



Transport
Canada Transports
Canada

Navigation Protection Program
Suite 610, 800 Burrard Street
Vancouver B.C. V6Z 2J8

Your file

Our file
2017-500078

May 18, 2017

BC Hydro
Suite 600 - Four Bentall Ctr
1055 Dunsmuir St. PO Box 49260
Vancouver, BC V7X 1V5

Attention: Karen von Muehldorfer

RE: Notice to the Minister\permission to proceed under the *Navigation Protection Act* for Fish Habitat Compensation Structures, located at 56° 11' 43.14" N x 120° 50' 34.50" W, Peace River, Peace River and side channel C at Old Fort, in the Province of British Columbia

The Minister of Transport has determined that your work is not likely to substantially interfere with navigation.

Therefore, your work is permitted under the NPA s.9(1) Construction, and you may proceed pursuant to the attached plans (8) in accordance with the following terms and conditions:

1. The NPA Approval and its Terms and Conditions shall be posted at the dam site office.
2. As built plans of the works are to be forwarded to Transport Canada upon completion of the project.
3. The proponent is required to conduct a post-construction survey of the Peace River mainstem portion of the work and submit the results to Transport Canada within 6 months of completion of the work.
4. The proponent shall conduct a survey of the channels 5 years after the dam begins operation and shall submit that survey to Transport Canada for review. Survey will confirm existing depth, any significant infilling and existing or potential bank failures.
5. In the event that the operation of the above works is terminated prior to completion, it will be the proponent's responsibility to remove the works and associated equipment in its entirety from the waterway including any anchors and pilings. The banks and bed of the waterway disturbed by the works shall be contoured to match the local conditions as required.
6. Provide adequate information about the fish habitat enhancement work using the Boater Communications Protocol, and the following actions:
 - For the duration of inwater works, post a notice at the Peace Island Park boat launch
 - On the owner website, on a web page related to the project

7. Upon completion of the work and removal of equipment and temporary works, provide adequate information about the fish habitat enhancement channels layout and depths using the Boater Communications Protocol, and the following actions:
 - For 1 year, posted notice at the Peace Island Park, boat launch
 - Handout or mail to every resident of Old Fort
 - On the owner website, on a page related to the project for a minimum of 1 year
8. A safety boat shall be manned and monitoring the river at the site of the work while equipment is working in the mainstem of the Peace River
9. No equipment shall be moored or secured with cables unless the equipment is in an area isolated upstream and downstream by berms and no boat traffic is able to use that portion of the waterway.
10. Install and maintain a yellow flashing light on the outermost extremity of any equipment, construction machinery or barges anchored or left in or on the waterway overnight. The lights shall be visible upstream and downstream.
11. Any temporary structures (pilings, causeways, cofferdams or berms) into the main stem of the Peace River to support equipment or for access will require the following conditions;
 - Shall mark the works every 50m with orange high visibility markers to be seen from both upstream and downstream
 - Install and maintain flashing yellow lights every 50m on the works. The lights shall be in operation in periods of darkness or limited visibility and to be seen from both upstream and downstream
 - Inspect and maintain weekly all lights and markings to ensure function and correct positioning
12. If the isolation berms are wetted on the river side, the following conditions apply;
 - Shall mark the berms with orange high visibility markers to be seen from the wetted side
 - Install and maintain a flashing yellow light on berms. The lights shall be in operation in the periods of darkness or limited visibility
 - Inspect and maintain weekly all lights and markings to ensure function and correct positioning
13. Install and maintain warning signs on both banks of the river at locations, approximately 1.3 km downstream of Old Fort. Signs shall be a minimum of 72" x 48", with a white background and black lettering, with text as outlined below

WARNING INSTREAM WORKS AHEAD

14. Install and maintain warning sign on Peace River Construction Bridge facing upstream. Sign shall be a minimum of 72" x 48", a white background with black lettering, with text as outlined below

WARNING INSTREAM WORKS AHEAD

The owner is responsible to ensure the temporary construction works are designed and maintained to withstand local weather conditions and the wash of vessels transiting the area.

Pursuant to Sec. 34 of the Navigation Protection Act, the owner shall provide unimpeded access to the Minister or their representatives for inspection purposes.

Pursuant to Sec. 5 of the Navigable Waters Works Regulations, no person shall permit any tools, equipment, vehicles, temporary structures or parts thereof used or maintained for the purpose of

building or placing a work in a navigable water to remain in such water after the completion of the project.

Pursuant to Sec. 6 of the Navigable Waters Works Regulations, where a work or a portion of a work that is being constructed or maintained in a navigable water causes debris or other material to accumulate on the bed or the surface of such water, the owner of that work or portion of that work shall cause the debris or other material to be removed to the satisfaction of the minister.

This permission relates only to the effect of your work on navigation under the NPA and does not grant any rights related to the ownership of the bed of the waterway.

It is the owner's responsibility to comply with any other applicable laws and regulations.

Please note that the NPA, amongst other obligations, requires the owner to immediately notify the Minister if his work causes or is likely to cause serious or imminent danger to navigation and take reasonable measures to remediate the danger to navigation (section 12 of the NPA).

Should you have any questions, please do not hesitate to contact our office in Vancouver by phone at (604) 775-8867 or by e-mail at NPPPAC-PPNPAC@tc.gc.ca.

Respectfully,



Colin Parkinson
Navigation Protection Program Officer
Programs Group
Transport Canada
Pacific Region

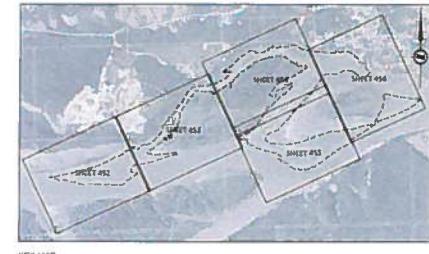
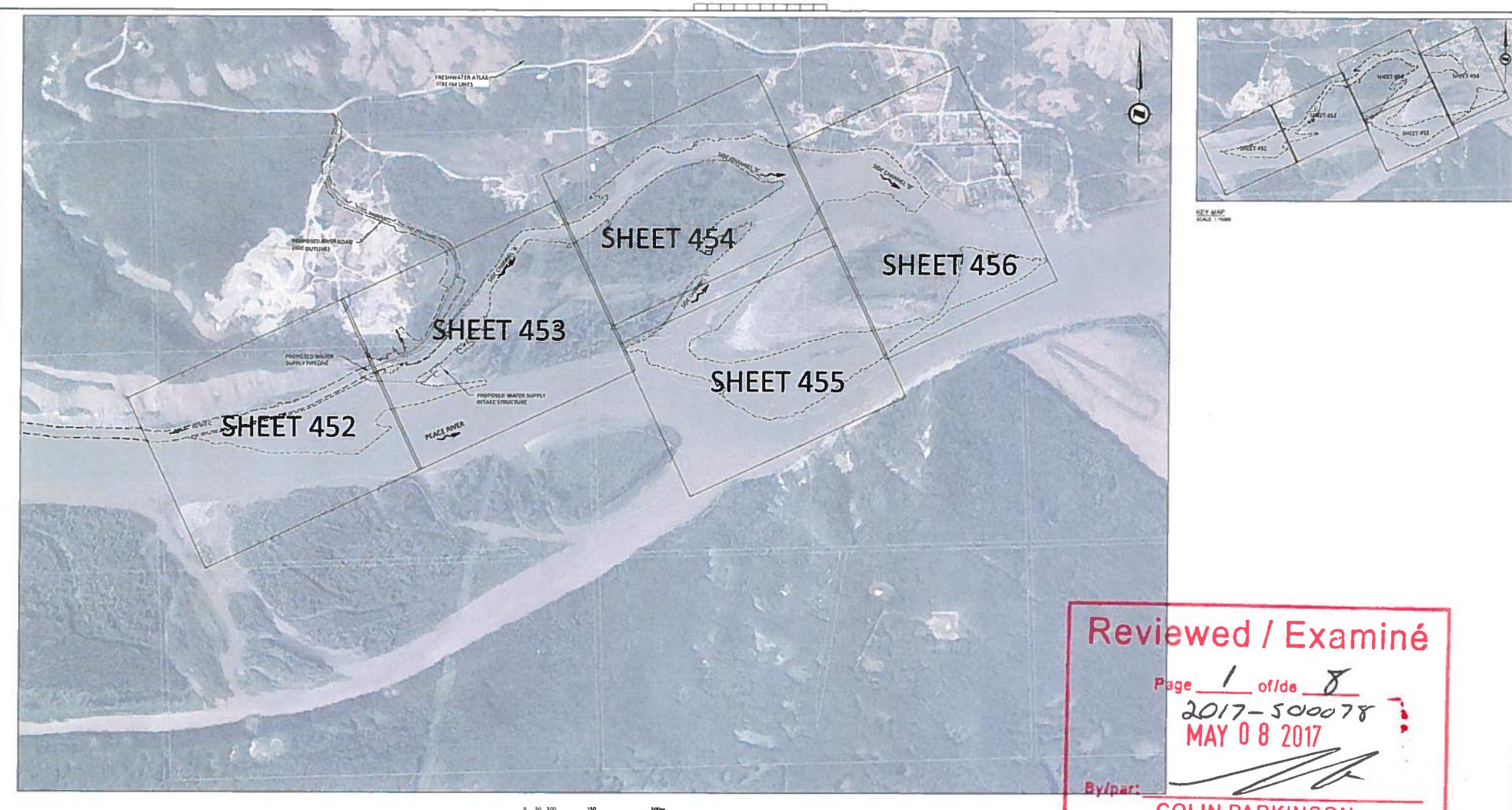
CP/co

cc: DFO
Brian.Naito@dfo-mpo.gc.ca
Stephanie.Major@dfo-mpo.gc.ca

FLNRO - Keith.Hansen@gov.bc.ca

CEAA - Compliance.Conformite@ceaa-acee.gc.ca

First Nation's



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2017-500078
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By/part:

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IMAGERY - BC HYDRO © 2013 BC HYDRO CORPORATION
TOPOGRAPHIC SUPPLEMENTED WITH BC HYDRO LASER (2013)
MAPS AND SURVEYS PROVIDED BY BC HYDRO CORPORATION WITH EIGHT MILE (2011)
3. ALL DRAIN HEIGHTS ARE IN METRES UNLESS OTHERWISE NOTED
4. ALL ELEVATIONS ARE TO THE GEODETIC SURVEY OF CANADA DATUM
5. ALL DISTANCES 2H 2V UNLESS OTHERWISE NOTED.
6. DRAWINGS TO BE READ IN CONJUNCTION WITH CONSTRUCTION SPECIFICATIONS

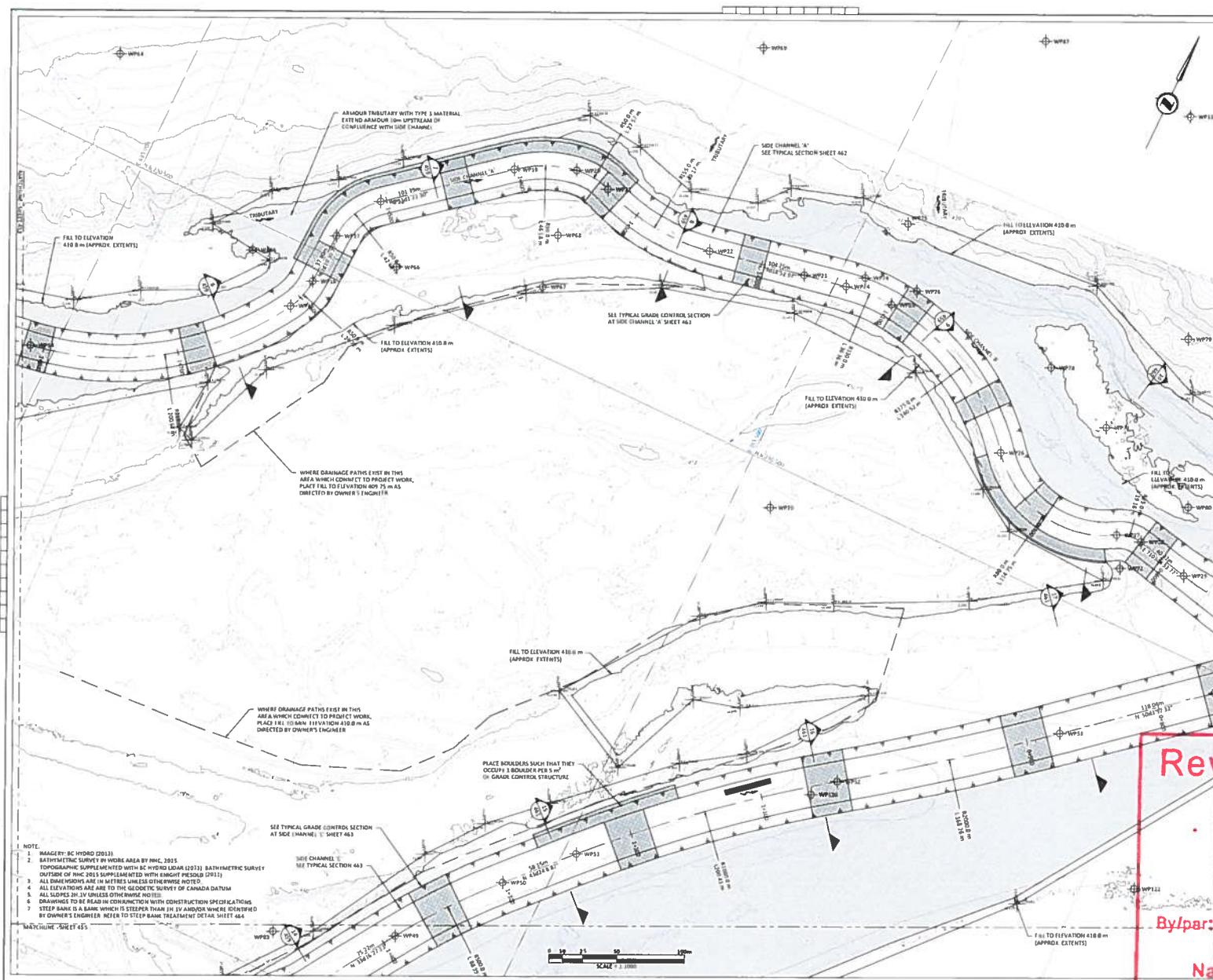
REF #	DRAWING NUMBER	FILE	REF #	DRAWING NUMBER	FILE

REFERENCE DRAWINGS

NO	REMARKS	DATE	DESIGNED	REVISIONS	ACPT	REV

REVISIONS

nbc		bchydro	
SITE C CLEAN ENERGY PROJECT		GENERAL PLANT	
GENERAL PLANT		FISH HABITAT MITIGATION	
		DOWNSTREAM - SITE 109L	
		DETAILED DESIGN	
		SITE LAYOUT	
PRELIMINARY	HOT FOR CONSTRUCTION		
DATE	03 NOV 2015	DOC NO.	1016-L13-451
BY	B. CHILBECK	AD	5



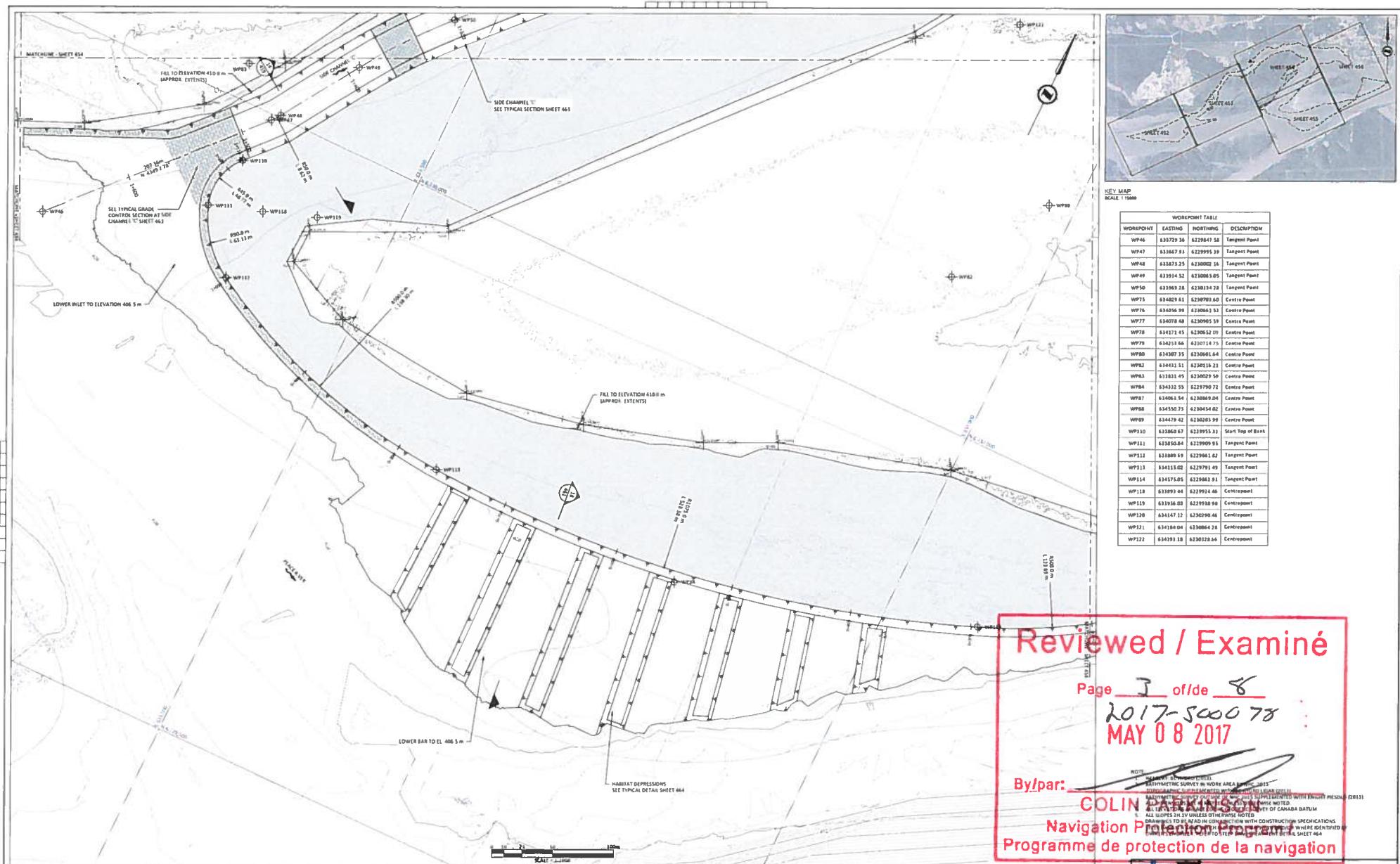
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SITE C CLEAN ENERGY PROJECT
GENERAL PLANT
FISH HABITAT MITIGATION
DOWNSTREAM - SITE 109L
DETAILED DESIGN
SIDE CHANNEL LAYOUT



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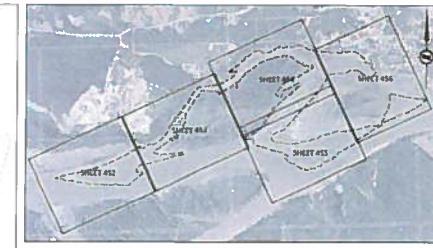
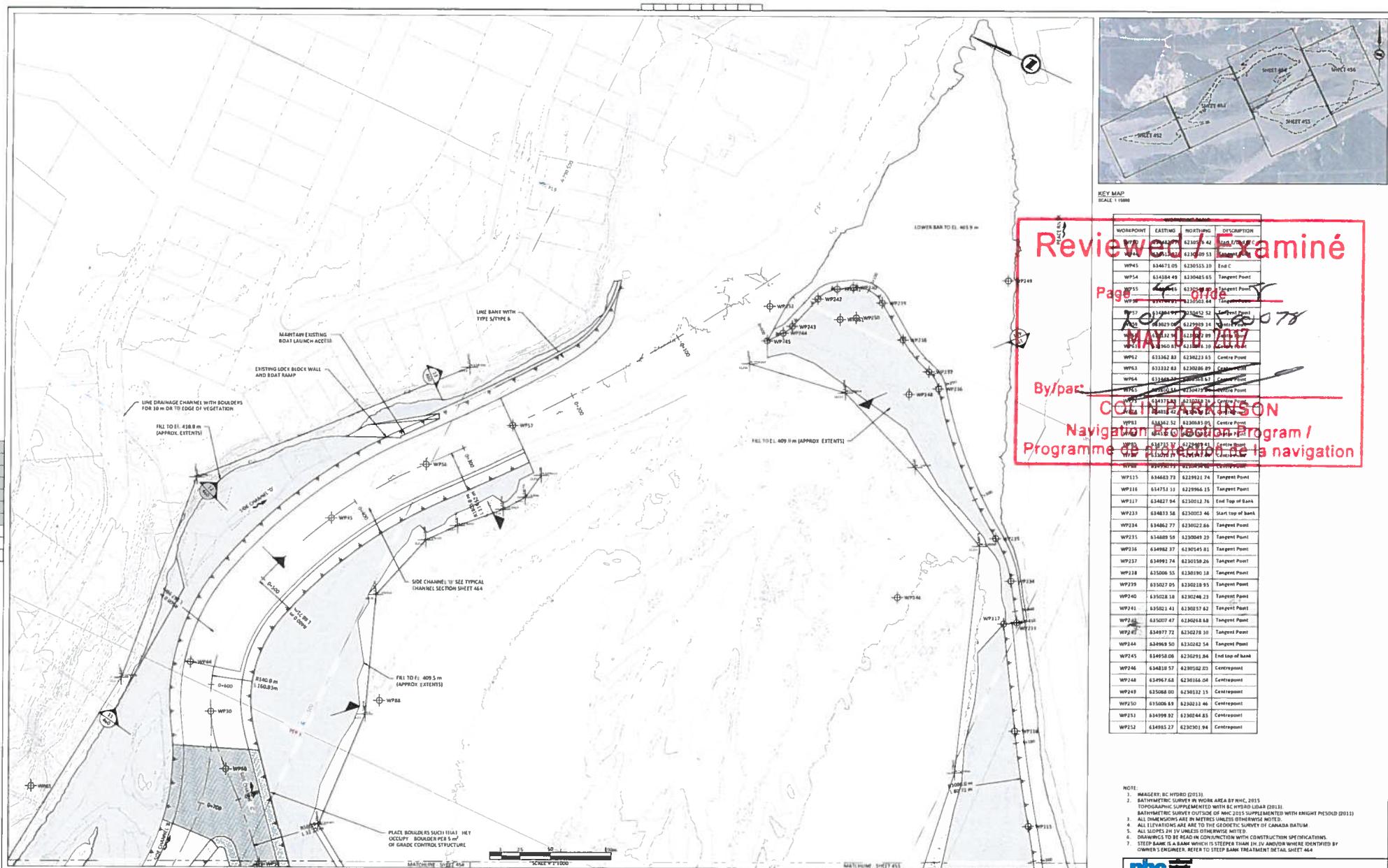
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By/pari

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 WTS C GLOBAL ENERGY PROJECT					
		SITE C CLEAN ENERGY PROJECT			
		GENERAL PLANT			
		FISH HABITAT MITIGATION			
		DOWNSTREAM - SITE 109L			
		DETAILED DESIGN			
		GRAVEL BAR EXCAVATION			
 MECH GEO ELEC	 DATE	 PDR NO.	 1016-L13-455	 A0	 5
 IEC	 DATE	 PDR NO.			

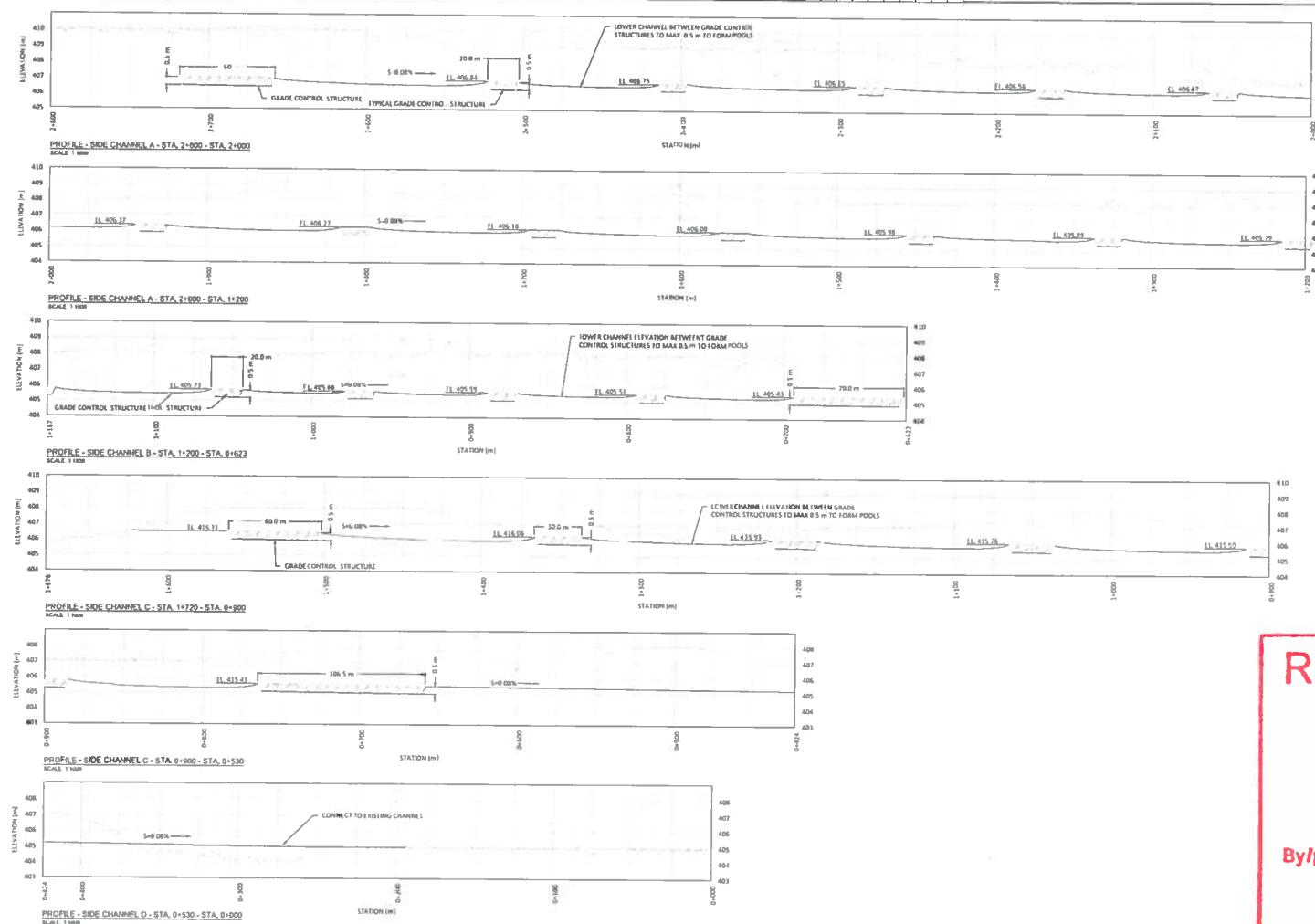


KEY MAP
SCALE 1:19000

WORKPOINT	EASTING	NORTHING	DESCRIPTION
WP101	634670.00	6236071.53	Centre Point
WP102	634670.00	6236071.53	End Top of Bank
WP103	634684.84	6236051.64	Tangent Point
WP104	634684.84	6236051.64	Tangent Point
WP105	634684.84	6236051.64	Tangent Point
WP106	634684.84	6236051.64	Tangent Point
WP107	634684.84	6236051.64	Tangent Point
WP108	634684.84	6236051.64	Tangent Point
WP109	634684.84	6236051.64	Tangent Point
WP110	634684.84	6236051.64	Tangent Point
WP111	634684.84	6236051.64	Tangent Point
WP112	634684.84	6236051.64	Tangent Point
WP113	634684.84	6236051.64	Tangent Point
WP114	634684.84	6236051.64	Tangent Point
WP115	634684.84	6236051.64	Tangent Point
WP116	634715.13	6236064.15	Tangent Point
WP117	634427.94	6236012.76	End Top of Bank
WP118	634481.58	6236003.46	Start top of bank
WP119	634684.77	6236022.66	Tangent Point
WP120	634688.59	6236049.59	Tangent Point
WP121	634692.37	6236045.81	Tangent Point
WP122	634692.74	6236059.26	Tangent Point
WP123	635006.55	6236019.95	Tangent Point
WP124	635027.05	6236018.95	Tangent Point
WP125	635022.18	6236024.65	Tangent Point
WP126	635021.41	6236037.62	Tangent Point
WP127	635027.47	6236058.68	Tangent Point
WP128	634997.72	6236208.20	Tangent Point
WP129	634968.50	6236242.54	Tangent Point
WP130	634958.08	6236291.84	End top of bank
WP131	634821.57	6236182.23	Centrepont
WP132	634967.63	6236166.04	Centrepont
WP133	635008.00	6236132.15	Centrepont
WP134	635008.69	6236033.46	Centrepont
WP135	634999.82	6236044.81	Centrepont
WP136	634982.27	623601.94	Centrepont

NOTE:
 1. IMAGERY: BC HYDRO (2013).
 2. BATHYMETRIC SURVEY IN WORK AREA BY NHC, 2015.
 3. ALL DISTANCES ARE IN METRES UNLESS OTHERWISE NOTED.
 4. ALL ELEVATIONS ARE IN METRES UNLESS OTHERWISE NOTED.
 5. ALL SLOPES ARE IN 1V:1H UNLESS OTHERWISE NOTED.
 6. DIAMETERS TO BE READ ON CONSTRUCTION DRAWINGS.
 7. STEEP BANK TREATMENT IF STEEPER THAN 1H:1V AND/OR WHERE IDENTIFIED BY OWNER'S ENGINEER. REFER TO STEEP BANK TREATMENT DETAIL SHEET 464.

NHC Clean Energy Project											
Site C Clean Energy Project											
GENERAL PLANT											
FISH HABITAT MITIGATION											
DOWNSTREAM - SITE 109L											
DETAILED DESIGN											
SIDE CHANNEL 'E' ST. 0 + 000 to 0 + 750											
DATE: 03 NOV 2016											
DESIGNER: B. CHLESICK											
DRAWING NO: 1016-L13-456											
PAGE NO: A0 5											
NOT TO BE REPRODUCED WITHOUT THE PERMISSION OF BC HYDRO											
REF ID	DRAWING NUMBER	TITLE	REF ID	DRAWING NUMBER	TITLE	REF ID	DRAWING NUMBER	TITLE	REF ID	DRAWING NUMBER	TITLE
REFERENCE DRAWINGS											
REVISIONS											
ACPT: B. CHLESICK											
DATE: 03 NOV 2016											
DESIGNER: B. CHLESICK											
DRAWING NO: 1016-L13-456											
PAGE NO: A0 5											



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LEGEND:

EXISTING GROUND

PROPOSED CHANNEL BOTTOM

THALWEG

MAX OPERATIONAL
WATER LEVEL
(O = 350 m³/s)

MIN OPERATIONAL
WATER LEVEL
(O = 200 m³/s)

TYPE 3 MATERIAL



SITE C CLEAN ENERGY PROJECT
GENERAL PLANT
FISH HABITAT MITIGATION
DOWNSTREAM - SITE 109L
DETAILED DESIGN
CHANNEL PROFILES

PRELIMINARY
NOT FOR
CONSTRUCTION

DATE: 03 NOV 2016

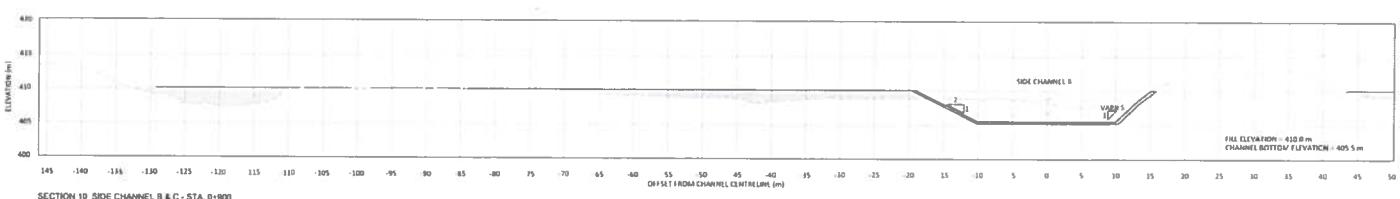
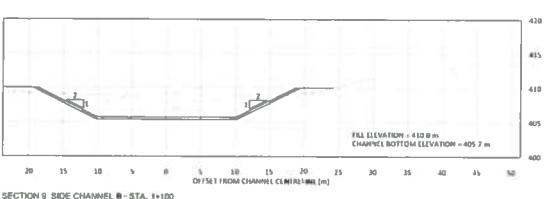
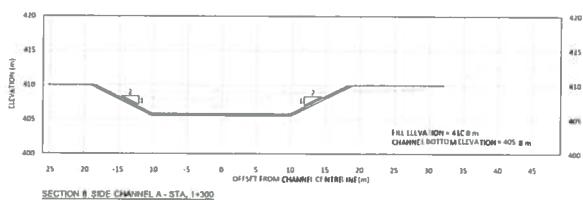
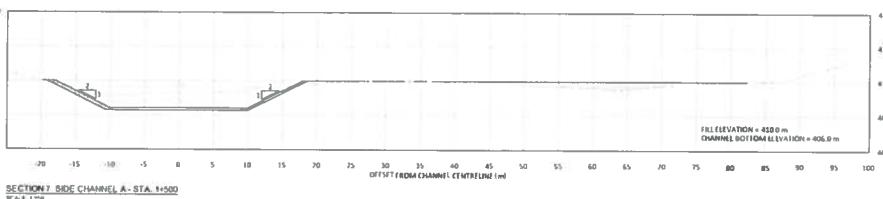
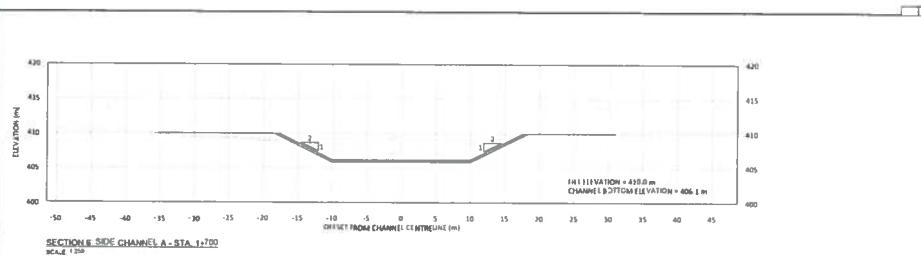
1st

DRG NO:

1016-L13-457

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5 ISSUED FOR CONSTRUCTION w/ REVISIONS		03 NOV 2016 A. BLEZY		BACI KIH AMB				AMB BACI DISC JAG	
4 ISSUED FOR CONSTRUCTION		29 FEB 2016 A. BLEZY		BACI KIH AMB				AMB BACI DISC BACI	
3 ISSUED FOR REVIEW		04 DEC 2015 J. GLAWDEL		BACI KIH AMB				ING BACI DTFC KIH	
2 UPDATED WITH VALUE ENGINEERING OPTIONS		23 SEPT 2015 J. GLAWDEL		BACI BAH JIG				ING BACI DTFC AMB	
1 UPDATED WITH COMMENTS		31 AUG 2015 J. GLAWDEL		BACI BAH JIG				JIG BACI DTFC	
0 ISSUED FOR REVIEW		06 JUN 2015 J. GLAWDEL		BACI BAH JIG				CW STW MECH GED ELEC	
REVISIONS		DATE		DESIGNED		REVIEWED		APPROVED	
REFERENCE DRAWINGS		NO.		REMARKS		REV.		ACPI B. CHILDECA	
REFERENCE DRAWINGS									



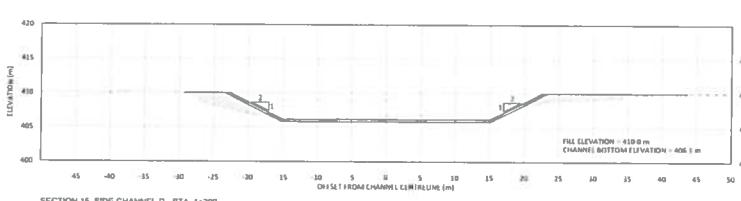
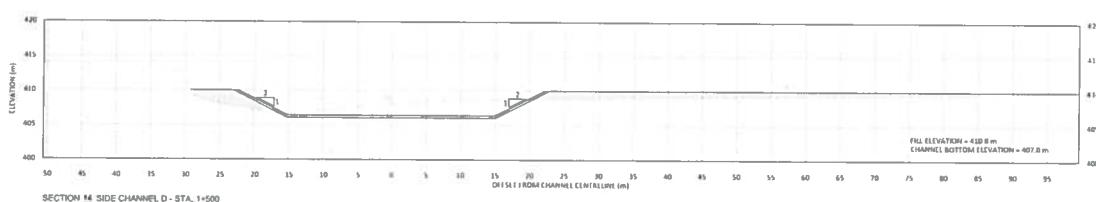
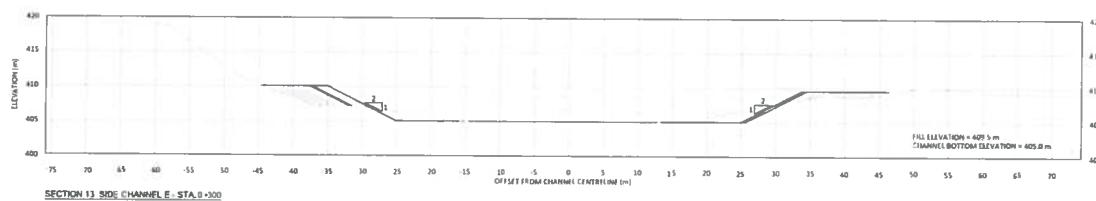
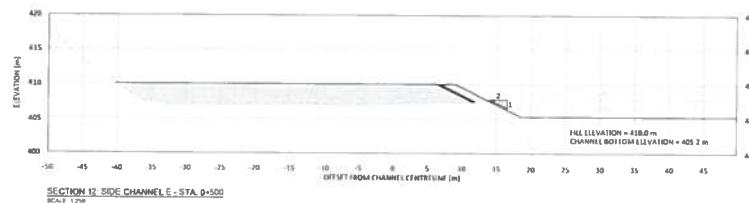
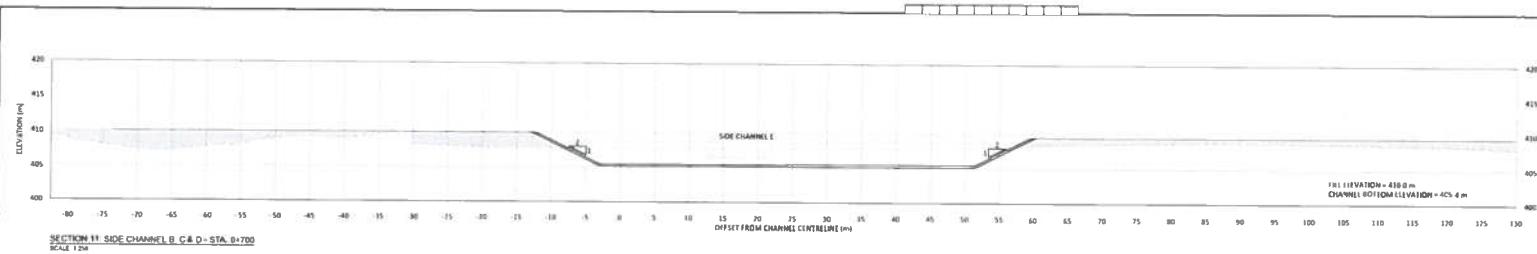
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OPERATIONAL
TER LEVEL
 $2000 \text{ m}^3/\text{s}$

OPERATIONAL
TER LEVEL
 $390 \text{ m}^3/\text{s}$



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EXERCISES

MAX. OPERATIONAL
WATER LEVEL
 $(Q = 2000 \text{ m}^3/\text{s})$

PROPOSAL GUIDE

**MIN. OPERATIONAL
WATER LEVEL
 $|Q| = 390 \text{ m}^3/\text{s}$**

1

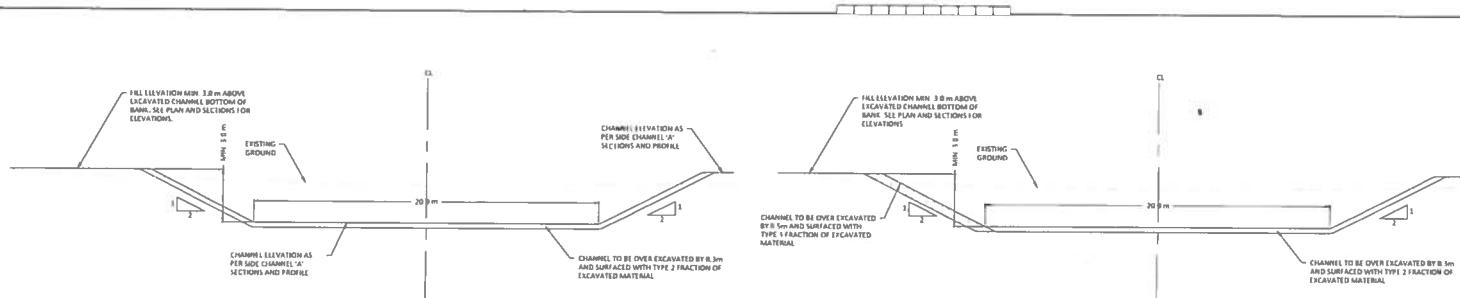
新概念

McGraw-Hill

SITE C CLEAN ENERGY PROJECT
GENERAL PLANT
FISH HABITAT MITIGATION
DOWNSTREAM - SITE 109L
DETAILED DESIGN
SECTIONS 11 THROUGH 15

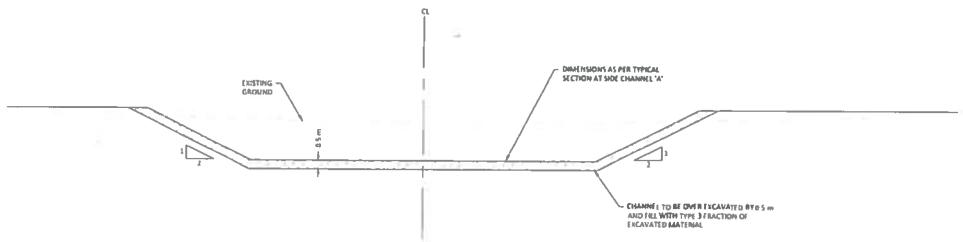
6-13-460

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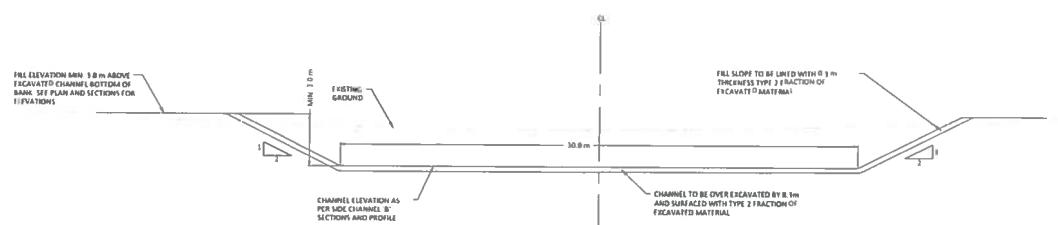


TYPICAL CHANNEL SECTION AT SIDE CHANNEL 'A' AND 'B'

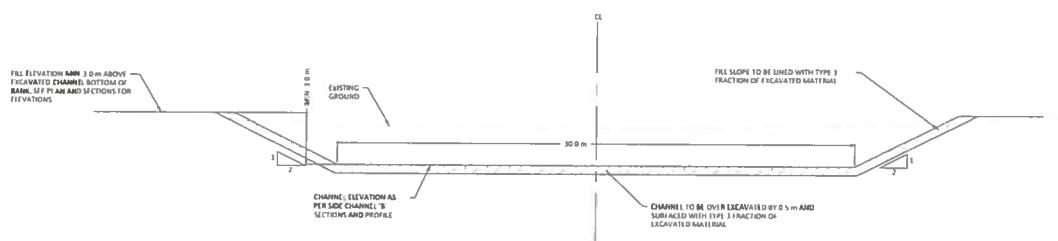
TYPICAL CHANNEL SECTION AT SIDE CHANNEL 'A' - LEFT BANK TYPE 3 TREATMENT



TYPICAL GRADE CONTROL SECTION AT SIDE CHANNEL 'A' AND B



TYPICAL CHANNEL SECTION AT EING CHANNEL



TYPICAL CHANNEL SECTION AT SIDE CHANNEL

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TYPE 2 MATERIAL

TABLE 2. MEAN PERCENT



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