of Bird or Bat Guano		no			
Bacteria / Legionella in Cooling Towers / Process Water		no			
Rodent / Insect Infestation	yes				
Poisonous Plants	yes				
Sharp or Potentially Infectious Objects in Wastes		no			
Wildlife	yes				Includes marine mammals, fish, and birds.
Chemical Hazards					

Asbestos Materials on Site		no			
Designated Substance Present		no			
Chemicals Used in work	yes				
Lead in paint		no			No existing paint is expected.
Mercury in Thermostats or Switches		no			
Application of Chemicals or Pesticides		no			Not expected.
PCB Liquids in Electrical Equipment		no			
Radioactive Materials in Equipment		no			
Other:		no			Existing wood was tested and no wood preservatives were detected. It is possible there may be some wood on site treated with wood preservatives including creosote, CCA, and ACZA.
Contaminated Sites Hazards					
Hazardous Waste		no			
Hydrocarbons		no			
Metals		no			
Other:					

Security Hazards					**Comments**
Risk of Assault	yes				Includes violence in the work-place.
Other:					
Other Hazards					

Other Compliance and Permit Requirements[1]	**YES**	**NO**	**Notes / Comments[2]**
Is a Building Permit required?		**no**	
Is an Electrical permit required?		**no**	
Is a Plumbing Permit required?		**no**	
Is a Sewage Permit required?		**no**	
Is a Dumping Permit required?		**no**	
Is a Hot Work Permit required?		**no**	
Is a Permit to Work required?		**no**	Mandatory for ALL AFD managed work sites.
Is a Confined Space Entry Permit required?		**no**	No confined space entry expected.
Is a Confined Space Entry Log required	**yes**		Mandatory for all Confined Spaces
Discharge Approval for treated water required	**yes**		No discharge of treated water expected.

Notes:

(1) Does not relieve Service Provider from complying with all applicable federal, provincial, and municipal laws and regulations.

(2) TBD means To Be Determined by Service Provider.

Service Provider Acknowledgement: We confirm receipt and review of this Pre-Project Hazard Assessment and acknowledge our responsibility for conducting our own assessment of project hazards, and taking all necessary

protective measures (which may exceed those cited herein) for performance of the work.			
Service Provider (Contractor) Name			
Signatory for Service Provider		**Date Signed**	
RETURN EXECUTED DOCUMENT TO PWGSC DEPARTMENTAL REPRESENTATIVE PRIOR TO ANY WORK COMMENCING			