

**FISHERIES AND OCEANS  
CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA) 2012  
PROJECT EFFECTS DETERMINATION REPORT**

**GENERAL INFORMATION**

<b>1. Project Title:</b> Wharf Extension, Harbour Grace, NL	
<b>2 Proponent:</b> Fisheries and Oceans Canada, Small Craft Harbours (DFO SCH)	
<b>3. Other Contacts</b> (Other Proponent, Contractor, etc): Public Works and Government Services Canada	<b>Role:</b> OGD Consultant
<b>5. Source of Project Information:</b> Keith Brinston, PWGSC Project Officer	
<b>6. Project Review Start Date:</b> June 4, 2014	
<b>7. DFO File No.:</b> 14-HNFL-00254	<b>8. PWGSC File No:</b> R.065073.001
<b>9. TC File No.:</b> 8200-97-1120	

**BACKGROUND**

**10. Background about Proposed Development (including a description of the proposed development):**

DFO SCH proposes to extend the existing wharf located at the Small Craft Harbour Facility in Harbour Grace, NL. The extension will involve the placement of six (6) – 7.6 m x 7.6 m treated timber cribs. Total length of the extension will be 46 meters.

**PROJECT REVIEW**

**11. DFO's rationale for the project review:**

Project is on federal land ☒ and:

- ☒ DFO is the proponent
- ☐ DFO to issue *Fisheries Act* Authorization or *Species at Risk Act* Permit
- ☐ DFO to provide financial assistance to another party to enable the project to proceed
- ☐ DFO to lease or sell federal land to enable the project to proceed
- ☐ Other

**12. Fisheries Act Sections (if applicable):** n/a

**13. Other Authorities**

Transport Canada, Navigation Protection Program

**14. Other Authorities rationale for involvement:**

Navigation Protection Act

<b>15. Other Jurisdiction:</b> n/a	
<b>16. Other Expert Departments Providing Advice:</b> Fisheries and Oceans Canada, Fisheries Protection Program	<b>17. Areas of Interest of Expert Departments:</b> Fisheries Act
<b>18. Other Contacts and Responses:</b> n/a	
<b>19. Scope of Project (details of the project subject to review):</b> <p><u><b>Project Description</b></u></p> <p><u><b>Construction/Installation:</b></u>  The proposed project will involve extending the existing wharf in Harbour Grace (south), NL. The extension will involve the placement of six (6) – 7.6 m x 7.6 m treated timber cribs. Total length of the extension will be 46 meters.</p> <p>A clean rock mattress will be placed within the footprint of the proposed wharf extension and, to ensure stability, dredging may be required prior to mattress placement. Cribs will be constructed on land and then placed onto the mattress. Excavators will work from the existing wharf, but could also operate from a barge. Clean ballast material will be placed within the cribs and cement will be poured for the deck.</p> <p>Miscellaneous works will include the installation of new wheelguards, fenders, ladders, cleats, etc.</p> <p><u><b>Operation</b></u></p> <p>The Environmental Management System (EMS) with an integrated Environmental Management Plan (EMP) for the Harbour Authority of Harbour Grace will cover operational aspects of environmental management at the harbour (fuelling, waste disposal, activities on the property and water).</p> <p><u><b>Decommissioning</b></u></p> <p>This facility is not presently planned to be decommissioned. At the time of decommissioning, Small Craft Harbours will develop a site-specific re-use or reclamation plan that is appropriate for the applicable environmental legislation and Fisheries and Oceans Canada policies.</p> <p><u><b>Scheduling</b></u></p> <p>Commencement of this project is subject to DFO SCH operational priorities and funding, but is anticipated for the fall of 2014.</p>	
<b>20. Location of Project:</b> <p>Harbour Grace is located in Conception Bay and is off of route 70. The approximate coordinates of the project site is 40° 40.659'N and 53° 13.478' W. The project site is located on the southern side of the harbour.</p>	
<b>21. Environment Description:</b> <p>The general surrounding area is surrounded by low to moderate slope, granite rock with a moderate cover of grass, native shrub, and coniferous vegetation. The general project site is well developed with marina, harbour, and commercial infrastructure. Sand, gravel, and cobble with small areas of bedrock outcrops are predominant along the shoreline outside the project limits. There are no known terrestrial wildlife or animal habitats in the immediate project area. Other fauna within the project area is limited to near shore fish species such as cunner, tomcod, and winter flounder. While marine mammals such as seals and whales frequent the general area, it is not</p>	

likely they inhabit the immediate project area. There are no known aquaculture sites or lobster pounds in the immediate area. There are no known terrestrial wildlife or animal habitats in the immediate and nearby project area. Gulls, crows, turrs, puffins, eagles, hawks, osprey, and several species of seabirds and songbirds are common throughout the general project area.

**Species at Risk (Aquatic and Terrestrial)**

A search of the Atlantic Canada Conservation Data Centre (ACCDC) database was conducted within a 5 km radius of the proposed project location (ACCDC 2013). The search did not yield any results of documented sightings of species at risk within the search area.

**22. Scope of Effects Considered (sections 5(1) and 5(2)):**

**Table 1: Potential Project / Environment Interactions Matrix**

	As per Section 5(1)			Section 5(1c)				Section 5(2)			Due Dillgence			
				Aboriginal Interest										
Project Phase / Physical Work/Activity	Fish (Fisheries Act)	Aquatic Species (SARA)	Birds (MBCA)	Health and Socio economic	Physical and cultural heritage	Land use	*HAPA Significance	Health and Socio economic	Physical and cultural heritage	*HAPA Significance	Water (ground, surface, drainage, etc)	Terrestrial / Aquatic Species	Soil	Air Quality
Construction/Installation														
Remove existing wheelguard, blocking, fenders and ladders	P	-	-	-	-	-	-	-	-	-	P	P	-	-
Construct new wharf	P	-	-	-	-	-	-	-	-	-	P	P	-	-
Operation / Maintenance	P	-	-	-	-	-	-	-	-	-	P	-	-	-
Decommissioning / Abandonment	-	-	-	-	-	-	-	-	-	-	-	-	-	-

\*structure, site or thing that is of historical, archaeological, paleontological or architectural significance.

Legend: P = Potential Effect of Project on Environment; '-' = No Interaction

### **23. Environmental Effects of Project:**

Potential Project/Environment Interactions and their effects are outlined below:

#### **Fish:**

- Sedimentation as a result of wharf preparation and construction and potential dredging may negatively impact fish and quality of potential fish habitat at the immediate project site.
- Accidental discharge of heavy machinery fuel/fluids could negatively impact fish and potential fish habitat.

#### **Water:**

- Sedimentation as a result of wharf preparation and construction and potential dredging may decrease marine water quality at immediate project site.
- Construction related refuse may be deposited in water-body, decreasing marine water quality.
- Accidental discharge of heavy machinery fuel/fluids may result in a decrease of marine water quality.

#### **Aquatic species:**

- Sedimentation as a result of wharf preparation and construction may negatively impact aquatic species present at the immediate project site.
- Accidental discharge of heavy machinery fuel/fluids could negatively affect aquatic species present at the immediate project site.

### **24. Mitigation Measures for Project (including Habitat Compensation):**

Whenever possible, minimize duration of in-water work;

Plan activities near water so materials such as paint, primers, solvents, degreasers, concrete or other chemicals do not enter the watercourse;

Machinery should arrive on-site in a clean condition and should be maintained free of fluid leaks;

Whenever possible, machinery should be operated on land above the highwater mark or from a location that minimizes disturbance to the waterbody;

Machinery should be clean and refueling/servicing as well as the storage of fuels and other materials for the machinery should be undertaken in a manner that prevents any deleterious substance from entering the water;

The proponent should be aware of the CCME "Canadian Environmental Quality Guidelines (1999) that recommend that for the protection of marine waters, human activities should not cause suspended solids levels to increase by more than 10% of the natural conditions expected at the time. The guidelines also recommend that no solid debris, including floating or drifting materials or settleable matter, be introduced into marine waters.

Waste materials should not be deposited in the tidal waters;

Work should be scheduled to avoid periods of heavy precipitation. Erosion control structures (temporary matting, geotextile filter fabric) are to be used, as appropriate, to prevent erosion runoff of sediment laden water during the construction phase.

Machinery must be checked for leakage of lubricants or fuel and must be in good working order. Re-fuelling must be done at least 100m from any water body. Basic petroleum spill clean-up equipment should be on-site. All spills or leaks should be promptly contained, cleaned up and reported to the 24-hour environmental emergencies report system (1-800-563-9089).

A turbidity barrier should be installed around the project site to prevent the release of sedimentation resulting from any in water work.

All drainage and washwater from concrete production should be properly contained.

Fill material is to be free of contaminants and from an approved quarry site.

All wastes must be recycled where possible or otherwise disposed of appropriately.

Attached are approvals and recommendations / guidelines from various provincial and federal departments. The advice provided should be incorporated into project planning to reduce and eliminate effects upon the environment.

#### **25. Significance of Adverse Environmental Effects of project:**

Significant adverse environmental effects are unlikely, taking into account mitigation measures.

#### **26. Other Considerations (Public Consultation, Aboriginal Consultation, Follow-up)**

##### **Public Consultation**

The proposed project will provide safer and more secure access for vessels utilizing this facility. No negative public concern is expected as a result of this project. As such, public consultation was not deemed necessary as part of this determination.

##### **Aboriginal Consultation**

Aboriginal fishers are not known to utilize the Harbour Grace SCH facility, nor are there any known aboriginal groups in the surrounding area. As such, aboriginal consultation was not deemed necessary as part of this determination.

##### **Government Consultation**

Federal and provincial authorities likely to have an interest in the project were consulted by Public Works & Government Services Canada, Environmental Services, during the course of this assessment. A project description was distributed to the following authorities:

- Fisheries and Oceans Canada – Fisheries Protection Program
- Transport Canada – Navigation Protection Program
- Service NL – Approval for Landfill Disposal of Dredged Material (if required).

DFO FPP determined that 'Serious Harm' to fish could be avoided by following standard mitigations as noted above and as attached.

A subsection 9 (1) approval will be issued under the Navigation Protection Act. Conditions stipulated in the approval document must be adhered to.

Service NL were provided with the sediment sampling results (approval pending)

##### **Accuracy and Compliance Monitoring**

A follow-up program (as defined in S. 2(1) and as applicable to non-designated projects on federal lands) is a program for determining the effectiveness of any mitigation measures. Site monitoring (accuracy and compliance monitoring) may be conducted to verify whether required mitigation

measures were implemented. The proponent must provide site access to Responsible Authority officials and/or its agents upon request.

**27. Other Monitoring and Compliance Requirements (e.g. *Fisheries Act* or *Species at Risk Act* requirements)**

n/a

## CONCLUSION

**28. Conclusion on Significance of Adverse Environmental Effects:**

The Federal Authority has evaluated the project in accordance with Section 67 of *Canadian Environmental Assessment Act (CEAA), 2012*. On the basis of this evaluation, the department has determined that the project is not likely to cause significant adverse environmental effects with mitigation and therefore can proceed using mitigative measures as outlined.

**29. Prepared by:** \_\_\_\_\_

**30. Date:** \_\_\_\_\_

**31. Name:** Shawn Kean

**32. Title:** Environmental Specialist, PWGSC-ES

## DECISION

**33. Decision Taken**

☒ DFO may exercise its power, duty or function, i.e. may issue the authorization - where the project is not likely to cause significant adverse environmental effects. Confirm below the specific power, duty or function that may be exercised.

☐ DFO to issue *Fisheries Act* Authorization or *Species at Risk Act* Permit

☒ DFO to proceed with project (as proponent)

☐ DFO to provide financial assistance for project to proceed

☐ DFO to provide federal land for project to proceed

☐ DFO has decided not to exercise its power, duty or function because the project is likely to cause significant adverse environmental effects.

☐ DFO to ask the Governor in Council to determine if the significant adverse environmental effects are justified in the circumstances

**34. Approved by:** \_\_\_\_\_

**35. Date:** \_\_\_\_\_

**36. Name:** Paul Curran

**37. Title:** Regional Engineer, DFO-SCH, NL

<b>38. References:</b> n/a
----------------------------

**Attachments:**

1. Copy of Transport Canada Sign Off
2. Topographic Map and Aerial Photograph of Project Site
3. Site Plans
4. Copy of MAXXAM Results
5. Regulatory Approvals / Guidelines / Mitigations AND Copy of Mitigation Measures

## TRANSPORT CANADA RECOMMENDATION

### 39. This section must be completed by Transport Canada;

Environmental effects of the project on navigation are taken into consideration as part of the environmental assessment only when the effects are indirect, *i.e.* resulting from a change in the environment affecting navigation. Direct effects on navigation are not considered in the environmental assessment, but any measures necessary to mitigate direct effects will be included as conditions of the *Navigation Protection Act* approval.

- ☐ Only direct effects are identified; therefore the effects of the project on navigation are not addressed in this environmental assessment.
- ☐ Indirect effects were identified and have been addressed in this environmental assessment.

40. REVIEWED by: \_\_\_\_\_ 41. Date: \_\_\_\_\_

42. Name: Melissa Ginn

43. Title: Environmental Officer – Environmental Affairs, Transport Canada

44. The above has reviewed the environmental screening report and recommends the determination as indicated above.

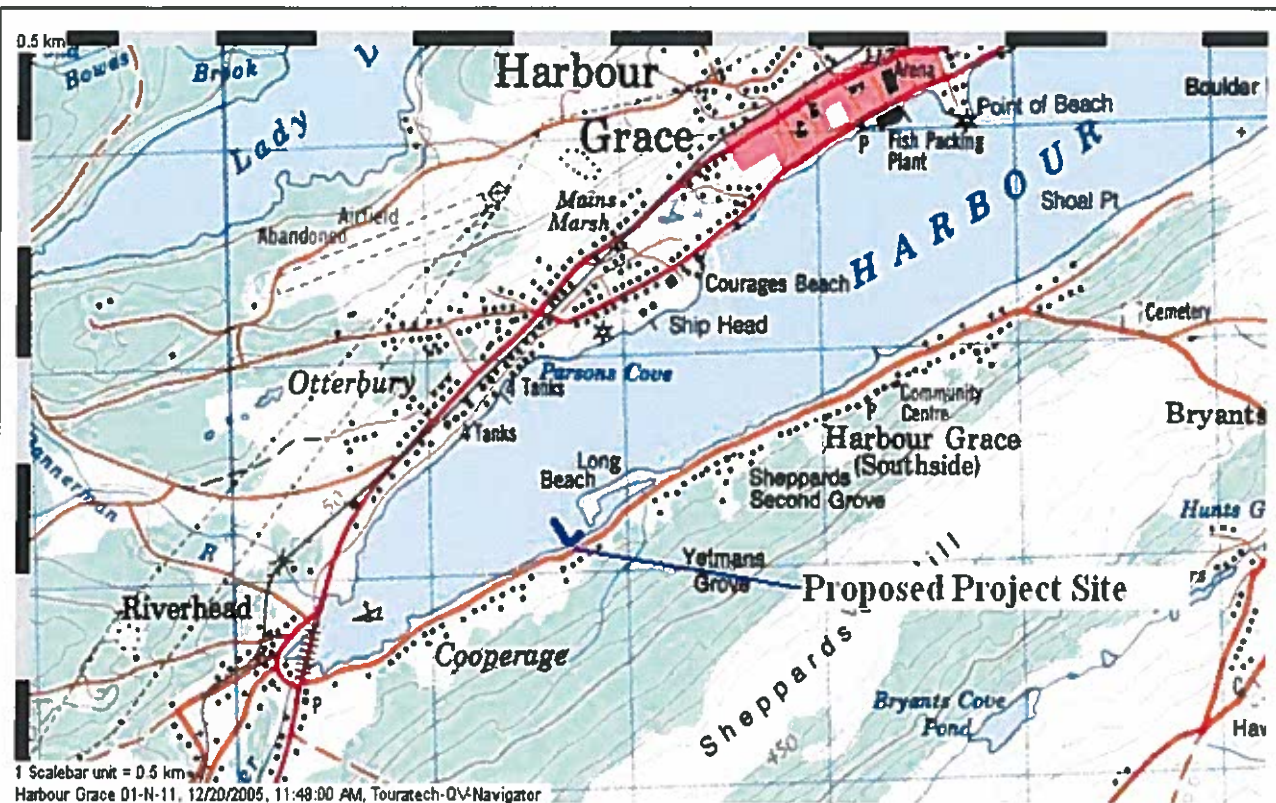
45. APPROVED by: \_\_\_\_\_ 46. Date: \_\_\_\_\_

47. Name: Kevin LeBlanc

48. Title: A/Regional Manager – Environmental Affairs, Transport Canada

49. The above has reviewed the environmental screening report and approves the recommended environmental effects determination.





### Description

Topographic Map of Proposed Site  
Location: Harbour Grace

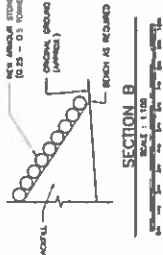
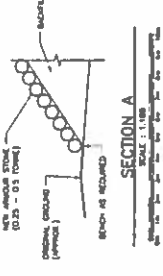
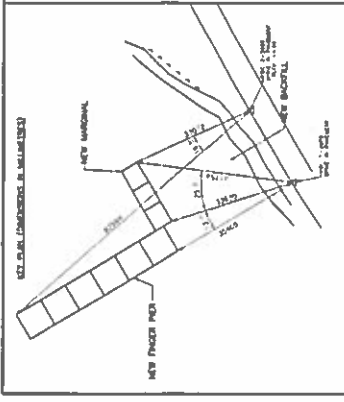
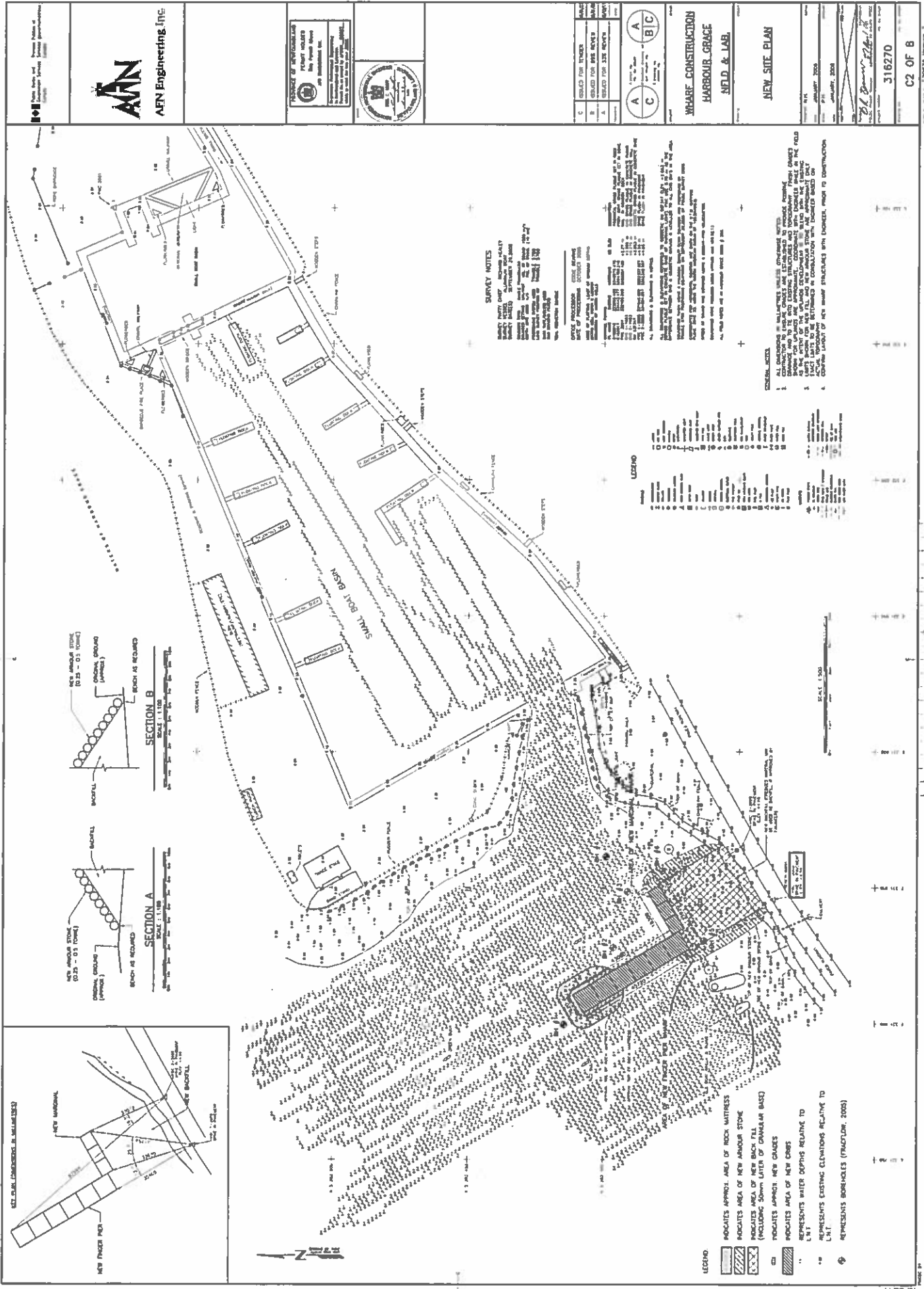
Scale 1:50,000

NTS Mapsheet 01-N-11 – Harbour Grace





Aerial 1: Existing finger pier wharf to be extended (in red).



**SURVEY NOTES**  
1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE CANADIAN STANDARDS FOR CONSTRUCTION.  
2. THE SURVEY WAS CONDUCTED ON 10/10/2008.  
3. THE SURVEY WAS CONDUCTED BY [Name].  
4. THE SURVEY WAS CONDUCTED BY [Name].  
5. THE SURVEY WAS CONDUCTED BY [Name].

**LEGEND**  
1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE CANADIAN STANDARDS FOR CONSTRUCTION.  
2. THE SURVEY WAS CONDUCTED ON 10/10/2008.  
3. THE SURVEY WAS CONDUCTED BY [Name].  
4. THE SURVEY WAS CONDUCTED BY [Name].  
5. THE SURVEY WAS CONDUCTED BY [Name].

**GENERAL NOTES**  
1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE CANADIAN STANDARDS FOR CONSTRUCTION.  
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4. THE SURVEY WAS CONDUCTED BY [Name].  
5. THE SURVEY WAS CONDUCTED BY [Name].

AMN Engineering Inc.

316270

C2 OF 8

NEW SITE PLAN

WHAVER CONSTRUCTION

HARBOUR GRACE

FIELD & LAB

316270

C2 OF 8

Your P.O. #: CALL UP #26  
Your Project #: R.070893.002  
Site Location: WHARF EXTENSION  
Your C.O.C. #: B157670

**Attention: Cathy Martin**

Public Works & Government Services Canada  
PO Box 4600  
10 Barter's Hill  
St. John's, NL  
A1C 5T2

Report Date: 2014/08/07  
Report #: R3113806  
Version: 3R

**CERTIFICATE OF ANALYSIS – REVISED REPORT**
**MAXXAM JOB #: B4C6299**
**Received: 2014/07/17, 16:08**

Sample Matrix: Soil  
# Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Free (WAD) Cyanide (1)	6	N/A	2014/07/24	CAM SOP-00457	OMOE E3015 m
TEH in Soil (PIRI) (2, 3)	6	2014/07/22	2014/07/23	ATL SOP 00111	Atl. PIRI v3 m
Metals Leach TCLP/CGSB extraction (2)	1	2014/08/06	2014/08/07	ATL SOP 00058	EPA 6020A R1 m
Metals Solids Acid Extr. ICPMS (2)	6	2014/07/22	2014/07/23	ATL SOP 00058	EPA 6020A R1 m
Moisture (2)	6	N/A	2014/07/22	ATL SOP 00001	OMOE Handbook 1983 m
PAH in sediment by GC/MS (Low Level) (2)	6	2014/07/22	2014/07/24	ATL SOP 00102	EPA 8270D m
Low Level PCB in Soil by GC-ECD (2)	6	2014/07/22	2014/07/23	ATL SOP 00106	EPA 8082 m
PCB Aroclor sum (low level soil) (2)	6	N/A	2014/07/23		Auto Calc.
pH (5:1 DI Water Extract) (2)	6	2014/07/22	2014/07/25	ATL SOP 00003	SM 22 4500-H+ B m
VPH in Soil (PIRI) (2)	6	2014/07/21	2014/07/22	ATL SOP 00119	Atl. PIRI v3 m
TCLP Inorganic extraction - pH (2)	1	N/A	2014/08/01	ATL SOP 00035	EPA 1311 m
TCLP Inorganic extraction - Weight (2)	1	N/A	2014/08/01	ATL SOP 00035	EPA 1311 m
ModTPH (T1) Calc. for Soil (2, 4)	6	N/A	2014/07/24	N/A	Atl. PIRI v3 m

**Remarks:**

Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Analytics Mississauga

(2) This test was performed by Maxxam Bedford

(3) Soils are reported on a dry weight basis unless otherwise specified.

(4) New RDLs in effect due to release of NS Contaminated Sites Regulations. Reduced RDL based on MDL study performance. Low level analytical run checks being implemented.

**Encryption Key**

 Katie Campbell  
07 Aug 2014 15:55:27 -03:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Mari Kenny, Project Manager

Email: MKenny@maxxam.ca

Phone# (902)420-0203 Ext:291

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total Cover Pages : 1  
Page 1 of 17

Maxxam Job #: B4C6299  
Report Date: 2014/08/07

Public Works & Government Services Canada  
Client Project #: R.070893.002  
Site Location: WHARF EXTENSION  
Your P.O. #: CALL UP #26

### RBCA HYDROCARBONS IN SOIL (SOIL)

Maxxam ID		WS8688	WS8689	WS8690	WS8691	WS8692		
Sampling Date		2014/07/17 09:59	2014/07/17 10:02	2014/07/17 10:04	2014/07/17 10:16	2014/07/17 10:27		
COC Number		B157670	B157670	B157670	B157670	B157670		
	Units	SAMPLES 3A	SAMPLE 2A	SAMPLE 1A	SAMPLE 3B	SAMPLE 2B	RDL	QC Batch
<b>Inorganics</b>								
Moisture	%	58	66	70	65	68	1	3683055
<b>Petroleum Hydrocarbons</b>								
Benzene	mg/kg	ND	ND	ND	ND	ND	0.025	3683740
Toluene	mg/kg	ND	ND	ND	ND	ND	0.025	3683740
Ethylbenzene	mg/kg	ND	ND	ND	ND	ND	0.025	3683740
Xylene (Total)	mg/kg	ND	ND	ND	ND	ND	0.050	3683740
C6 - C10 (less BTEX)	mg/kg	ND	ND	ND	ND	ND	2.5	3683740
>C10-C16 Hydrocarbons	mg/kg	ND	ND	ND	ND	ND	10	3683758
>C16-C21 Hydrocarbons	mg/kg	49	66	94	ND	88	10	3683758
>C21-<C32 Hydrocarbons	mg/kg	200	190	250	110	250	15	3683758
Modified TPH (Tier1)	mg/kg	250	250	350	110	340	15	3680160
Reached Baseline at C32	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	3683758
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	COMMENT (2)	COMMENT (2)	COMMENT (1)	COMMENT (2)	N/A	3683758
<b>Surrogate Recovery (%)</b>								
Isobutylbenzene - Extractable	%	89	89	93	89	90		3683758
n-Dotriacontane - Extractable	%	79	81	83	90	83		3683758
Isobutylbenzene - Volatile	%	91	105	103	116	114		3683740
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not detected N/A = Not Applicable (1) Lube oil fraction. (2) One product in fuel oil range. Lube oil fraction.								



Maxxam Job #: B4C6299  
Report Date: 2014/08/07

Public Works & Government Services Canada  
Client Project #: R.070893.002  
Site Location: WHARF EXTENSION  
Your P.O. #: CALL UP #26

### RBCA HYDROCARBONS IN SOIL (SOIL)

Maxxam ID		WS8693		
Sampling Date		2014/07/17 10:36		
COC Number		B157670		
	Units	SAMPLE 1B	RDL	QC Batch
<b>Inorganics</b>				
Moisture	%	69	1	3683055
<b>Petroleum Hydrocarbons</b>				
Benzene	mg/kg	ND	0.025	3683740
Toluene	mg/kg	ND	0.025	3683740
Ethylbenzene	mg/kg	ND	0.025	3683740
Xylene (Total)	mg/kg	ND	0.050	3683740
C6 - C10 (less BTEX)	mg/kg	ND	2.5	3683740
>C10-C16 Hydrocarbons	mg/kg	ND	10	3683758
>C16-C21 Hydrocarbons	mg/kg	140	10	3683758
>C21-<C32 Hydrocarbons	mg/kg	350	15	3683758
Modified TPH (Tier1)	mg/kg	500	15	3680160
Reached Baseline at C32	mg/kg	Yes	N/A	3683758
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	N/A	3683758
<b>Surrogate Recovery (%)</b>				
Isobutylbenzene - Extractable	%	93		3683758
n-Dotriacontane - Extractable	%	85		3683758
Isobutylbenzene - Volatile	%	112		3683740
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				
ND = Not detected				
N/A = Not Applicable				
(1) One product in fuel oil range. Lube oil fraction.				

Maxxam Job #: B4C6299  
Report Date: 2014/08/07

Public Works & Government Services Canada  
Client Project #: R.070893.002  
Site Location: WHARF EXTENSION  
Your P.O. #: CALL UP #26

### ATLANTIC TCLP LEACHATE + METALS (SOIL)

Maxxam ID		WS8689	WS8689		
Sampling Date		2014/07/17 10:02	2014/07/17 10:02		
COC Number		B157670	B157670		
	Units	SAMPLE 2A	SAMPLE 2A Lab-Dup	RDL	QC Batch
<b>Inorganics</b>					
Sample Weight (as received)	g	50	50	N/A	3696786
Initial pH	N/A	7.4	NA		3696787
Final pH	N/A	5.0	5.0		3696787
<b>Metals</b>					
Leachable Arsenic (As)	ug/L	ND	ND	20	3701295
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable ND = Not detected					

Maxxam Job #: 84C6299  
Report Date: 2014/08/07

Public Works & Government Services Canada  
Client Project #: R.070893.002  
Site Location: WHARF EXTENSION  
Your P.O. #: CALL UP #26

### RESULTS OF ANALYSES OF SOIL

Maxxam ID		WS8688	WS8689	WS8690		WS8690	WS8691	WS8692	WS8693		
Sampling Date		2014/07/17 09:59	2014/07/17 10:02	2014/07/17 10:04		2014/07/17 10:04	2014/07/17 10:16	2014/07/17 10:27	2014/07/17 10:36		
COC Number		B157670	B157670	B157670		B157670	B157670	B157670	B157670		
	Units	SAMPLES 3A	SAMPLE 2A	SAMPLE 1A	RDL	SAMPLE 1A Lab-Dup	SAMPLE 3B	SAMPLE 2B	SAMPLE 1B	RDL	QC Batch

Inorganics											
Free Cyanide	ug/g	0.02	0.02	0.04	0.01		0.02	0.01	0.02	0.01	3686570
Soluble (5:1) pH	pH	7.62	7.55	7.80	N/A	7.83	8.04	8.27	8.18	N/A	3688807

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable



Maxxam Job #: B4C6299  
Report Date: 2014/08/07

Public Works & Government Services Canada  
Client Project #: R.070893.002  
Site Location: WHARF EXTENSION  
Your P.O. #: CALL UP #26

### PCB'S AND DDT BY GC-ECD (SOIL)

Maxxam ID		WS8688	WS8689	WS8690	WS8691	WS8691	WS8692	WS8693		
Sampling Date		2014/07/17 09:59	2014/07/17 10:02	2014/07/17 10:04	2014/07/17 10:16	2014/07/17 10:16	2014/07/17 10:27	2014/07/17 10:36		
COC Number		B157670	B157670	B157670	B157670	B157670	B157670	B157670		
	Units	SAMPLES 3A	SAMPLE 2A	SAMPLE 1A	SAMPLE 3B	SAMPLE 3B Lab-Dup	SAMPLE 2B	SAMPLE 1B	RDL	QC Batch

PCBs										
Aroclor 1016	mg/kg	ND	ND	ND	ND	ND	ND	ND	0.010	3683857
Aroclor 1221	mg/kg	ND	ND	ND	ND	ND	ND	ND	0.010	3683857
Aroclor 1232	mg/kg	ND	ND	ND	ND	ND	ND	ND	0.010	3683857
Aroclor 1248	mg/kg	ND	ND	ND	ND	ND	ND	ND	0.010	3683857
Aroclor 1242	mg/kg	ND	ND	ND	ND	ND	ND	ND	0.010	3683857
Aroclor 1254	mg/kg	ND	0.046	ND	ND	ND	ND	ND	0.010	3683857
Aroclor 1260	mg/kg	ND	ND	ND	ND	ND	ND	ND	0.010	3683857
Calculated Total PCB	mg/kg	ND	0.046	ND	ND		ND	ND	0.010	3680155

#### Surrogate Recovery (%)

Decachlorobiphenyl	%	106	98	98	120	97	101	121		3683857
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RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

ND = Not detected

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### ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		WS8688	WS8689	WS8690	WS8691	WS8692	WS8693		
Sampling Date		2014/07/17 09:59	2014/07/17 10:02	2014/07/17 10:04	2014/07/17 10:16	2014/07/17 10:27	2014/07/17 10:36		
COC Number		B157670	B157670	B157670	B157670	B157670	B157670		
	Units	SAMPLES 3A	SAMPLE 2A	SAMPLE 1A	SAMPLE 3B	SAMPLE 2B	SAMPLE 1B	RDL	QC Batch

Metals									
Acid Extractable Aluminum (Al)	mg/kg	15000	14000	13000	13000	13000	14000	10	3683848
Acid Extractable Antimony (Sb)	mg/kg	ND	ND	ND	ND	ND	ND	2.0	3683848
Acid Extractable Arsenic (As)	mg/kg	7.6	12	7.8	3.8	3.6	3.9	2.0	3683848
Acid Extractable Barium (Ba)	mg/kg	29	33	36	19	21	23	5.0	3683848
Acid Extractable Beryllium (Be)	mg/kg	ND	ND	ND	ND	ND	ND	2.0	3683848
Acid Extractable Boron (B)	mg/kg	94	88	110	300	300	340	50	3683848
Acid Extractable Cadmium (Cd)	mg/kg	1.3	1.3	1.6	3.5	3.1	3.3	0.30	3683848
Acid Extractable Chromium (Cr)	mg/kg	20	21	24	24	24	25	2.0	3683848
Acid Extractable Cobalt (Co)	mg/kg	7.4	7.5	5.3	4.9	5.1	4.9	1.0	3683848
Acid Extractable Copper (Cu)	mg/kg	33	42	43	24	25	26	2.0	3683848
Acid Extractable Iron (Fe)	mg/kg	27000	26000	25000	25000	25000	25000	50	3683848
Acid Extractable Lead (Pb)	mg/kg	37	47	48	10	13	9.3	0.50	3683848
Acid Extractable Manganese (Mn)	mg/kg	560	500	440	500	480	490	2.0	3683848
Acid Extractable Mercury (Hg)	mg/kg	0.14	0.13	0.16	ND	ND	ND	0.10	3683848
Acid Extractable Molybdenum (Mo)	mg/kg	7.3	6.1	7.6	11	9.6	13	2.0	3683848
Acid Extractable Nickel (Ni)	mg/kg	19	19	20	23	23	24	2.0	3683848
Acid Extractable Selenium (Se)	mg/kg	1.2	1.3	1.5	2.2	2.7	2.7	1.0	3683848
Acid Extractable Silver (Ag)	mg/kg	ND	ND	ND	ND	ND	ND	0.50	3683848
Acid Extractable Strontium (Sr)	mg/kg	49	50	55	67	75	73	5.0	3683848
Acid Extractable Thallium (Tl)	mg/kg	0.19	0.19	0.19	0.20	0.23	0.19	0.10	3683848
Acid Extractable Tin (Sn)	mg/kg	9.1	7.4	9.5	ND	ND	ND	2.0	3683848
Acid Extractable Uranium (U)	mg/kg	2.4	2.1	2.2	3.4	3.0	3.7	0.10	3683848
Acid Extractable Vanadium (V)	mg/kg	26	27	27	23	24	27	2.0	3683848
Acid Extractable Zinc (Zn)	mg/kg	92	100	89	82	74	75	5.0	3683848

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not detected

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### SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		WS8688	WS8689	WS8690	WS8691	WS8691	WS8692		
Sampling Date		2014/07/17 09:59	2014/07/17 10:02	2014/07/17 10:04	2014/07/17 10:16	2014/07/17 10:16	2014/07/17 10:27		
COC Number		B157670	B157670	B157670	B157670	B157670	B157670		
	Units	SAMPLES 3A	SAMPLE 2A	SAMPLE 1A	SAMPLE 3B	SAMPLE 3B Lab-Dup	SAMPLE 2B	RDL	QC Batch
<b>Polyaromatic Hydrocarbons</b>									
1-Methylnaphthalene	mg/kg	ND	ND	ND	ND	ND	ND	0.0050	3684055
2-Methylnaphthalene	mg/kg	ND	ND	ND	ND	ND	ND	0.0050	3684055
Acenaphthene	mg/kg	ND	0.019	0.019	0.019	ND	ND	0.0050	3684055
Acenaphthylene	mg/kg	ND	ND	ND	ND	ND	ND	0.0050	3684055
Anthracene	mg/kg	0.038	0.056	0.067	0.068	ND	ND	0.0050	3684055
Benzo(a)anthracene	mg/kg	0.085	0.12	0.30	0.086	ND	ND	0.0050	3684055
Benzo(a)pyrene	mg/kg	0.10	0.13	0.33	0.054	ND	ND	0.0050	3684055
Benzo(b)fluoranthene	mg/kg	0.089	0.10	0.28	0.042	ND	ND	0.0050	3684055
Benzo(g,h,i)perylene	mg/kg	0.056	0.070	0.16	0.016	ND	ND	0.0050	3684055
Benzo(j)fluoranthene	mg/kg	0.055	0.065	0.17	0.027	ND	ND	0.0050	3684055
Benzo(k)fluoranthene	mg/kg	0.052	0.059	0.16	0.028	ND	ND	0.0050	3684055
Chrysene	mg/kg	0.084	0.12	0.31	0.083	ND	ND	0.0050	3684055
Dibenz(a,h)anthracene	mg/kg	0.017	0.019	0.050	ND	ND	ND	0.0050	3684055
Fluoranthene	mg/kg	0.21	0.28	0.62	0.20	0.021	0.018	0.0050	3684055
Fluorene	mg/kg	0.014	0.023	0.030	0.036	ND	ND	0.0050	3684055
Indeno(1,2,3-cd)pyrene	mg/kg	0.050	0.061	0.15	0.018	ND	ND	0.0050	3684055
Naphthalene	mg/kg	ND	ND	ND	0.031	ND	ND	0.0050	3684055
Perylene	mg/kg	0.050	0.055	0.15	0.064	0.073	0.14	0.0050	3684055
Phenanthrene	mg/kg	0.13	0.21	0.27	0.24	ND	ND	0.0050	3684055
Pyrene	mg/kg	0.21	0.27	0.58	0.15	0.021	0.022	0.0050	3684055
<b>Surrogate Recovery (%)</b>									
D10-Anthracene	%	84	82	80	79	76	72		3684055
D14-Terphenyl	%	92	89	90	89	84	84		3684055
D8-Acenaphthylene	%	84	82	76	77	78	75		3684055
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate ND = Not detected									

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### SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		WS8693		
Sampling Date		2014/07/17 10:36		
COC Number		B157670		
	Units	SAMPLE 1B	RDL	QC Batch
<b>Polyaromatic Hydrocarbons</b>				
1-Methylnaphthalene	mg/kg	ND	0.0050	3684055
2-Methylnaphthalene	mg/kg	ND	0.0050	3684055
Acenaphthene	mg/kg	0.030	0.0050	3684055
Acenaphthylene	mg/kg	ND	0.0050	3684055
Anthracene	mg/kg	ND	0.0050	3684055
Benzo(a)anthracene	mg/kg	ND	0.0050	3684055
Benzo(a)pyrene	mg/kg	ND	0.0050	3684055
Benzo(b)fluoranthene	mg/kg	ND	0.0050	3684055
Benzo(g,h,i)perylene	mg/kg	ND	0.0050	3684055
Benzo(j)fluoranthene	mg/kg	ND	0.0050	3684055
Benzo(k)fluoranthene	mg/kg	ND	0.0050	3684055
Chrysene	mg/kg	ND	0.0050	3684055
Dibenz(a,h)anthracene	mg/kg	ND	0.0050	3684055
Fluoranthene	mg/kg	0.024	0.0050	3684055
Fluorene	mg/kg	0.022	0.0050	3684055
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.0050	3684055
Naphthalene	mg/kg	ND	0.0050	3684055
Perylene	mg/kg	0.12	0.0050	3684055
Phenanthrene	mg/kg	ND (1)	0.040	3684055
Pyrene	mg/kg	0.026	0.0050	3684055
<b>Surrogate Recovery (%)</b>				
D10-Anthracene	%	78		3684055
D14-Terphenyl	%	83		3684055
D8-Acenaphthylene	%	75		3684055
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				
ND = Not detected				
(1) Elevated PAH RDL(s) due to matrix / co-extractive interference.				

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#### GENERAL COMMENTS

VPH sample preservation not within 72 hours of receipt at the laboratory. VPH samples were preserved within 7 days of sampling date as recommended by the reference method.

Additional TCLP + As analysis added as per client request.HM July 29/14

Revised report to included AEC file revision. HM

**Results relate only to the items tested.**

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### QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
3683740	THL	Matrix Spike	Isobutylbenzene - Volatile	2014/07/22		106 (1)	%	60 - 140
			Benzene	2014/07/22		92	%	60 - 140
			Toluene	2014/07/22		130	%	60 - 140
			Ethylbenzene	2014/07/22		120	%	60 - 140
			Xylene (Total)	2014/07/22		132	%	60 - 140
3683740	THL	Spiked Blank	Isobutylbenzene - Volatile	2014/07/22		94	%	60 - 140
			Benzene	2014/07/22		83	%	60 - 140
			Toluene	2014/07/22		86	%	60 - 140
			Ethylbenzene	2014/07/22		84	%	60 - 140
			Xylene (Total)	2014/07/22		100	%	60 - 140
3683740	THL	Method Blank	Isobutylbenzene - Volatile	2014/07/22		101	%	60 - 140
			Benzene	2014/07/22	ND, RDL=0.025		mg/kg	
			Toluene	2014/07/22	ND, RDL=0.025		mg/kg	
			Ethylbenzene	2014/07/22	ND, RDL=0.025		mg/kg	
			Xylene (Total)	2014/07/22	ND, RDL=0.050		mg/kg	
			C6 - C10 (less BTEX)	2014/07/22	ND, RDL=2.5		mg/kg	
			Isobutylbenzene - Extractable	2014/07/23		86	%	30 - 130
			n-Dotriacontane - Extractable	2014/07/23		83	%	30 - 130
			>C10-C16 Hydrocarbons	2014/07/23		74	%	30 - 130
			>C16-C21 Hydrocarbons	2014/07/23		83	%	30 - 130
3683758	CMI	Matrix Spike	>C21-<C32 Hydrocarbons	2014/07/23		90	%	30 - 130
			Isobutylbenzene - Extractable	2014/07/23		91	%	30 - 130
			n-Dotriacontane - Extractable	2014/07/23		84	%	30 - 130
			>C10-C16 Hydrocarbons	2014/07/23		78	%	30 - 130
			>C16-C21 Hydrocarbons	2014/07/23		91	%	30 - 130
3683758	CMI	Spiked Blank	>C21-<C32 Hydrocarbons	2014/07/23		103	%	30 - 130
			Isobutylbenzene - Extractable	2014/07/23		89	%	30 - 130
			n-Dotriacontane - Extractable	2014/07/23		85	%	30 - 130
			>C10-C16 Hydrocarbons	2014/07/23	ND, RDL=10		mg/kg	
			>C16-C21 Hydrocarbons	2014/07/23	ND, RDL=10		mg/kg	
3683758	CMI	Method Blank	>C21-<C32 Hydrocarbons	2014/07/23	ND, RDL=15		mg/kg	
			Isobutylbenzene - Extractable	2014/07/23				
			n-Dotriacontane - Extractable	2014/07/23				
			>C10-C16 Hydrocarbons	2014/07/23				
			>C16-C21 Hydrocarbons	2014/07/23				
3683848	DLB	Matrix Spike	Acid Extractable Antimony (Sb)	2014/07/23		100	%	75 - 125
			Acid Extractable Arsenic (As)	2014/07/23		97	%	75 - 125
			Acid Extractable Barium (Ba)	2014/07/23		95	%	75 - 125
			Acid Extractable Beryllium (Be)	2014/07/23		100	%	75 - 125
			Acid Extractable Boron (B)	2014/07/23		99	%	75 - 125
			Acid Extractable Cadmium (Cd)	2014/07/23		99	%	75 - 125
			Acid Extractable Chromium (Cr)	2014/07/23		94	%	75 - 125
			Acid Extractable Cobalt (Co)	2014/07/23		95	%	75 - 125
			Acid Extractable Copper (Cu)	2014/07/23		96	%	75 - 125
			Acid Extractable Lead (Pb)	2014/07/23		96	%	75 - 125
			Acid Extractable Manganese (Mn)	2014/07/23		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2014/07/23		90	%	75 - 125

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### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
3683848	DLB	Spiked Blank	Acid Extractable Molybdenum (Mo)	2014/07/23		96	%	75 - 125
			Acid Extractable Nickel (Ni)	2014/07/23		96	%	75 - 125
			Acid Extractable Selenium (Se)	2014/07/23		103	%	75 - 125
			Acid Extractable Silver (Ag)	2014/07/23		99	%	75 - 125
			Acid Extractable Strontium (Sr)	2014/07/23		95	%	75 - 125
			Acid Extractable Thallium (Tl)	2014/07/23		99	%	75 - 125
			Acid Extractable Tin (Sn)	2014/07/23		102	%	75 - 125
			Acid Extractable Uranium (U)	2014/07/23		98	%	75 - 125
			Acid Extractable Vanadium (V)	2014/07/23		97	%	75 - 125
			Acid Extractable Zinc (Zn)	2014/07/23		89	%	75 - 125
			Acid Extractable Antimony (Sb)	2014/07/23		102	%	75 - 125
			Acid Extractable Arsenic (As)	2014/07/23		99	%	75 - 125
			Acid Extractable Barium (Ba)	2014/07/23		97	%	75 - 125
			Acid Extractable Beryllium (Be)	2014/07/23		98	%	75 - 125
			Acid Extractable Boron (B)	2014/07/23		94	%	75 - 125
			Acid Extractable Cadmium (Cd)	2014/07/23		99	%	75 - 125
			Acid Extractable Chromium (Cr)	2014/07/23		97	%	75 - 125
			Acid Extractable Cobalt (Co)	2014/07/23		97	%	75 - 125
			Acid Extractable Copper (Cu)	2014/07/23		97	%	75 - 125
			Acid Extractable Lead (Pb)	2014/07/23		96	%	75 - 125
			Acid Extractable Manganese (Mn)	2014/07/23		102	%	75 - 125
			Acid Extractable Mercury (Hg)	2014/07/23		94	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2014/07/23		100	%	75 - 125
			Acid Extractable Nickel (Ni)	2014/07/23		97	%	75 - 125
			Acid Extractable Selenium (Se)	2014/07/23		101	%	75 - 125
			Acid Extractable Silver (Ag)	2014/07/23		99	%	75 - 125
			Acid Extractable Strontium (Sr)	2014/07/23		94	%	75 - 125
			Acid Extractable Thallium (Tl)	2014/07/23		99	%	75 - 125
			Acid Extractable Tin (Sn)	2014/07/23		102	%	75 - 125
			Acid Extractable Uranium (U)	2014/07/23		95	%	75 - 125
			Acid Extractable Vanadium (V)	2014/07/23		101	%	75 - 125
			Acid Extractable Zinc (Zn)	2014/07/23		98	%	75 - 125
3683848	DLB	Method Blank	Acid Extractable Aluminum (Al)	2014/07/23	ND , RDL=10		mg/kg	
			Acid Extractable Antimony (Sb)	2014/07/23	ND , RDL=2.0		mg/kg	
			Acid Extractable Arsenic (As)	2014/07/23	ND , RDL=2.0		mg/kg	
			Acid Extractable Barium (Ba)	2014/07/23	ND , RDL=5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2014/07/23	ND , RDL=2.0		mg/kg	
			Acid Extractable Boron (B)	2014/07/23	ND , RDL=50		mg/kg	
			Acid Extractable Cadmium (Cd)	2014/07/23	ND , RDL=0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2014/07/23	ND , RDL=2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2014/07/23	ND , RDL=1.0		mg/kg	

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Acid Extractable Copper (Cu)	2014/07/23	ND , RDL=2.0		mg/kg	
			Acid Extractable Iron (Fe)	2014/07/23	ND , RDL=50		mg/kg	
			Acid Extractable Lead (Pb)	2014/07/23	ND , RDL=0.50		mg/kg	
			Acid Extractable Manganese (Mn)	2014/07/23	ND , RDL=2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2014/07/23	ND , RDL=0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2014/07/23	ND , RDL=2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2014/07/23	ND , RDL=2.0		mg/kg	
			Acid Extractable Selenium (Se)	2014/07/23	ND , RDL=1.0		mg/kg	
			Acid Extractable Silver (Ag)	2014/07/23	ND , RDL=0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2014/07/23	ND , RDL=5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2014/07/23	ND , RDL=0.10		mg/kg	
			Acid Extractable Tin (Sn)	2014/07/23	ND , RDL=2.0		mg/kg	
			Acid Extractable Uranium (U)	2014/07/23	ND , RDL=0.10		mg/kg	
			Acid Extractable Vanadium (V)	2014/07/23	ND , RDL=2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2014/07/23	ND , RDL=5.0		mg/kg	
3683857	LGE	Matrix Spike [WS8691-01]	Decachlorobiphenyl	2014/07/23		98	%	70 - 130
			Aroclor 1254	2014/07/23		87	%	N/A
3683857	LGE	Spiked Blank	Decachlorobiphenyl	2014/07/23		125	%	70 - 130
			Aroclor 1254	2014/07/23		110	%	N/A
3683857	LGE	Method Blank	Decachlorobiphenyl	2014/07/23		108	%	70 - 130
			Aroclor 1016	2014/07/23	ND , RDL=0.010		mg/kg	
			Aroclor 1221	2014/07/23	ND , RDL=0.010		mg/kg	
			Aroclor 1232	2014/07/23	ND , RDL=0.010		mg/kg	
			Aroclor 1248	2014/07/23	ND , RDL=0.010		mg/kg	
			Aroclor 1242	2014/07/23	ND , RDL=0.010		mg/kg	
			Aroclor 1254	2014/07/23	ND , RDL=0.010		mg/kg	



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### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Aroclor 1260	2014/07/23	ND , RDL=0.010		mg/kg	
3683857	LGE	RPD [WS8691-01]	Aroclor 1016	2014/07/23	NC		%	50
			Aroclor 1221	2014/07/23	NC		%	50
			Aroclor 1232	2014/07/23	NC		%	50
			Aroclor 1248	2014/07/23	NC		%	50
			Aroclor 1242	2014/07/23	NC		%	50
			Aroclor 1254	2014/07/23	NC		%	50
			Aroclor 1260	2014/07/23	NC		%	50
3684055	GTH	Matrix Spike [WS8691-01]	D10-Anthracene	2014/07/24		82	%	30 - 130
			D14-Terphenyl	2014/07/24		91	%	30 - 130
			D8-Acenaphthylene	2014/07/24		84	%	30 - 130
			1-Methylnaphthalene	2014/07/24		80	%	30 - 130
			2-Methylnaphthalene	2014/07/24		84	%	30 - 130
			Acenaphthene	2014/07/24		78	%	30 - 130
			Acenaphthylene	2014/07/24		90	%	30 - 130
			Anthracene	2014/07/24		NC	%	30 - 130
			Benzo(a)anthracene	2014/07/24		NC	%	30 - 130
			Benzo(a)pyrene	2014/07/24		85	%	30 - 130
			Benzo(b)fluoranthene	2014/07/24		84	%	30 - 130
			Benzo(g,h,i)perylene	2014/07/24		89	%	30 - 130
			Benzo(j)fluoranthene	2014/07/24		90	%	30 - 130
			Benzo(k)fluoranthene	2014/07/24		86	%	30 - 130
			Chrysene	2014/07/24		NC	%	30 - 130
			Dibenz(a,h)anthracene	2014/07/24		88	%	30 - 130
			Fluoranthene	2014/07/24		NC	%	30 - 130
			Fluorene	2014/07/24		78	%	30 - 130
			Indeno(1,2,3-cd)pyrene	2014/07/24		87	%	30 - 130
			Naphthalene	2014/07/24		70	%	30 - 130
			Perylene	2014/07/24		NC	%	30 - 130
			Phenanthrene	2014/07/24		NC	%	30 - 130
			Pyrene	2014/07/24		NC	%	30 - 130
3684055	GTH	Spiked Blank	D10-Anthracene	2014/07/24		82	%	30 - 130
			D14-Terphenyl	2014/07/24		89	%	30 - 130
			D8-Acenaphthylene	2014/07/24		81	%	30 - 130
			1-Methylnaphthalene	2014/07/24		81	%	30 - 130
			2-Methylnaphthalene	2014/07/24		86	%	30 - 130
			Acenaphthene	2014/07/24		85	%	30 - 130
			Acenaphthylene	2014/07/24		94	%	30 - 130
			Anthracene	2014/07/24		97	%	30 - 130
			Benzo(a)anthracene	2014/07/24		88	%	30 - 130
			Benzo(a)pyrene	2014/07/24		99	%	30 - 130
			Benzo(b)fluoranthene	2014/07/24		100	%	30 - 130
			Benzo(g,h,i)perylene	2014/07/24		91	%	30 - 130
			Benzo(j)fluoranthene	2014/07/24		96	%	30 - 130
			Benzo(k)fluoranthene	2014/07/24		100	%	30 - 130
			Chrysene	2014/07/24		92	%	30 - 130
			Dibenz(a,h)anthracene	2014/07/24		88	%	30 - 130
			Fluoranthene	2014/07/24		93	%	30 - 130
			Fluorene	2014/07/24		86	%	30 - 130
			Indeno(1,2,3-cd)pyrene	2014/07/24		90	%	30 - 130

Maxxam Job #: B4C6299  
Report Date: 2014/08/07

Public Works & Government Services Canada  
Client Project #: R.070893.002  
Site Location: WHARF EXTENSION  
Your P.O. #: CALL UP #26

### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
3684055	GTH	Method Blank	Naphthalene	2014/07/24		82	%	30 - 130
			Perylene	2014/07/24		95	%	30 - 130
			Phenanthrene	2014/07/24		91	%	30 - 130
			Pyrene	2014/07/24		92	%	30 - 130
			D10-Anthracene	2014/07/24		80	%	30 - 130
			D14-Terphenyl	2014/07/24		92	%	30 - 130
			D8-Acenaphthylene	2014/07/24		79	%	30 - 130
			1-Methylnaphthalene	2014/07/24	ND, RDL=0.0050		mg/kg	
			2-Methylnaphthalene	2014/07/24	ND, RDL=0.0050		mg/kg	
			Acenaphthene	2014/07/24	ND, RDL=0.0050		mg/kg	
			Acenaphthylene	2014/07/24	ND, RDL=0.0050		mg/kg	
			Anthracene	2014/07/24	ND, RDL=0.0050		mg/kg	
			Benzo(a)anthracene	2014/07/24	ND, RDL=0.0050		mg/kg	
			Benzo(a)pyrene	2014/07/24	ND, RDL=0.0050		mg/kg	
			Benzo(b)fluoranthene	2014/07/24	ND, RDL=0.0050		mg/kg	
			Benzo(g,h,i)perylene	2014/07/24	ND, RDL=0.0050		mg/kg	
			Benzo(j)fluoranthene	2014/07/24	ND, RDL=0.0050		mg/kg	
			Benzo(k)fluoranthene	2014/07/24	ND, RDL=0.0050		mg/kg	
			Chrysene	2014/07/24	ND, RDL=0.0050		mg/kg	
			Dibenz(a,h)anthracene	2014/07/24	ND, RDL=0.0050		mg/kg	
			Fluoranthene	2014/07/24	ND, RDL=0.0050		mg/kg	
			Fluorene	2014/07/24	ND, RDL=0.0050		mg/kg	
			Indeno(1,2,3-cd)pyrene	2014/07/24	ND, RDL=0.0050		mg/kg	
			Naphthalene	2014/07/24	ND, RDL=0.0050		mg/kg	
			Perylene	2014/07/24	ND, RDL=0.0050		mg/kg	
			Phenanthrene	2014/07/24	ND, RDL=0.0050		mg/kg	
			Pyrene	2014/07/24	ND, RDL=0.0050		mg/kg	
3684055	GTH	RPD [WS8691-01]	1-Methylnaphthalene	2014/07/24	NC		%	50
			2-Methylnaphthalene	2014/07/24	NC		%	50
			Acenaphthene	2014/07/24	NC		%	50

Maxxam Job #: B4C6299  
Report Date: 2014/08/07

Public Works & Government Services Canada  
Client Project #: R.070893.002  
Site Location: WHARF EXTENSION  
Your P.O. #: CALL UP #26

### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	Units	QC Limits
			Acenaphthylene	2014/07/24	NC		%	50
			Anthracene	2014/07/24	NC		%	50
			Benzo(a)anthracene	2014/07/24	NC		%	50
			Benzo(a)pyrene	2014/07/24	NC		%	50
			Benzo(b)fluoranthene	2014/07/24	NC		%	50
			Benzo(g,h,i)perylene	2014/07/24	NC		%	50
			Benzo(j)fluoranthene	2014/07/24	NC		%	50
			Benzo(k)fluoranthene	2014/07/24	NC		%	50
			Chrysene	2014/07/24	NC		%	50
			Dibenz(a,h)anthracene	2014/07/24	NC		%	50
			Fluoranthene	2014/07/24	NC		%	50
			Fluorene	2014/07/24	NC		%	50
			Indeno(1,2,3-cd)pyrene	2014/07/24	NC		%	50
			Naphthalene	2014/07/24	NC		%	50
			Perylene	2014/07/24	13.3		%	50
			Phenanthrene	2014/07/24	NC		%	50
			Pyrene	2014/07/24	NC		%	50
3686570	XQI	Matrix Spike	Free Cyanide	2014/07/24		99	%	75 - 125
3686570	XQI	Spiked Blank	Free Cyanide	2014/07/24		97	%	80 - 120
3686570	XQI	Method Blank	Free Cyanide	2014/07/24	ND, RDL=0.01		ug/g	
3688807	KSR	RPD [WS8690-01]	Soluble (5:1) pH	2014/07/25	0.4		%	N/A
3696786	GDX	RPD [WS8689-01]	Sample Weight (as received)	2014/08/01	0		%	N/A
3701295	DLB	Matrix Spike [WS8689-01]	Leachable Arsenic (As)	2014/08/07		96	%	75 - 125
3701295	DLB	Spiked Blank	Leachable Arsenic (As)	2014/08/07		102	%	80 - 120
3701295	DLB	Method Blank	Leachable Arsenic (As)	2014/08/07	ND, RDL=20		ug/L	
3701295	DLB	RPD [WS8689-01]	Leachable Arsenic (As)	2014/08/07	NC		%	35

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) VPH samples were extracted using a flat-bed shaker instead of the accelerated mechanical shaker due to matrix incompatibility.

Maxxam Job #: B4C6299  
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Public Works & Government Services Canada  
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Site Location: WHARF EXTENSION  
Your P.O. #: CALL UP #26

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Cristina Carriere, Scientific Services



Kevin MacDonald, Inorganics Supervisor



Rose MacDonald, Scientific Specialist (Organics)

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

File Reference #

December 15, 2010

Paul Curran, P. Eng.  
Regional Engineer  
Small Crafts Harbours  
St. John's NL A1C 5X1

Dear Mr. Curran:

**Re: Section 48 Permitting Requirements under the Water Resources Act –  
Wharves, Breakwaters, Slipways and Boathouses**

This letter is to inform you that as of January 1, 2011 permits will no longer be required under Section 48 of the *Water Resources Act* for the construction and maintenance of wharves, breakwaters, slipways and boathouses. Therefore blanket permit ALT5055 is canceled effective January 1, 2011. Water Resources Management Division is currently preparing guidelines on environmental controls which should be followed during the construction and maintenance of wharves, breakwaters, slipways and boathouses. These guidelines will be posted on the department's website once they are completed. In the interim, we have attached a list of terms and conditions which we recommend be followed when completing these types of projects.

This letter does not affect other activities, such as dredging, which will continue to require permits under Section 48 of the Act. As such existing blanket permit ALT5054 remains valid.

This letter does not release Small Crafts Harbours from the obligation to obtain permits and approvals from other concerned provincial, federal and municipal agencies for wharves, breakwaters, slipways and boathouses.

Please do not hesitate to contact this office at **729-5713** if you have any questions.

Yours truly,



**Clyde McLean, P.Eng**  
Manager Water Investigations

cc. Shawn Kean  
Haseen Khan

RCM/MSWord 2003  
SCH Wharves Breakwaters Permitting Dec 15 2010.doc

## **Environmental Terms and Conditions**

### **General Alterations**

1. All work must take place within the legal boundaries of the proponent or with the approved of the land owner. The constructed works must comply with all other terms and conditions provided in the Crown Lands grant, lease or license for occupancy.
2. Any work that must be performed below the high water mark must be carried out during a period of low water levels.
3. Any flowing or standing water must be diverted around work sites so that work is carried out in the dry.
4. Water pumped from excavations for work areas, or any runoff or effluent directed out of work sites, must have silt and turbidity removed by settling ponds, filtration, or other suitable treatment before discharging to a body of water. Effluent discharged into receiving waters must comply with the *Environmental Control Water and Sewage Regulations, 2003*.
5. All operations must be carried out in a manner that prevents damage to land, vegetation, and watercourses, and which prevents pollution of bodies of water.
6. The use of heavy equipment in streams or bodies of water is not permitted. The operation of heavy equipment must be confined to dry stable areas.
7. All vehicles and equipment must be clean and in good repair, free of mud and oil, or other harmful substances that could impair water quality.
8. During the construction of concrete components, formwork must be properly constructed to prevent any fresh concrete from entering a body of water. Dumping of concrete or washing of tools and equipment in any body of water is prohibited.
9. Wood preservatives such as penta, CCA or other such chemicals must not be applied to timber near a body of water. All treated wood or timber must be thoroughly dry before being brought to any work site and installed.
10. The use of creosote treated wood is strictly prohibited within 15 metres of all bodies of fresh water in the province.
11. Any areas adversely affected by this project must be restored to a state that resembles local natural conditions. Further remedial measures to mitigate environmental impacts on water resources can and will be specified, if considered necessary in the opinion of the Department of Environment and Conservation.

12. All waste materials resulting from this project must be disposed of at a site approved by the regional Government Service Center of the Department of Government Services. The Department of Government Services may require samples to be submitted for testing and analysis.
13. Periodic maintenance such as painting, resurfacing, clearing of debris, or minor repairs, must be carried out without causing any physical disruption of any watercourse. Care must be taken to prevent spillage of pollutants into the water.
14. The owners of structures are responsible for any environmental damage resulting from dislodgement caused by the wind, wave, ice action, or structural failure.
15. Sediment and erosion control measures must be installed before starting work. All control measures must be inspected regularly and any necessary repairs made if damage is discovered.
16. Fill or ballast material must be of good quality, free of fines or other substances including metals, organics or chemicals that may be harmful to the receiving waters.
17. Armour stone must be placed around cribbing, where required, to prevent erosion.
18. Suitable booms must be deployed around construction sites to contain any floating debris that might otherwise be carried away. All booms must be properly maintained and remain in place until all work is completed.
19. The proponent must consult with the Department of Fisheries and Oceans should the total combined footprint of the dock exceed 15 metres squared ( $15\text{m}^2$ ) and/or it is made of concrete or steel sheeting or any other skirting that isolates the inside of the crib from the rest of the water.
20. This work must not interfere with the operation of any sanitary or storm sewer outfalls in the area. If it is determined that your work adversely impacts any outfalls, you will be responsible for any repairs, modifications or associated costs to correct the problem.
21. Before commencing work on this project, approval must first be obtained from any municipality in which the work is planned.



## Timber Cribwork

## Fisheries and Oceans Canada

Measures to Avoid Causing Harm to Fish and Fish Habitat

On November 25, 2013 the Fisheries Protection Provisions of the *Fisheries Act* came into force. The *Fisheries Act* requires that projects avoid causing serious harm to fish unless authorized by the Minister of Fisheries and Oceans. This applies to work being conducted in or near waterbodies that support fish that are part of or that support a commercial, recreational or Aboriginal fishery.

If you are conducting a project near water, it is your responsibility to ensure you avoid causing serious harm to fish in compliance with the *Fisheries Act*. The following advice will help you avoid causing harm and comply with the *Act*.

- a. *Material used to fill a timber crib structure should be free of fines or sediment; suitable material may include clean blasted rock or boulders.*
- b. *Material should never be removed directly from any watercourse, streambank or shoreline area for use as ballast.*
- c. *Shoreline or streambank disturbance should be restricted to the immediate work area. Disturbed shorelines or streambanks should be stabilized.*
- d. *Untreated wood or pressure treated wood is required for use in or near freshwater environments. Freshly treated preserved wood is to be avoided. The appropriate regulatory agencies (e.g., Environment Canada) should be contacted regarding the use of wood treatment products, weathering and the location of treatment sites for manually applied preservatives.*
- e. *Equipment should be mechanically sound to avoid leaks of oil, gas, and/or hydraulic fluids. Equipment use should be confined to dry stable areas.*
- f. *Conduct work in a manner that prevents the release of debris (e.g., cribbing, ballast, etc.) or sediments into the water.*
- g. *If dredging is required to seat cribs, work should be carried out during low tide or low flow conditions; minimize the amount of dredged material removed by only dredging the area and depth required; use site isolation measures (e.g., silt boom or silt curtain) for containing suspended sediment where in-water work is required.*
- h. *When works are completed, the stream channel, banks and approaches should be restored to original condition.*



Figure 1: Infill material for timber cribs should be blocky, angular and free of fines or sediment.

Additional measures that may be required to protect fish and fish habitat can be found on the DFO national website (<http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>) and in the *Guidelines for the Protection of Freshwater Fish Habitat in Newfoundland & Labrador* (<http://www.dfo-mpo.gc.ca/Library/240270.pdf>)

Should your plans change please contact the Fisheries Protection Program-Regulatory Review:

Fisheries Protection Program  
Fisheries and Ocean Canada  
80 East White Hills Road  
St. John's NL A1C 5X1  
Telephone: (709) 772-4140  
Fax: (709) 772-5562  
Email: FPP-NL@dfo-mpo.gc.ca

Note: This advice is only applicable to the project specified on the accompanying DFO letter.







Fisheries and Oceans  
Canada

Pêches et Océans  
Canada

July 8, 2014

Your file      Votre référence  
n/a

Our file      Notre référence  
14-HNFL-00254

Paul Curran  
Small Craft Harbours  
10 Barters Hill  
St. John's, NL  
A1C 5T2

Dear Mr. Curran:

**Subject: Serious harm to fish can be avoided or mitigated**

The Fisheries Protection Program (the Program) of Fisheries and Oceans Canada received your proposal for the 46 m extension of a crib wharf in Harbour Grace on June 27, 2014.

Based on the information provided, your proposal has been identified as a project where a *Fisheries Act* authorization is not required given that serious harm to fish can be avoided by following standard measures. Proposals in this category are not considered to need an authorization from the Program under the *Fisheries Act* in order to proceed. In order to comply with the Act, it is recommended that you follow our guidance tools which can be found at the following website (<http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html>). It remains your responsibility to meet the other requirements of federal, provincial and municipal agencies.

Should your plans change or if you have omitted some information in your proposal such that your proposal meets the criteria for a site specific review, as described on our website (<http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>), you should complete and submit the request for review form that is also available on the website.

Should you have any questions or concerns about the compliance of your proposal with the *Fisheries Act*, you may wish to engage an environmental professional familiar with measures to avoid impacts to fish and fish habitat (<http://www.dfo-mpo.gc.ca/pnw-ppe/env-pro-eng.html>).

Yours sincerely,

Michèle M. Roberge  
Team Leader, Triage & Planning

Canada

## Fisheries and Oceans Canada

[Home](#) > [Projects Near Water](#) > [Measures to Avoid Causing Harm](#)

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### Measures to Avoid Causing Harm to Fish and Fish Habitat

If you are conducting a project near water, it is your responsibility to ensure you avoid causing [serious harm to fish](#) in compliance with the [Fisheries Act](#). The following advice will help you avoid causing harm and comply with the Act.

**PLEASE NOTE:** This advice applies to all project types and replaces all "Operational Statements" previously produced by DFO for different project types in all regions.

#### Measures

##### Project Planning

##### Timing

- Time work in water to respect [timing windows](#) to protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed.
- Minimize duration of in-water work.
- Conduct instream work during periods of low flow, or at low tide, to further reduce the risk to fish and their habitat or to allow work in water to be isolated from flows.
- Schedule work to avoid wet, windy and rainy periods that may increase erosion and sedimentation.

##### Site Selection

- Design and plan activities and works in waterbody such that loss or disturbance to aquatic habitat is minimized and sensitive spawning habitats are avoided.
- Design and construct approaches to the waterbody such that they are perpendicular to the watercourse to minimize loss or disturbance to riparian vegetation.
- Avoid building structures on meander bends, braided streams, alluvial fans, active floodplains or any other area that is inherently unstable and may result in erosion and scouring of the stream bed or the built structures.
- Undertake all instream activities in isolation of open or flowing water to maintain the natural flow of water downstream and avoid introducing sediment into the watercourse.

##### Contaminant and Spill Management

- Plan activities near water such that materials such as paint, primers, blasting abrasives, rust solvents, degreasers, grout, or other chemicals do not enter the watercourse.
- Develop a response plan that is to be implemented immediately in the event of a sediment release or spill of a deleterious substance and keep an emergency spill kit on site.
- Ensure that building material used in a watercourse has been handled and treated in a manner to prevent the release or leaching of substances into the water that may be deleterious to fish.

##### Erosion and Sediment Control

- Develop and implement an Erosion and Sediment Control Plan for the site that minimizes risk of sedimentation of the waterbody during all phases of the project. Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized, suspended sediment has resettled to the bed of the waterbody or settling basin and runoff water is clear. The plan should, where applicable, include:
  - Installation of effective erosion and sediment control measures before starting work to prevent sediment from entering the water body.

- Measures for managing water flowing onto the site, as well as water being pumped/diverted from the site such that sediment is filtered out prior to the water entering a waterbody. For example, pumping/diversion of water to a vegetated area, construction of a settling basin or other filtration system.
- Site isolation measures (e.g., silt boom or silt curtain) for containing suspended sediment where in-water work is required (e.g., dredging, underwater cable installation).
- Measures for containing and stabilizing waste material (e.g., dredging spoils, construction waste and materials, commercial logging waste, uprooted or cut aquatic plants, accumulated debris) above the high water mark of nearby waterbodies to prevent re-entry.
- Regular inspection and maintenance of erosion and sediment control measures and structures during the course of construction.
- Repairs to erosion and sediment control measures and structures if damage occurs.
- Removal of non-biodegradable erosion and sediment control materials once site is stabilized.

### **Shoreline Re-vegetation and Stabilization**

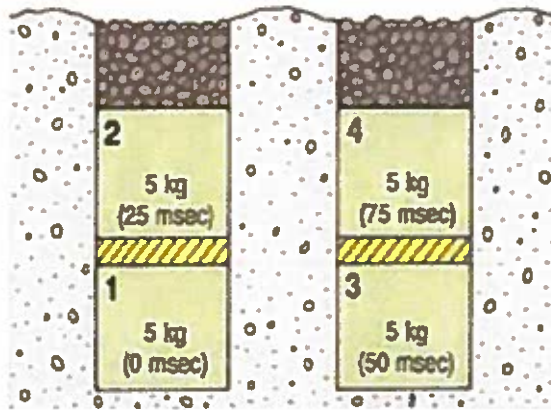
- Clearing of riparian vegetation should be kept to a minimum: use existing trails, roads or cut lines wherever possible to avoid disturbance to the riparian vegetation and prevent soil compaction. When practicable, prune or top the vegetation instead of grubbing/uprooting.
- Minimize the removal of natural woody debris, rocks, sand or other materials from the banks, the shoreline or the bed of the waterbody below the ordinary high water mark. If material is removed from the waterbody, set it aside and return it to the original location once construction activities are completed.
- Immediately stabilize shoreline or banks disturbed by any activity associated with the project to prevent erosion and/or sedimentation, preferably through re-vegetation with native species suitable for the site.
- Restore bed and banks of the waterbody to their original contour and gradient; if the original gradient cannot be restored due to instability, a stable gradient that does not obstruct fish passage should be restored.
- If replacement rock reinforcement/armouring is required to stabilize eroding or exposed areas, then ensure that appropriately-sized, clean rock is used; and that rock is installed at a similar slope to maintain a uniform bank/shoreline and natural stream/shoreline alignment.
- Remove all construction materials from site upon project completion.

### **Fish Protection**

- Ensure that all in-water activities, or associated in-water structures, do not interfere with fish passage, constrict the channel width, or reduce flows.
- Retain a qualified environmental professional to ensure applicable permits for relocating fish are obtained and to capture any fish trapped within an isolated/enclosed area at the work site and safely relocate them to an appropriate location in the same waters. Fish may need to be relocated again, should flooding occur on the site.
- Screen any water intakes or outlet pipes to prevent entrainment or impingement of fish. Entrainment occurs when a fish is drawn into a water intake and cannot escape. Impingement occurs when an entrapped fish is held in contact with the intake screen and is unable to free itself.
  - In freshwater, follow these measures for design and installation of intake end of pipe fish screens to protect fish where water is extracted from fish-bearing waters:
    - Screens should be located in areas and depths of water with low concentrations of fish throughout the year.
    - Screens should be located away from natural or artificial structures that may attract fish that are migrating, spawning, or in rearing habitat.
    - The screen face should be oriented in the same direction as the flow.
    - Ensure openings in the guides and seals are less than the opening criteria to make "fish tight".

- Screens should be located a minimum of 300 mm (12 in.) above the bottom of the watercourse to prevent entrainment of sediment and aquatic organisms associated with the bottom area.
  - Structural support should be provided to the screen panels to prevent sagging and collapse of the screen.
  - Large cylindrical and box-type screens should have a manifold installed in them to ensure even water velocity distribution across the screen surface. The ends of the structure should be made out of solid materials and the end of the manifold capped.
  - Heavier cages or trash racks can be fabricated out of bar or grating to protect the finer fish screen, especially where there is debris loading (woody material, leaves, algae mats, etc.). A 150 mm (6 in.) spacing between bars is typical.
  - Provision should be made for the removal, inspection, and cleaning of screens.
  - Ensure regular maintenance and repair of cleaning apparatus, seals, and screens is carried out to prevent debris-fouling and impingement of fish.
  - Pumps should be shut down when fish screens are removed for inspection and cleaning.
- Avoid using explosives in or near water. Use of explosives in or near water produces shock waves that can damage a fish swim bladder and rupture internal organs. Blasting vibrations may also kill or damage fish eggs or larvae.
    - If explosives are required as part of a project (e.g., removal of structures such as piers, pilings, footings; removal of obstructions such as beaver dams; or preparation of a river or lake bottom for installation of a structure such as a dam or water intake), the potential for impacts to fish and fish habitat should be minimized by implementing the following measures:
      - Time in-water work requiring the use of explosives to prevent disruption of vulnerable fish life stages, including eggs and larvae, by adhering to appropriate fisheries timing windows.
      - Isolate the work site to exclude fish from within the blast area by using bubble/air curtains (i.e., a column of bubbled water extending from the substrate to the water surface as generated by forcing large volumes of air through a perforated pipe/hose), cofferdams or aquadams.
      - Remove any fish trapped within the isolated area and release unharmed beyond the blast area prior to initiating blasting
      - Minimize blast charge weights used and subdivide each charge into a series of smaller charges in blast holes (i.e., decking) with a minimum 25 millisecond (1/1000 seconds) delay between charge detonations (see Figure 1).
      - Back-fill blast holes (stemmed) with sand or gravel to grade or to streambed/water interface to confine the blast.
      - Place blasting mats over top of holes to minimize scattering of blast debris around the area.
      - Do not use ammonium nitrate based explosives in or near water due to the production of toxic by-products.
      - Remove all blasting debris and other associated equipment/products from the blast area.

**Figure 1: Sample Blasting Arrangement**



Per Fig. 1: 20 kg total weight of charge; 25 msecs delay between charges and blast holes; and decking of charges within holes.

#### **Operation of Machinery**

- Ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks, invasive species and noxious weeds.
- Whenever possible, operate machinery on land above the high water mark, on ice, or from a floating barge in a manner that minimizes disturbance to the banks and bed of the waterbody.
- Limit machinery fording of the watercourse to a one-time event (i.e., over and back), and only if no alternative crossing method is available. If repeated crossings of the watercourse are required, construct a temporary crossing structure.
- Use temporary crossing structures or other practices to cross streams or waterbodies with steep and highly erodible (e.g., dominated by organic materials and silts) banks and beds. For fording equipment without a temporary crossing structure, use stream bank and bed protection methods (e.g., swamp mats, pads) if minor rutting is likely to occur during fording.
- Wash, refuel and service machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water.

Date modified: 2013-11-25



Transport  
Canada

Transports  
Canada

Navigation Protection Program  
95 Foundry Street, 6th Floor  
Moncton N.B. E1C 8K6

Your file

Our file  
8200-97-1120

SEP 02 2014

Fisheries and Oceans Canada - SCH - St. John's  
Small Craft Harbours Branch  
PO Box 5667, John Cabot Building, 10 Barbers Hill  
St. John's, NL A1C 5X1

Attention: Paul Curran

**RE: Notice to the Minister under the *Navigation Protection Act* for review of a Wharf Extension, located on Harbour Grace, Conception Bay, in the Province of Newfoundland and Labrador**

Our assessment of your work has determined that it is not likely to substantially interfere with navigation.

Therefore your work is permitted under section 9(1) – *Alteration of the Navigation Protection Act* (NPA) and you may proceed per the attached plans in accordance with the following terms and conditions:

1. All vessels navigating the waterway must be allowed access through or around the work site at all times during construction and must be assisted as necessary
2. The proponent must notify the Canadian Coast Guard Vessel Traffic Centre Notship desk at 709-695-2168 or email to [notshippax@dfo-mpo.gc.ca](mailto:notshippax@dfo-mpo.gc.ca) at least 24 hours in advance of commencement and upon completion of the project.

Please note that permission relates only to the effect of your work on navigation under the NPA. It is the owner's responsibility to comply with any other applicable laws and regulations.

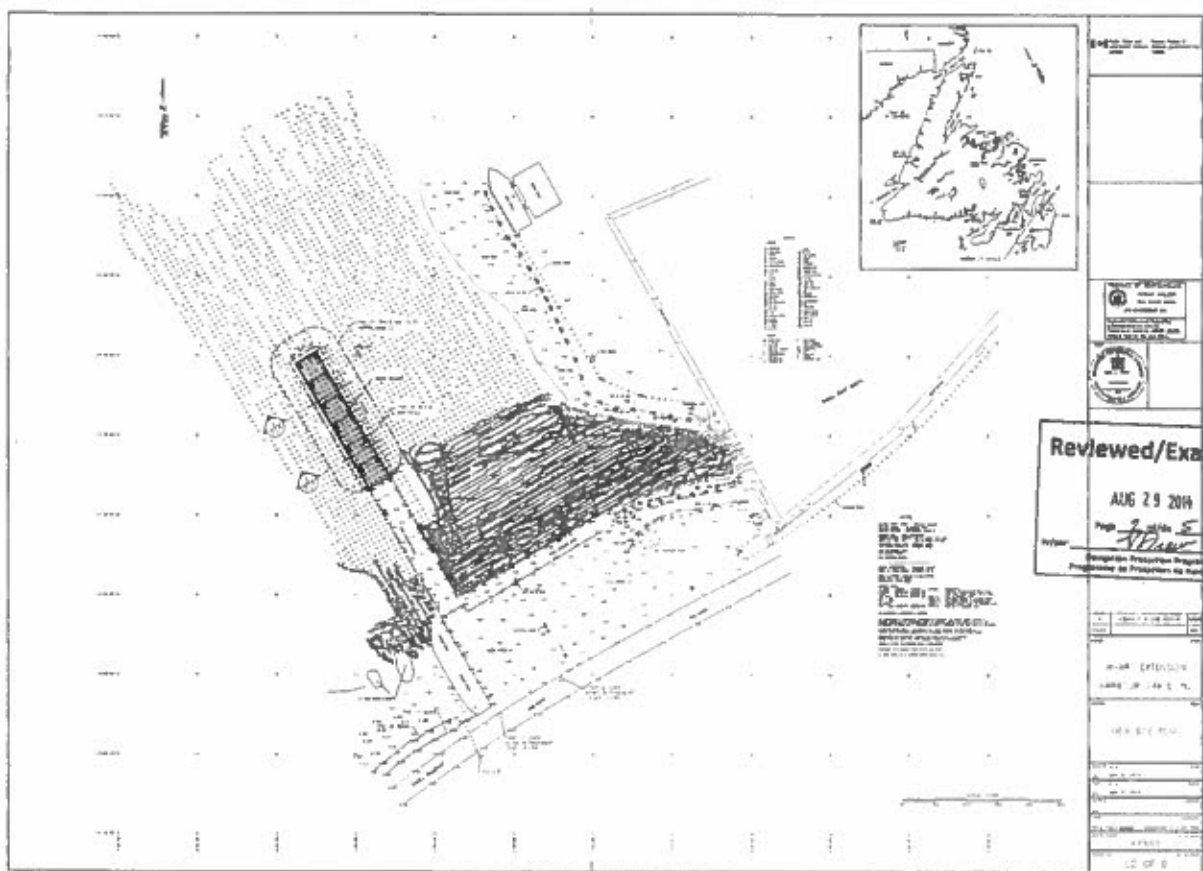
Should you have any questions, please do not hesitate to contact our office in Moncton by phone at (506) 851-3113, by fax at (506) 851-7542 or by e-mail at [NPPATL-PPNATL@tc.gc.ca](mailto:NPPATL-PPNATL@tc.gc.ca).

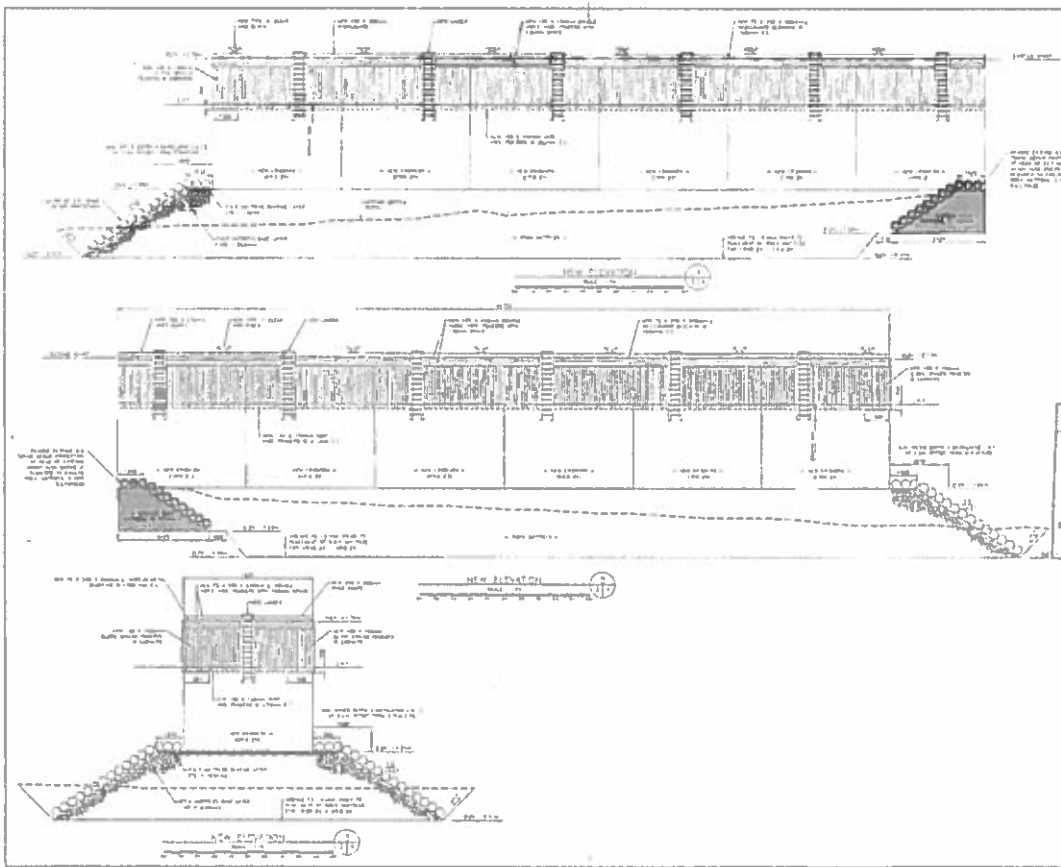
Respectfully,

Virginia Drew  
Officer  
Navigation Protection Program  
Programs Group  
Transport Canada  
Atlantic Region

cc: PWGSC – Shawn Kean - [shawn.kean@pwgsc-tpsgc.gc.ca](mailto:shawn.kean@pwgsc-tpsgc.gc.ca)  
DFO CHS – Carrie Bryall - [carrie.bryall@dfo-mpo.gc.ca](mailto:carrie.bryall@dfo-mpo.gc.ca)

Canada





<p>Reviewed/Examiné</p> <p>AUG 29 2014</p> <p>Page 4 of 5</p> <p>Signature: <i>[Signature]</i></p> <p>Transportation Masterplan Program / Programme de Planification de Transport</p>	
<p>Project: <i>[Blank]</i></p> <p>Location: <i>[Blank]</i></p> <p>Scale: <i>[Blank]</i></p> <p>Drawn by: <i>[Blank]</i></p> <p>Checked by: <i>[Blank]</i></p> <p>Approved by: <i>[Blank]</i></p> <p>Date: <i>[Blank]</i></p>	



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PAGE 02/02



Government of Newfoundland and Labrador  
Service NL

September 8, 2014

**Shawn Kean**

Environmental Assessment Officer, Environmental Services  
Public Works and Government Services Canada  
P.O. Box 4600  
10 Barter's Hill  
St. John's, NL A1C 5T2

**Wharf Extension, Dredging Project, Harbour Grace, NL**

The Government Service Centre has received and reviewed your request of August 29, 2014, regarding the above mentioned project. Based on the results of chemical analyses provided, the Government Service Centre has no objections to the disposal of 2000m<sup>3</sup> of dredged material at an approved waste disposal site with prior permission from the owner/operator.

Should you have any questions regarding this matter, please contact me at (709) 945-3112.

Regards,

A handwritten signature in black ink, appearing to read "Tammy McDonald".

Tammy McDonald, CPHI©  
Environmental Protection Officer

### **Copy of Mitigation Measure and Regulatory Approvals**

Whenever possible, minimize duration of in-water work;

Plan activities near water so materials such as paint, primers, solvents, degreasers, concrete or other chemicals do not enter the watercourse;

Machinery should arrive on-site in a clean condition and should be maintained free of fluid leaks;

Whenever possible, machinery should be operated on land above the highwater mark or from a location that minimizes disturbance to the waterbody;

Machinery should be clean and refueling/servicing as well as the storage of fuels and other materials for the machinery should be undertaken in a manner that prevents any deleterious substance from entering the water;

The proponent should be aware of the CCME "Canadian Environmental Quality Guidelines (1999) that recommend that for the protection of marine waters, human activities should not cause suspended solids levels to increase by more than 10% of the natural conditions expected at the time. The guidelines also recommend that no solid debris, including floating or drifting materials or settleable matter, be introduced into marine waters.

Waste materials should not be deposited in the tidal waters;

Work should be scheduled to avoid periods of heavy precipitation. Erosion control structures (temporary matting, geotextile filter fabric) are to be used, as appropriate, to prevent erosion runoff of sediment laden water during the construction phase.

Machinery must be checked for leakage of lubricants or fuel and must be in good working order. Re-fuelling must be done at least 100m from any water body. Basic petroleum spill clean-up equipment should be on-site. All spills or leaks should be promptly contained, cleaned up and reported to the 24-hour environmental emergencies report system (1-800-563-9089).

A turbidity barrier should be installed around the project site to prevent the release of sedimentation resulting from in water work.

All drainage and washwater from concrete production should be properly contained.

Fill material is to be free of contaminants and from an approved quarry site.

All wastes must be recycled where possible or otherwise disposed of appropriately.

Attached are **approvals and recommendations / guidelines** from various provincial and federal departments. The advice provided should be incorporated into project planning to reduce and eliminate effects upon the environment.