



OGC File: 9642749

KM LNG Operating Ltd.
500-5th Avenue SW
Calgary Alberta
T2P 0L7

Attention: Dan Phillips

Re: Approval for Changes in and About a Stream

Date of issuance: October 15, 2015

The Oil and Gas Commission hereby authorizes the holder under section 9 of the *Water Act* to make changes in and about streams at locations shown on map titled: North Logistics Area Watercourse E Restoration Plan. Drawing No. 2039-00-SK10, Revision 3. Dated September 30, 2015.

1. Any substance, sediment, debris or material that could adversely impact the stream
 - a. must not be allowed or permitted to enter or leach or seep into the stream from an activity, construction, worksite, machinery or from components used in the construction of any works, or
 - b. must not be placed, used or stored within the stream channel;
2. Temporary material, fill, bridge, culvert, pump, pipe, conduit, ditch or other structure used in the construction of any works must be constructed and maintained only during the period of construction, and must be removed upon completion of the works;
3. Activities associated with the stream crossing are carried out in accordance with the regional and /or species -specific timing windows or the periods of time in the year when change can proceed without causing serious harm to fish, wildlife or habitat;
4. Instream works associated with this project must not prevent the movement of fish, nor impede the movement of fish to the extent that it is harmful to the survival of the fish.
5. During the construction of a snow fill or ice bridge across a stream, the authorization holder must ensure that:
 - a. the sides of the stream are protected at the stream crossing location,
 - b. naturally occurring stream flow is not obstructed or prevented from flowing under the crossing, and
 - c. the crossing is removed at the end of the period of use at a time, before the next freshet, when the removal can proceed without causing harm to fish, wildlife or habitat.
6. During the temporary ford of a stream the authorization holder must ensure that:
 - a. the construction occurs at a time of the year during which the construction can occur without causing harm to fish, wildlife or habitat,
 - b. the 1 in 10 year maximum daily flow over the ford is accommodated without the loss of the ford and without scouring the stream,

- c. a stream culvert, if used, is designed and installed to pass the average low flow during the period of use,
 - d. the stream channel is protected against erosion during the period of construction and use of the ford, and
 - e. the temporary ford is removed at the end of the period of use at a time, before the next freshet, when the removal can proceed without causing serious harm to fish, wildlife or habitat.
7. During the installation, maintenance or removal of a stream culvert for crossing a stream, the authorization holder must ensure that:
 - a. equipment used for site preparation, construction, maintenance or removal of the culvert is operated from the top of the bank,
 - b. in fish bearing waters, the culvert allows fish in the stream to pass up or down stream under all flow conditions,
 - c. the culvert inlet and outlet incorporate measures to protect the structure and the stream channel against erosion and scour,
 - d. if debris cannot safely pass, provision is made to prevent the entrance of debris into the culvert,
 - e. the installation, maintenance or removal does not destabilize the stream channel,
 - f. the culvert and its approach roads do not produce a backwater effect or increase the head of the stream,
 - g. the culvert capacity is equivalent to the hydraulic capacity of the stream channel or is capable of passing the 1 in 10 year maximum daily flow without the water level at the culvert inlet exceeding the top of the culvert,
 - h. the culvert has a minimum equivalent diameter of 600 mm,
 - i. a culvert having an equivalent diameter of 2 metres or greater, or having a design capacity to pass a flow of more than 6 cubic metres a second, is designed by a professional engineer and is constructed in conformance with that design,
 - j. the stream channel, located outside the cleared width, is not altered,
 - k. embankment fill materials do not and will not encroach on culvert inlets and outlets,
 - l. the culvert has a depth of fill cover which is at least 300 mm or as required by the culvert manufacturer's specifications,
 - m. the maximum fill heights above the top of the culvert do not exceed 2 m, and
 - n. the culvert is fabricated in compliance with the Canadian Standards Association standard CSA G401, Corrugated Steel Pipe Products, or section B182.2 of the Canadian Standards Association standard CSA B1800, whichever is applicable;
8. During the construction, maintenance or removal of a clear span bridge, the authorization holder must ensure that:
 - a. the bridge and its approach roads do not produce a back water effect or increase the head in the stream,
 - b. the equipment used for construction, including site preparation, maintenance or removal of the bridge, is situated in a dry stream channel or is operated from the top of the bank,
 - c. the hydraulic capacity of the bridge is equivalent to the hydraulic capacity of the stream channel, or is capable of passing the 1 in 10 year maximum daily flow, whichever is greater, and the height under the bridge will provide free passage of flood debris and ice flows, and
 - d. the bridge is designed and fabricated in compliance with the Canadian Bridge Design Code, CAN/CSA-86, of the Canadian Standards Association;

9. During the restoration of a change in and about a stream, the authorization holder must ensure that:
- a. any structures constructed to cross the stream are removed,
 - b. the channel is restored to its natural state, to the extent practicable,
 - c. the site of the crossing and associated approaches (including cut and fill slopes and ditch lines) are restored by:
 - i. stabilizing any waste materials removed from the site to above the high water mark to prevent them from entering the stream,
 - ii. re-vegetating disturbed areas associated with the crossing using seed or vegetative propagules of an ecologically suitable species,
 - iii. redistributing coarse wood debris in a manner that aids soil stabilization, and
 - iv. ensuring that surface drainage associated with approaches will not transport sediments into the stream.

Additional Conditions

1. The permit holder must notify the Commission 48 hours prior to commencing construction. Notification must be sent to OGC.ExternalNotifications@bcogc.ca
2. The permit holder must notify the Haisla First Nation a minimum of 48 hours prior to commencing any construction activities under this permit.

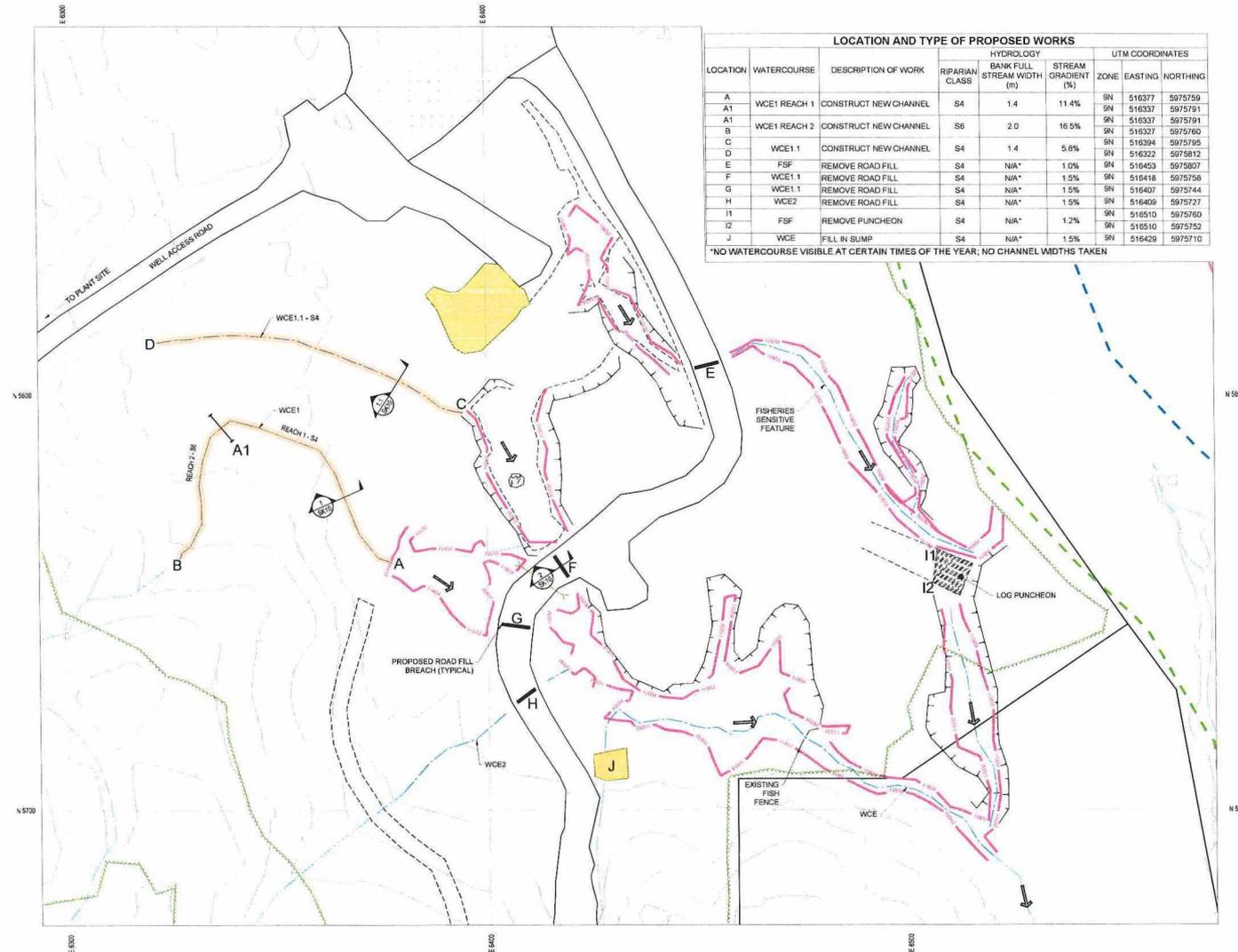
The attached plan(s) form an integral part of this authorization



Andrew Osmond
Natural Resource Officer

cc: 9642749
cc: Scott Land & Lease Ltd.
cc: Haisla First Nation



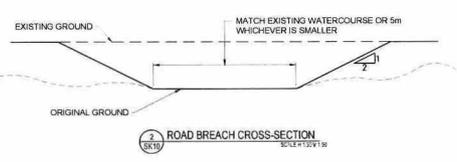
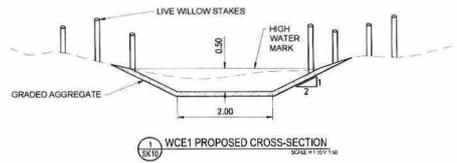
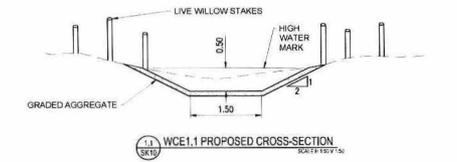


LOCATION AND TYPE OF PROPOSED WORKS							
LOCATION	WATERCOURSE	DESCRIPTION OF WORK	HYDROLOGY			UTM COORDINATES	
			RIPARIAN CLASS	BANK FULL STREAM WIDTH (m)	STREAM GRADIENT (%)	ZONE	EASTING
A	WCE1 REACH 1	CONSTRUCT NEW CHANNEL	S4	1.4	11.4%	5N	516377 5975759
A1						5N	516337 5975791
A1	WCE1 REACH 2	CONSTRUCT NEW CHANNEL	S6	2.0	16.5%	5N	516337 5975791
B						5N	516327 5975760
C	WCE1.1	CONSTRUCT NEW CHANNEL	S4	1.4	5.8%	5N	516394 5975795
D						5N	516322 5975812
E	FSF	REMOVE ROAD FILL	S4	N/A*	1.0%	5N	516453 5975807
F	WCE1.1	REMOVE ROAD FILL	S4	N/A*	1.5%	5N	516418 5975758
G	WCE1.1	REMOVE ROAD FILL	S4	N/A*	1.5%	5N	516407 5975744
H	WCE2	REMOVE ROAD FILL	S4	N/A*	1.5%	5N	516409 5975727
I1	FSF	REMOVE PUNCHED	S4	N/A*	1.2%	5N	516510 5975760
I2						5N	516510 5975752
J	WCE	FILL IN SUMP	S4	N/A*	1.5%	5N	516429 5975710

*NO WATERCOURSE VISIBLE AT CERTAIN TIMES OF THE YEAR, NO CHANNEL WIDTHS TAKEN

LEGEND:

- EXISTING CONTOUR
- SURVEYED TREE LINE
- WATERCOURSE & SURVEYED
- WATERCOURSE & UNSURVEYED
- SURVEYED HIGH WATER MARK (HWM)
- 70m CREEK SETBACK
- 30m CREEK SETBACK
- PLACED PROCESSED ROCK
- SITE ROADWAY
- TOP OF BANK
- TOE OF BANK
- SUMP POND
- CHANNEL RESTORATION
- REMOVE PUNCHED
- REMOVE ROAD FILL



NOTES:

- COORDINATES ARE BASED ON PLANT GRID BASE MAP PRODUCED BY McELHANNEY CONSULTING SERVICES LTD. (MCSL) IN SEPTEMBER 2011
- SURFACE CONTOURS ARE DERIVED FROM TOPOGRAPHIC SURVEY BY MCSL UP TO DECEMBER 17, 2014 AND LIDAR DATA COMPILED BY MCSL IN 2010
- DRAINAGE FEATURES SHOWN WERE SURVEYED BY MCSL UP TO JUNE 27, 2015
- THIS DRAWING IS ISSUED FOR INFORMATION DUE TO THE CONSTANTLY EVOLVING SITE, THIS DRAWING IS NOT NECESSARILY REFLECTIVE OF THE SITE CONDITIONS PAST THE ISSUED DATE OF THIS DRAWING
- ALL DESIGN INFORMATION SHOWN IN THIS SKETCH HAS BEEN PROVIDED BY KITIMAT LNG

EPASS: 10052972

Rev	Date	Description	Drawn	Design	App'd
3	2015-09-30	UPDATED RIPARIAN CLASSIFICATION	AW	-	JB
2	2015-07-21	AUTOFD PASS NUMBER	NG	-	JB
1	2015-07-13	ISSUED FOR INFORMATION	MT	-	NG
0	2015-07-09	ISSUED FOR INFORMATION	MT	-	NG

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BCOS 103H-09
UNIT 20, BLOCK J, GROUP 103-H-15

0 1 500 25

ORIGINAL DRAWING SIZE: ANSI C (22" x 34")

McElhanney
McElhanney Consulting Services Ltd.

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Kamloops BC
Canada V2C 1T6
Tel 250-832-3000

Approved/Sealed

KM LNG OPERATING LTD.
KITIMAT, BC

NORTH LOGISTICS AREA
WATERCOURSE E
RESTORATION PLAN

Drawing No
2039-00-SK10

Project Number
2353-20000-0

Rev
3

9642749