Cenovus Energy Inc. | 500 Centre Street SE | PO Box 766 | Calgary, AB | T2P 0M5 | 403.766.2000 | cenovus.com

April 23, 2015

Mr. Andrew MacPherson, P.Eng.
Director, In Situ Authorizations
Authorizations Branch
Alberta Energy Regulator
Suite 1000, 250 – 5th Street SW
Calgary, AB T2P 0R4

Re: Christina Lake Thermal Project Phase H and Eastern Expansion
Round 3 Supplemental Information Request Responses
AER Application No. 1758947
EPEA Application No. 019-48522

Dear Mr. MacPherson,

Cenovus FCCL Ltd. (Cenovus), as operator for FCCL Partnership, submitted the Christina Lake Thermal Project Phase H and Eastern Expansion Project Application to the Energy Resources Conservation Board (now the Alberta Energy Regulator [AER]) and Alberta Environment and Sustainable Resource Development (ESRD) on March 22, 2013. Following this submission, the AER and ESRD issued the Round 1 and Round 2 Supplemental Information Requests (SIRs) on February 24, 2014 and November 21, 2014, respectively. Cenovus provided responses to the Round 1 and Round 2 SIRs on June 23, 2014 and January 22, 2015. Further to this, the AER issued the Round 3 SIR on March 12, 2015. The enclosed document provides responses to the Round 3 SIR.

Should you have any questions regarding the enclosed Phase H and Eastern Expansion Application Round 3 SIR response, please contact the undersigned at (403) 766-7521.

Yours truly,

B. Mitchell

Brent Mitchell
Specialist, Regulatory Applications
Cenovus FCCL Ltd.

Copy: Shay Dodds – AER
Rieanne Graham – AER
Doug Wong – AER

Enclosure

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ALBERTA ENERGY REGULATOR

THERMAL COMPATIBILITY

1. Section 6.7.1.2, Table 6.7-1: Thermal Compatibility Assessment Results Summary, Page 6-24. Cenovus has identified a number of wells that have been abandoned with non-thermal or unknown cement and have cement from TD to surface. Upon review of these wells the AER has discovered that four of these wells meet this criteria and one well, 00/09-06-076-05W4, has a gap in the cement plugs from 300-336 mKB. Given this discrepancy Cenovus must provide cementing details for the following wells:

00/16-35-075-06W4	**AA/02-26-076-06W4**
00/06-26-076-06W4	**AA/12-26-076-06W4**
AA/03-28-076-06W4	**AA/11-28-076-06W4**
00/10-08-076-05W4	**00/10-16-076-05W4**
00/10-29-076-05W4	**00/09-06-076-05W4**
AA/04-26-076-06W4	**AA/10-26-076-06W4**
AA/01-28-076-06W4	**AA/09-28-076-06W4**
00/10-01-076-05W4	**00/10-10-076-05W4**
00/10-27-076-05W4	

Response:

Cenovus is in the process of acquiring the physical well files for the referenced wells from the respective well owners in order to provide the requested cementing details. In the interim, Cenovus is continuing to assess the thermal compatibility of these wells through the wellview files that are publicly available, and has prioritized the review of the wells in relation to the Project Steam Assisted Gravity Drainage (SAGD) well pad development schedule, as given in Table 1-1.

Before drilling a SAGD well pair within 300 m of these well bores, Cenovus will conduct a comprehensive assessment of the existing wells to confirm compliance with *Directive 020: Well Abandonment* (ERCB 2010). Wells that are not thermally compatible will be individually evaluated and a fluid containment risk assessment plan will be developed for each well. Proposed non-routine well abandonment applications will be submitted to the AER for approval before drilling any SAGD well pairs within 300 m of the non-compliant well bores.

Reference:

ERCB (Energy Resources Conservation Board). 2010. *Directive 020: Well Abandonment*. Revised edition June 9, 2010. Calgary, AB. 47 pp.

Table 1-1 Updated Status of Thermal Compatibility Assessment

UWI	License No.	Well Name	Licensee Name	Well Type	Profile Type	Spud Date	Status	TD [m]	TVD [m]
100/16-35-075-06W4/00	0089075	CDN-SUP ET AL KIRBY 16-35-75-6	ExxonMobil Canada Resources Company	Gas Well	Vertical	3/8/1981	Abandoned	442.00	442.00
100/06-26-076-06W4/00	0068270	HOME LEISMER 6-26-76-6	Devon Canada Corp.	Gas Well	Vertical	2/25/1978	Abandoned	408.70	408.70
1AA/03-28-076-06W4/00	0088626	HOME LEISMER OV 3-28-76-6	Devon Canada Corp.	Gas Well	Vertical	2/18/1981	Abandoned	364.00	364.00
100/10-08-076-05W4/00	0089154	PEX PHILLIPS HARDY 10-8-76-5	Suncor Energy Inc.	Gas Well	Vertical	3/8/1978	Abandoned	429.00	429.00
100/10-29-076-05W4/00	0052656	BAYSEL PHILLIPS WINEFRED 10-29-76-5	Suncor Energy Inc.	Gas Well	Vertical	2/3/1975	Abandoned	410.90	410.90
1AA/04-26-076-06W4/00	0088839	HOME LEISMER OV 4-26-76-6	Devon Canada Corp.	Gas Well	Vertical	3/9/1981	Abandoned	402.00	402.00
1AA/01-28-076-06W4/00	0088627	HOME LEISMER OV 1-28-76-6	Devon Canada Corp.	Gas Well	Vertical	2/12/1981	Abandoned	371.00	371.00
100/10-01-076-05W4/00	0062768	BAYSEL PHILLIPS WINEFRED 10-1-76-5	Suncor Energy Inc.	Gas Well	Vertical	1/25/1978	Abandoned	489.20	489.20
100/10-27-076-05W4/00	0068187	PACIFIC PHILLIPS WINEFRED 10-27-76-5	Suncor Energy Inc.	Gas Well	Vertical	2/20/1979	Abandoned	420.00	420.00
1AA/02-26-076-06W4/00	0088838	HOME LEISMER OV 2-26-76-6	Devon Canada Corp.	Gas Well	Vertical	2/19/1981	Abandoned	412.00	412.00
1AA/12-26-076-06W4/00	0088841	HOME LESMER OV 12-26-76-6	Devon Canada Corp.	Gas Well	Vertical	3/3/1981	Abandoned	395.00	395.00
1AA/11-28-076-06W4/00	0088837	HOME LEISMER OV 11-28-76-6	Devon Canada Corp.	Gas Well	Vertical	2/27/1981	Abandoned	363.50	363.50
100/10-16-076-05W4/00	0062791	BAYSEL PHILLIPS WINEFRED 10-16-76-5	Suncor Energy Inc.	Gas Well	Vertical	2/27/1977	Abandoned	451.10	451.10
100/09-06-076-05W4/00	0147470	PPRL HARDY 9-6-76-5	Phillips Petroleum Resources Ltd.	Gas Well	Vertical	2/2/1991	Abandoned	431.00	431.00
1AA/10-26-076-06W4/00	0088840	HOME LEISMER OV 10-26-76-6	Devon Canada Corp.	Gas Well	Vertical	2/5/1981	Abandoned	385.00	385.00
1AA/09-28-076-06W4/00	0088823	HOME LEISMER OV 9-28-76-6	Devon Canada Corp.	Gas Well	Vertical	2/22/1981	Abandoned	366.00	366.00
100/10-10-076-05W4/00	0049330	BAYSEL PHILLIPS WINEFRED 10-10-76-5	Suncor Energy Inc.	Gas Well	Vertical	3/17/1974	Abandoned	466.30	466.30

Note: TD = True Depth; TVD = True Vertical Depth.

Table 1-1 Updated Status of Thermal Compatibility Assessment

UWI	Formation at TD	DH	Surface Casing Vent (SCV) Information	SCVF Test (Y/N)	Thermally Compatible (Y/N)	Comments	NON-T/C Type	SAGD Well Pad	First Steam Date
100/16-35-075-06W4/00	Beaverhill Lake Group	Cement Plug	N/A well was D&A	N	N	This well was drilled in 1981 to perform DST natural gas testing no production casing was run in well. The open hole section was abandoned with non-thermal cement. Cement plug evaluation required.	4	J09	2017+
100/06-26-076-06W4/00	Beaverhill Lake Group	Cement Plug	N/A well was D&A	N	N	This well was drilled in 1978 to perform DST Natural gas testing. No production casing was run in the well. Abandoned from TD to Surface with non-thermal cement. Cement plug evaluation required.	4	L07	2020+
1AA/03-28-076-06W4/00	Beaverhill Lake Group	Cement Plug	N/A well was D&A	N	N	This well was drilled in 1981 for core sampling. Surface casing was run but no production casing was run. This well had core samples pulled and then the open hole abandonment with non-thermal cement.	4	M21	2020+
100/10-08-076-05W4/00	McMurray Formation	Cement Plug	N/A well was D&A	N	N	This well was drilled in 1981 for core sampling. Surface casing was run but no production casing was run. This well had core samples pulled and then the open hole abandonment with non-thermal cement. Cement plug evaluation required.	4	B25	2025+
100/10-29-076-05W4/00	Beaverhill Lake Group	Cement Plug	N/A well was D&A	N	N	This well was drilled in 1981 for core sampling. Surface casing was run but no production casing was run. This well had core samples pulled and then the open hole abandonment with non-thermal cement. Cement plug evaluation required.	4	N11	2025+
1AA/04-26-076-06W4/00	Beaverhill Lake Group	Cement Plug	N/A well was D&A	N	N	This well was drilled in 1981 for core sampling. Surface casing was run but no production casing was run. This well had core samples pulled and then the open hole abandonment with non-thermal cement. Cement plug evaluation required.	4	L11	2020+
1AA/01-28-076-06W4/00	Beaverhill Lake Group	Cement Plug	N/A well was D&A	N	N	This well was drilled in 1981 for core sampling. Surface casing was run but no production casing was run. This well had core samples pulled and then the open hole abandonment with non-thermal cement. Cement plug evaluation required.	4	M21	2020+
100/10-01-076-05W4/00	Beaverhill Lake Group	Cement Plug	N/A well was D&A	N	N	This well was drilled in 1978 for core sampling. Surface casing was run but no production casing was run. This well had core samples pulled and then the open hole abandonment with non-thermal cement.	4	U07	2025+
100/10-27-076-05W4/00	Beaverhill Lake Group	Cement Plug	N/A well was D&A	N	N	This well was drilled in 1979 for core sampling. Surface casing was run but no production casing was run. This well had core samples pulled and the open hole abandonment with non-thermal cement. Cement plug evaluation required.	4	R25	2025+
1AA/02-26-076-06W4/00	Beaverhill Lake Group	Cement Plug	N/A well was D&A	N	N	This well was drilled in 1981 for core sampling. Surface casing was run but no production casing was run. This well had core samples pulled and then the open hole abandonment with non-thermal cement. Cement plug evaluation required.	4	L07	2020+
1AA/12-26-076-06W4/00	Beaverhill Lake Group	Cement Plug	N/A well was D&A	N	N	This well was drilled in 1981 for core sampling. Surface casing was run but no production casing was run. This well had core samples pulled and then the open hole abandonment with non-thermal cement. Cement plug evaluation required.	4	L17	2020+
1AA/11-28-076-06W4/00	Beaverhill Lake Group	Cement Plug	N/A well was D&A	N	N	This well was drilled in 1981 for core sampling. Surface casing was run but no production casing was run. This well had core samples pulled and then the open hole abandonment with non-thermal cement.	4	M23	2020+
100/10-16-076-05W4/00	Beaverhill Lake Group	Cement Plug	N/A well was D&A	N	N	This well was drilled in 1977 for core sampling. Surface casing was run but no production casing was run. This well had core samples pulled and then the open hole abandonment with non-thermal cement. Cement plug evaluation required.	4	R01	2025+
100/09-06-076-05W4/00	Beaverhill Lake Group	Cement Plug	N/A well was D&A	N	N	This well was drilled in 1991 to perform DST natural gas testing no production casing was run in well. The open hole section was abandoned with non-thermal cement. Cement plug evaluation required.	4	S19	2020+
1AA/10-26-076-06W4/00	Beaverhill Lake Group	Cement Plug	N/A well was D&A	N	N	This well was drilled in 1981 for core sampling. Surface casing was run but no production casing was run. This well had core samples pulled and then the open hole abandonment with non-thermal cement.	4	L13	2020+
1AA/09-28-076-06W4/00	Beaverhill Lake Group	Cement Plug	N/A well was D&A	N	N	This well was drilled in 1981 for core sampling. Surface casing was run but no production casing was run. This well had core samples pulled and then the open hole abandonment with non-thermal cement.	4	M15	2020+
100/10-10-076-05W4/00	Beaverhill Lake Group	Cement Plug	N/A well was D&A	N	N	This well was drilled in 1974 for core sampling. Surface casing was run but no production casing was run. This well had core samples pulled and then the open hole abandonment with non-thermal cement.	4	C17	2025+

Note: N/A = Not Applicable; D&A = Drilled and Abandoned; TD = True Depth; TVD = True Vertical Depth.

2. Section 6.7.1.2, Table 6.7-1: Thermal Compatibility Assessment Results Summary, Page 6-24. The following wells appear to be Directive 020 noncompliant. Provide formation tops to complete this evaluation and address the gaps in the cement plugs for the following wells:

UWI	Cement information
00/09-06-076-05W4	**Cement gap 30-336 mKB**
00/11-01-076-06W4	**Bridge plug plus 8 m of cement at 282 mKB and 320 mKB**
00/16-20-076-06W4	**Bridge plug plus 8 m of cement at 240 mKB and 324 mKB**
00/07-06-076-04W4	**Bridge plug plus 3 m cement at 408 mKB, bridge plug plus 23 m cement at 397 mKB, and bridge plug plus 8 m cement at 363 mKB**

Response:

Cenovus is in the process of acquiring the physical well files for the referenced wells from the respective well owners in order to provide the requested formation tops and cementing details. In the interim, Cenovus is continuing to assess the thermal compatibility of these wells through the wellview files that area publicly available, and has prioritized the review of the wells in relation to the Project SAGD well pad development schedule, as given in Table 2-1.

Cenovus completed the remediation of well 00/11-01-076-06W4 in March 2015, as approved by the AER Well Operations on February 17, 2015 (Table 2-1). The well was re-entered and thermally abandoned by placing a cement plug from true depth (TD) into the surface casing, and covering the production casing and connections with Class G thermal cement. In addition, to confirm hydraulic isolation through the caprock interval the Clearwater perforations were squeezed off and drilled out. The updated well log for this well is provided in Figure 2-1.

For the remaining wells reviewed in Table 2-1, Cenovus will conduct a comprehensive assessment of the existing wells to confirm compliance with *Directive 020: Well Abandonment* (ERCB 2010). Wells that are not thermally compatible will be individually evaluated and a fluid containment risk assessment plan will be developed for each well. Proposed non-routine well abandonment applications will be submitted to the AER for approval before drilling any SAGD well pairs within 300 m of the non-compliant well bores.

Reference:

ERCB (Energy Resources Conservation Board). 2010. *Directive 020: Well Abandonment*. Revised edition June 9, 2010. Calgary, AB. 47 pp.

Table 2-1 Updated Status of Thermal Compatibility Assessment

UWI	License No.	Well Name	Licensee Name	Well Type	Profile Type	Spud Date	Status	TD [m]	TVD [m]
100/09-06-076-05W4/00	0147470	PPRL HARDY 9-6-76-5	Phillips Petroleum Resources Ltd.	Gas Well	Vertical	2/2/1991	Abandoned	431.00	431.00
100/11-01-076-06W4/00	0074193	HOME LEISMER 11-1-76-6	Devon Canada Corp.	Gas Well	Vertical	2/7/1979	Abandoned	423.00	423.00
100/16-20-076-06W4/00	0161938	HOME UNIT #1 LEISMER 16-20-76-6	Devon Canada Corp.	Gas Well	Vertical	1/23/1994	Abandoned	384.00	384.00
100/07-06-076-04W4/00	0150918	ANDERSON HARDY 7-6-76-4	Devon Canada Corp.	Gas Well	Vertical	1/14/1992	Abandoned	485.00	485.00

UWI	Formation at TD	DH	Surface Casing Vent (SCV) Information	SCVF Test (Y/N)	Thermally Compatible (Y/N)	Comments	NON-T/C type	SAGD Well Pad	First Steam Date
100/09-06-076-05W4/00	Beaverhill Lake Group	Cement Plug	N/A well was D&A	N	N	This well was drilled in 1991 to perform DST natural gas testing. No production casing was run in well. The open hole section was abandon with non-thermal cement. Cement plug evaluation required.	4	S19	2020+
100/11-01-076-06W4/00	Beaverhill Lake Group	N/A	If SCV testing is required it is completed by licence holder	N	Y	Well remediated in March 2015. Thermally compliant as per Directive 020 requirements.	N/A	S03	2020+
100/16-20-076-06W4/00	Beaverhill Lake Group	N/A	If SCV testing is required it is completed by licence holder	N	N	This well was drilled for gas production. The wells were completed with thermal cement and non-premium casing. The well was perffed in the Clearwater Zone and produced gas until 2000. In 2007 a bridge plug was run and set at 324 m, 16 m into the McMurray Zone, and then capped with a cement plug to 284 m. Then, another bridge plug was set at 240 m, 10 m above existing perfs and capped with cement. Well status at this time is abandoned. Well needs to be re-entered and abandoned to thermal standards	2	M17	2020+
100/07-06-076-04W4/00	Beaverhill Lake Group	N/A	If SCV testing is required it is completed by licence holder	N	N	This well was drilled in 1992 for gas production. Well produced gas from the Clearwater Zone until 1999. Well was also perffed in McMurray but no signs of production. A bridge plug was run and cap with cement above the McMurray perffs. Well was completed with thermal cement and non-premium casing connections. Well current status is abandoned. Well needs to be re-entered and abandoned to thermal standards.	2	Y02	2025+

N/A = Not applicable.

Schematic - Current

cenovus ENERGY

Well Name: Home Leismer 11-1-76-6

Bottom Hole UWI	Surface Legal Location	Pad	Field Name	License #	State/Province
				0074193	

Profile Type	Orig KB Elev (m)	KB-Grd (m)	KB-CF (m)	KB-TH (m)	Total Depth (mKB)	Sour Class (Licensed)	Sour Status Date
	599.10	3.60	3.60	2.60	423.00		

Most Recent Job

Job Category	Type	Job Start Date	Job End Date
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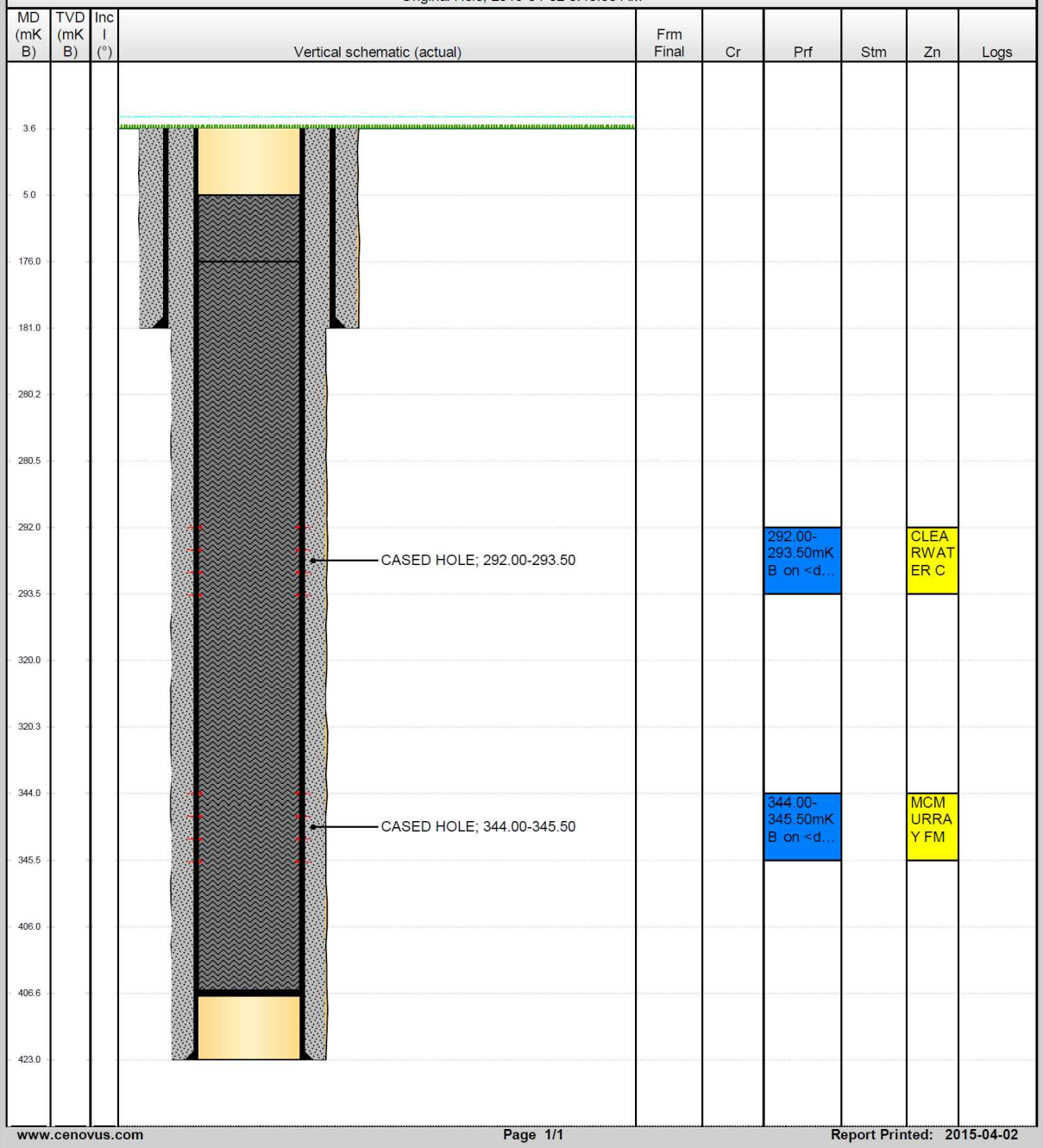

www.cenovus.com Page 1/1 Report Printed: 2015-04-02

SCHEMATIC ONLY. NOT TO SCALE.

PROJECT

cenovus ENERGY

CHRISTINA LAKE THERMAL PROJECT
PHASE H AND EASTERN EXPANSION
SIR REPORT

TITLE

UPDATED WELL LOG FOR 11-1-76-6 (HOME LEISMER)

Golder Associates

PROJECT No.	14.1346.0011.9000		FILE No.	14134600119000A003	
DESIGN	RL	2015-04-20	SCALE	AS SHOWN	
CADD	BSW	2015-04-21			
CHECK	BM	2015-04-21			
REVIEW	BM	2015-04-21			

FIGURE:2-1

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SOCIO-ECONOMICS

3. Volume 2, Section 4.3.8.1, Page 4-25. Cenovus identifies that "the Traditional Land Use (TLU) LSA, Lease Area, and local Registered Fur Management Areas (RFMAs) are shown in Figure 4.3-1. The LSA partially overlaps RFMA #s 1595, 2316, 2322 and 2443. Of these, RFMA #2316 is registered to a Métis trapper and will be assessed in the TLU Assessment."

a. Local Registered Fur Management Areas (RFMAs) are NOT shown in Figure 4.3-1. Include all overlapping RFMAs in Figure 4.3-1;

b. To illustrate overlap of the project and the expansion with RFMAs, include the project area, and identify the Phase H area and eastward expansion in Figure 2.2-2;

c. Provide rationale for excluding RFMA #s 1595, 2316, 2322 and 2443 from the TLU assessment and provide updates on consultation activities with RFMA holders, if they have occurred.

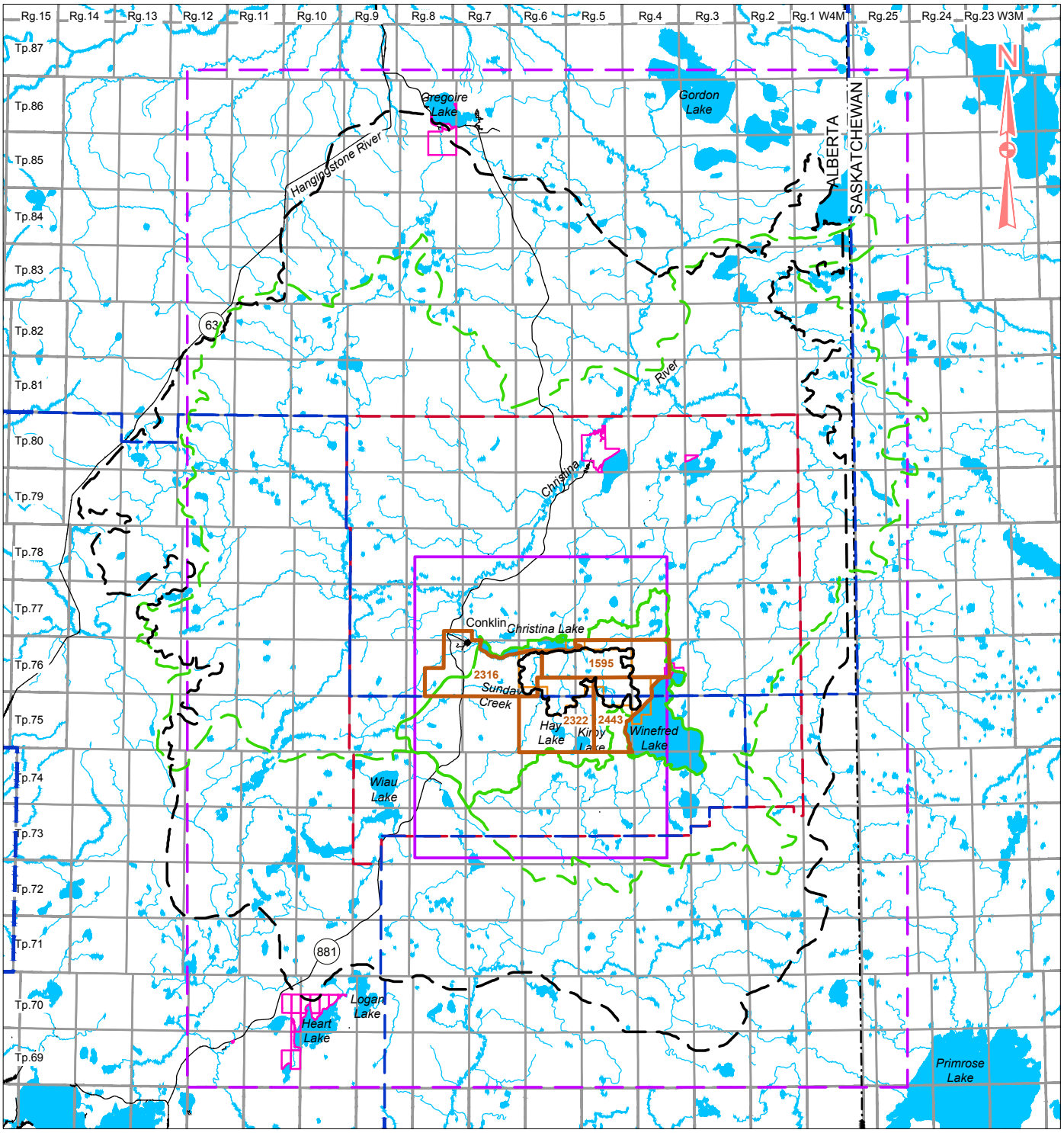
Response:

a. Figure 4.3-1 has been updated and provided as Figure 3-1.

b. Figure 2.2-2 has been updated and provided as Figure 3-2.

c. The effects of the Project on Registered Fur Management Area (RFMA) #2316 were assessed in Volume 6, Section 2.7 of the TLU Assessment because it is registered under an Aboriginal Trapper. RFMAs #1595 and #2322 are registered to a non-Aboriginal trapper; therefore, they were not included in the TLU assessment. The effects of the Project on RFMAs #1595 and #2322 were assessed in Volume 6, Section 3.5.3 of the Resource Use Assessment. RFMA #2443 is registered to a Métis trapper. Although RFMA #2443 was inadvertently excluded from the TLU assessment, it was assessed in Volume 6, Section 3.5.3 of the Resource Use Assessment.

Cenovus maintains ongoing consultation with each of the above RFMA holders. The registered holders of RFMA #s 1595, 2316, 2332 and 2443 have been consulted regarding the Project and have indicated that they do not have a concern with the Project.



LEGEND

- COMMUNITY
- RAILWAY
- WATERCOURSE
- AIR LOCAL STUDY AREA
- AQUATIC RESOURCES LOCAL STUDY AREA
- NOISE LOCAL STUDY AREA
- TRADITIONAL LAND USE LOCAL STUDY AREA
- AIR REGIONAL STUDY AREA
- AQUATICS RESOURCES REGIONAL STUDY AREA
- REGISTERED FUR MANAGEMENT AREA (WITH AESRD RFMA ID)
- RESOURCE USE REGIONAL STUDY AREA
- SOCIO-ECONOMIC REGIONAL STUDY AREA
- TERRESTRIAL RESOURCES REGIONAL STUDY AREA
- TRADITIONAL LAND USE REGIONAL STUDY AREA
- WATERBODY

REFERENCE

BASE DATA FROM IHS ENERGY INC. DATUM: NAD83 PROJECTION: UTM ZONE 12

0 20 40 60

SCALE KILOMETRES

PROJECT

cenovus ENERGY

CHRISTINA LAKE THERMAL PROJECT
PHASE H AND EASTERN EXPANSION
SIR REPORT

TITLE

LOCAL AND REGIONAL STUDY AREAS

Golder Associates

PROJECT No.	14.1346.0011.9000		FILE No.	14134600119000A001
DESIGN	RL	2015-03-15	SCALE	AS SHOWN
CADD	BSW	2015-03-17		
CHECK	MG	2015-04-07		
REVIEW	RL	2015-04-07		

FIGURE:3-1

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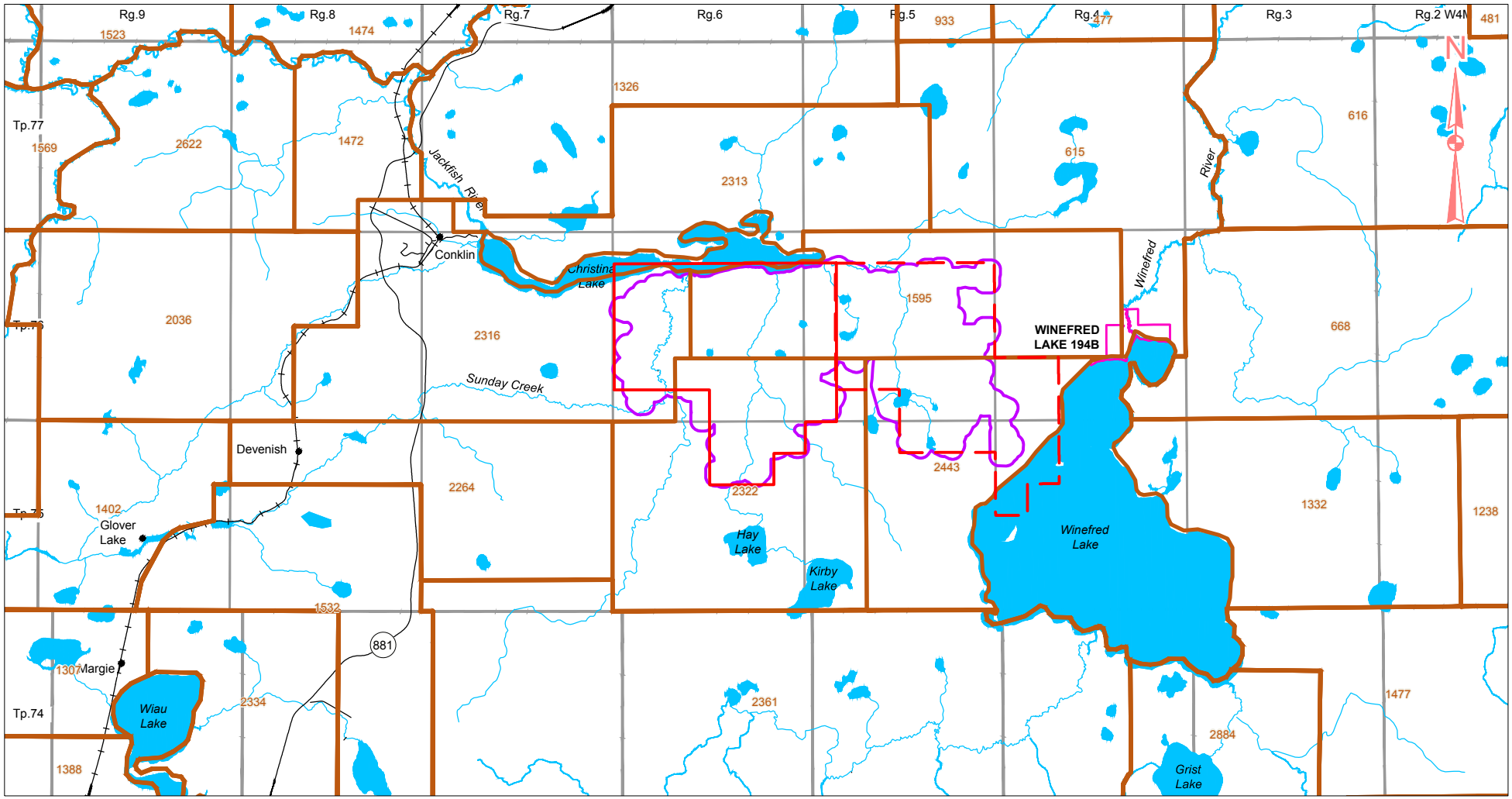

LEGEND

- COMMUNITY
- HIGHWAY
- RAILWAY
- WATERCOURSE
- INDIAN RESERVE
- PROJECT AREA - EASTERN EXPANSION
- PROJECT AREA - PHASE H
- REGISTERED FUR MANAGEMENT AREA (RFMA)
- TRADITIONAL LAND USE LOCAL STUDY AREA
- WATERBODY

REFERENCES

BASE DATA OBTAINED FROM IHS ENERGY INC. AND DEPARTMENT OF NATURAL RESOURCES CANADA, ALL RIGHTS RESERVED.
DATUM: NAD83 PROJECTION: UTM ZONE 12

cenovus ENERGY

CHRISTINA LAKE THERMAL PROJECT
PHASE H AND EASTERN EXPANSION
SIR REPORT

TITLE

REGISTERED FUR MANAGEMENT AREA AND TRADTIONAL LAND USE LOCAL STUDY AREA

Golder Associates

PROJECT No.	14.1346.0011.9000		FILE No.	14134600119000A002
DESIGN	RL	2015-03-12	SCALE	AS SHOWN
CADD	BSW	2015-03-17		
CHECK	MG	2015-04-08		
REVIEW	BSW	2015-04-08		

FIGURE:3-2

4. Volume 6, Section 2.9, Page 2-40. Cenovus states that "an assessment of the Project's effects on traditional trails, and spiritual and cultural sites determined that traditional trails and travel areas surround portions of Christina Lake and the northeast portion of the LSA. The available information did not indicate the exact location of the trails. As a result, Cenovus will meet with the potentially affected Aboriginal groups to determine the exact location of the trails and discuss any reasonable mitigation or avoidance measures."

a. Provide an update on consultations with relevant Aboriginal groups to determine location and discuss reasonable mitigation or avoidance measures.

Response:

a. Since filing the Project application in March 2013, Cenovus has continued to engage relevant Aboriginal groups regarding potential effects of the Project. Further information related to traditional trails was discussed in the Chipewyan Prairie Dene First Nation (CPDFN) and Cold Lake First Nation (CLFN) statements of concern (SOC) that were submitted to the AER.

Within the CPDFN SOC, the Chipewyan Prairie Industry Relations Corporation (CPIRC) requested that Cenovus work with the CPIRC to identify and catalogue the locations of traditional trails, cabins, gravesites or other cultural features that might be adversely affected by the Project. In response to this request, assurance was provided to CPDFN that Cenovus will continue to meet with CPDFN to determine the location of identified areas and features, and will discuss any reasonable mitigation or avoidance measures. The CPDFN did not provide any traditional trail maps with their SOC. However, Cenovus will continue to engage CPDFN throughout the life of the Project, and will participate in mutually agreeable consultation, education and information-sharing processes regarding traditional trails.

The CLFN SOC also discussed traditional trails, and included a map of the *Denesuline* Cabins and Trails System in Figure 3 of the SOC. Cenovus has reviewed Figure 3 of the CLFN SOC submission to determine potential effects on the provided trail system locations by the proposed Project footprint. Based on this review it does not appear that any of the documented trails will be disturbed by the Project footprint because no trails are shown to be within the proposed Project Area. Cenovus will continue to engage with CLFN as the Eastern Expansion Area is developed, to ensure documented CLFN traditional land use sites are avoided or impacts on them are appropriately mitigated.

No other statements of concern filed regarding the Project, or ongoing consultation with Aboriginal groups have indicated the presence of additional traditional trail locations within the Project Area. Cenovus will continue to engage with relevant Aboriginal groups regarding the Project as the footprint is developed.

5. SIR 1, AER Response, 58b, Page 146. Cenovus did not completely answer the question: "How much will the traffic increase by? Separate out the construction and operation phases, and regular and oversize loads."

a. How much will the traffic increase by, as a results of increased traffic specific to the CLTP site, during both construction and operations phase?

b. Provide a table with traffic volumes (AADT) attributed to CLTP, separated for construction and operation phases (column), and by heavy (oversize loads) and light vehicles (row).

Response:

a. Cenovus anticipates that background traffic volumes at Highway 881 will increase by approximately 4% during the construction phase (outbound peak), and by 3% during the operations phase (inbound peak) of the overall Christina Lake Thermal Project (CLTP) facility (Table 5-1). As discussed in the response to Round 1 AER Supplemental Information Request (SIR) 58, Cenovus recognizes that the construction and operation of the overall CLTP facility will result in traffic increases on Highway 881. However, the proposed Project (Phase H and Eastern Expansion) is not expected to increase traffic levels beyond those assessed in the 2011 Traffic Impact Assessment (Dillon Consulting Ltd. 2011). Thus, Cenovus believes that the proposed Project will not materially change the conclusions of the 2011 Traffic Impact Assessment.

b. Projected traffic volumes at Highway 881 that are attributed to the construction and operation of the overall CLTP facility, including the Phase H and Eastern Expansion Project, are provided in Table 5-1. Traffic volumes presented include the background traffic and the percent increase in volumes generated by the CLTP. Peak vehicle per hour traffic volumes (rather than annual average daily traffic counts [AADT]) were modelled in the 2011 Traffic Impact Assessment to determine the adequacy of the Conklin Access and Cenovus Bypass intersections.

The heavy (oversized) vehicle volumes provided in Table 5-1 are shown as zero since these volumes are associated with peak traffic periods. Heavy (oversize loads) vehicles are typically brought to site during off-peak hours and, therefore have no effect on peak volume periods. However, based on previous construction projects, Cenovus predicts that approximately one-third of the total construction traffic volumes would consist of heavy loads.

Reference:

Dillon Consulting Ltd. 2011. *Cenovus Energy, Devon Energy, Harvest Operations Corp. Christina Lake Projects, Conklin, Alberta - Traffic Impact Assessment, October 2011*. 112 pp.

Table 5-1 Summary of CLTP Traffic Volumes Generated During Construction and Operations Phases

Peak Construction	Inbound Peak Hour Traffic (Monday)				Outbound Peak Hour Traffic (Thursday)			
	Background (vehicles per hour)	Site-Generated		% increase	Background (vehicles per hour)	Site-Generated		% increase
		Light	Heavy			Light	Heavy	
Hwy 881 - Conklin Access to Cenovus Bypass	355	14	0	4%	289	12	0	4%
Hwy 881 - Cenovus Bypass to Sunday Creek Road	348	9	0	3%	278	8	0	3%
Peak Operations	**Inbound Peak Hour Traffic (Mon)**				**Outbound Peak Hour Traffic (Thu)**			
	Background (vehicles per hour)	Site-Generated		% increase	Background (vehicles per hour)	Site-Generated		% increase
		Light	Heavy			Light	Heavy	
Hwy 881 - Conklin Access to Cenovus Bypass	426	14	0	3%	348	8	0	2%
Hwy 881 - Cenovus Bypass to Sunday Creek Road	409	8	0	2%	337	6	0	2%

ENVIRONMENT PROTECTION AND ENHANCEMENT ACT (EPEA)

6. SIR 2, AER Response 11, Page 29; SIR 2, ESRD Response 36, Page 187. In response to question 11(c) Cenovus states that "due to the trade-off of maximizing recovery of the resource, it was not possible to avoid disturbance to all other sensitive environmental features such as rare plants, old growth forest, pattern fens and lichen jack pine." The response continues and provides examples of how the company will minimize developmental footprint including maximizing the number of wells per pads.

In response to ESRD Question #36, Cenovus provides information including Figure 36-1 that identifies proposed and planned exploration activities. Based on the figure it appears that the exploration activities (i.e., OSE wells, 3D & 4D seismic) identified will overlap the sensitive environmental features listed above.

a. Describe the impacts of the planned and proposed exploration activities on rare plants, old growth forest, pattern fens and lichen jack pine ecosites?

b. Since these activities are not directly tied to maximizing recovery, can they avoid the listed sensitive environmental features? Explain.

Response:

a. The relative footprint disturbance from exploration activities and the Project footprint on old growth forest, patterned fens and lichen jack pine ecosites are provided in Table 6-1.

Table 6-1 Project Footprint and Planned Exploration Activity Impacts on Old Growth, Lichen jack pine (a1) and Patterned fen (FOPN, FTPN) Land Cover Types

Ecosite Type	Description	Loss/alteration due to the Project Footprint (ha)	Loss/alteration due to Proposed Exploration Activities (ha)	Total Loss/Alteration (ha)
n/a	old growth forest	23	27	50
a1	lichen jack pine	4	3	7
FOPN	open patterned fen	1	3	4
FTPN	wooded patterned fen	6	8	14

n/a= Not applicable.

Seismic exploration activities are unlikely to significantly affect lichen jack pine (a1 ecosite phase) areas because of the open nature of these habitats and the high cover of terrestrial lichens. Lichens may be less vulnerable to winter seismic activity because they are low to the ground and less likely to be disturbed by low impact seismic methods. The Oil Sands Exploration (OSE) wells may result in direct clearing of vegetation in lichen jack pine (a1 ecosite phase) areas. If any grading or ground levelling

activities occur, lichen in the ground cover will also be disturbed. Retaining snow or ice cover on top in these areas may reduce effects to ground lichens by minimizing disturbance from vehicles and equipment. Active reclamation of OSE well sites reduces the time to achieve reclamation criteria and revegetate cleared areas.

Effects of seismic lines and OSE wells in patterned fens (open FOPN and wooded FTPN) could affect micro-topography, rare plants, moss community structure, and peat accumulation. Experience to date suggests moss recovery is dependent on the level of disturbance to soils (i.e., peat) during the vegetation clearing and/or mulching process. Where soil disturbance is minimal, recovery of vascular species and shrubs has been shown to occur quickly (Lee and Boutin 2006; Polster 2009).

For seismic lines in patterned fens, factors such as surface water depth and compaction of hummocks and repeated access can delay recovery of shrubs and mosses, until the appropriate micro-topography (e.g., hummocks and depressions) re-establishes (Graf 2009; Lee and Boutin 2006). Effects to patterned fens are reduced by implementing low-impact seismic activities that minimize peat compaction, allowing for retention of micro-topography, and minimizing ground cover disturbance. For OSE wells in patterned fens, the creation of ice pads will result in compaction of peat and micro-topography in the elevated portions of patterned fens (i.e., strings) where tree and shrubs and different ground cover species grow.

The effects of seismic activity on old growth forests will have less of an impact than the Project footprint development since old growth forests have a more diverse structure. Old growth forests have more open and diverse habitat characteristics as a result of tree mortality and regeneration, including a diversity of different tree ages. Individual old growth trees will be avoided when possible while clearing seismic lines to minimize loss of canopy and retain forest structure. The number of proposed OSE wells is relatively low in the largest patch of old growth forest (southwest area of the Local Study Area [LSA]; Round 2 AER SIR 11, Figures 11-1 and Round 2 ESRD SIR 36, Figure 36-1); and therefore, exploration activities are not expected to have a significant impact on old growth forest.

The field methods used to identify rare plant locations (ANPC 2012; Golder 2006) do not allow for identification of all rare plant populations in the LSA. Therefore, to describe the impacts of the Project on rare plants is best accomplished by assessing the effects of the Project on rare plant potential (Cenovus 2013). The relative footprint disturbance from exploration activities and the Project footprint are provided in Table 6-2.

Seismic activities may not affect populations of rare plants because this type of disturbance is narrow, has low ground disturbance, and is surrounded by intact habitat. On OSE well sites, rare plant occurrences may be affected by mulching of cleared trees, or by changes to site conditions from the frozen well pad surface (e.g., delayed thawing, compaction, change in moisture or light conditions). However, in some cases rare plant species may establish on disturbed areas such as OSE well sites.

Table 6-2 Changes to High and Moderate Rare Plant Potential Ecosites due to Project Footprint and Proposed Explorations Activities

Rare Plant Potential	Loss/Alteration due to the Project Footprint [ha]	Loss/Alteration due to Proposed Exploration Activities [ha]	Total Loss/Alteration [ha]
high	808	263	1,071
moderate	690	229	919

The additional effects associated with exploration activities are conservative, because they are calculated assuming that all exploration disturbance will be developed at once on the landscape. In reality, Cenovus is committed to progressive reclamation activities such that Project footprint and exploration disturbances will be reclaimed throughout the life of the Project. As a result, only a portion of the total Project footprint and Project exploration area will exist as disturbances at any given time.

b. Environmental constraints mapping was undertaken early in the design stage of the Project to aid in delineation of the development footprint, such that disturbance to sensitive environmental features could be avoided or minimized. Environmental constraints are considered when planning exploration activities; however, exploration activities must take place in areas where underlying bitumen resource is present and not all sensitive environmental features can be completely avoided.

Although the proposed exploration activities may disturb areas of old growth forest, patterned fens, and lichen jack pine habitats, as well as rare plants (areas of high and moderate rare plant potential), in addition to the Project footprint, the nature of the disturbances is different. Project footprint development occurs over a longer timeframe, and involves disturbance of soils and construction of facilities. In contrast, exploration activities are temporary, are conducted only during winter, and generally do not involve soil stripping or construction of facilities. These differences reduce impacts and facilitate natural regeneration of exploration-related disturbances. In addition, Cenovus will conduct progressive reclamation in areas where exploration activities have resulted in soils disturbance.

References:

ANPC (Alberta Native Plant Council). 2012. *ANPC Guidelines for Rare Vascular Plant Surveys in Alberta – 2012 Update*. Alberta Native Plant Council, Edmonton, AB. Available at: http://www.anpc.ab.ca/content/resources.php

Cenovus (Cenovus FCCL Ltd.). 2013. *Application for the Christina Lake Thermal Project Phase H and Eastern Expansion*. Application No. 1758947. Submitted to the Energy Resources Conservation Board and Alberta Environment and Sustainable Resource Development, March 2013. Calgary, AB.

Golder (Golder Associates Ltd.). 2006. *Rare Plant Survey Technical Procedures, V2.06*.

Graf M.D. 2009. *Literature Review on the Restoration of Alberta's Boreal Wetlands Affected by Oil, Gas and In Situ Oil Sands Development*. Report prepared for Ducks Unlimited. 52 pp.

Lee, P. and S. Boutin. 2006. *Persistence and developmental transitions of wide seismic lines in the western Boreal Plains of Canada*. Journal of Environmental Management 78:240-250.

Polster, D. 2009. *Seismic Line Recovery in the South east Yukon: Patterns and Processes*. Prepared for Mining and Petroleum Environmental Research Group. Energy, Mines and Resources, Whitehorse, YT. 19 pp.

ENVIRONMENTAL ASSESSMENT

7. Supplemental Information Request Round 2, Question 34, Page 75.

Cenovus was asked to discuss the steps that they would take to maintain a viable Western toad population in the LSA and to describe how Western toad dispersal patterns would be identified and maintained. Cenovus responded by describing an amphibian call survey that is completed every three years and wildlife observation cards that are used on-site; however, the use of these methods alone are not suitable for identifying and maintaining Western toad dispersal patterns and populations within the LSA.

a. Has Cenovus identified all of the Western toad breeding ponds, hibernacula and dispersal routes throughout the LSA? Provide a figure showing the locations of any features that have been identified. If all or some of these features have not been identified, describe the steps that Cenovus will take to do so. For features that have been identified, discuss how they will be maintained.

b. Discuss the steps that Cenovus will take to mitigate toad mortality on roadways in areas where dispersal routes cross roads.

Response:

a. As indicated in the Environmental Impact Assessment (EIA, Volume 5, Appendix 5-III, Figures 11 and 13), a western toad survey was conducted for the baseline assessment and subsequent amphibian monitoring has also occurred. The toad survey employed accepted methods to provide a baseline assessment sufficient to address the terms of reference (ESRD 2012, Section 3.7.1 [A]). The methods employed may not be sufficient to identify all breeding wetlands because these locations may change from year to year and detectability may also change within a single season, depending on environmental conditions.

The identification of all western toad hibernacula and dispersal routes are beyond the expectations of baseline data collection for an EIA and are not a requirement of the terms of reference. Breeding season amphibian surveys conducted for the baseline assessment will not identify hibernacula locations. Western toads may den communally in small groups and they may use many micro-site features that provide access below frost, including squirrel middens, peat mounds, rotten root tunnels, and beaver lodges. Also, it is unlikely that western toads have specific dispersal routes, either between hibernation sites and breeding wetlands or from wetlands once tadpoles have metamorphosed because breeding locations may change from year to year. The approach to assess baseline conditions and the impacts of the Project on western toads has been used for several previous Cenovus applications and applications for other in situ projects which have been approved by the Government of Alberta.

In addition to the baseline survey, western toad breeding habitat suitability mapping (EIA, Volume 5, Appendix 5-V, Figure 27) was used to identify potential western toad breeding ponds in the Local Study Area (LSA). As indicated by the breeding habitat suitability index mapping, there is high potential for toads to occur at several locations across the LSA. Figures describing western toad survey effort and occurrence in the LSA during the breeding season and western toad occurrence in the Regional Study Area (RSA) as reported in the Fish and Wildlife Management Information System were provided in the Wildlife Environmental Setting Report (EIA, Volume 5, Appendix 5-III, Figures 11 and 13).

To reduce effects on western toads, a constraints mapping exercise was conducted during the footprint planning stage and water features including open water and water courses were avoided, thereby reducing the potential for Project effects on western toad breeding ponds (EIA, Volume 5, Appendix 5-V, Figure 27). A study in northeast Alberta by Browne and Paszkowski (2010) found that the vast majority of hibernacula occurred in black spruce and black spruce/tamarack stands characterized by forested and wooded bogs (BFNN and BTNN), and to some extent by some transitional ecosite phases including Labrador tea-subhygric Sb-Pj (g1) and Labrador tea/horsetail Sw-Sb (h1). These habitat types account for less than 13% of the LSA. Constraints mapping conducted for footprint planning avoided wetlands, including fens, as much as practical, thereby reducing the potential effects of the Project on western toad hibernacula.

b. Cenovus has identified a number of breeding wetlands within the LSA and is continuing to monitoring amphibians bi-annually as per the approved Wildlife Monitoring Program (Golder 2012). To date, Cenovus has not noted areas where toad mortality on existing roads is occurring; however, will continue to follow the amphibian monitoring program as outlined in the approved Wildlife Monitoring Program. As discussed in Round 2 ESRD Supplemental Information Request (SIR) 34 and Cenovus's ESRD-approved *Wildlife Monitoring Program* (Golder 2012) for the Christina Lake Thermal Project, if effects to western toad populations are identified as a result of Project disturbance and ongoing monitoring, Cenovus will develop an appropriate mitigation plan, which may include measures to enhance amphibian passage across roads. Such measures may include modified culverts and drift fencing to allow small mammal and amphibian passage under roads.

References:

Browne, C.L. and C.A. Paszkowski. 2010. *Hibernation sites of western toads (Anaxyrys boreas): characterization and management implications*. Herpetological Conservation and Biology 5(1): 49-63.

ESRD (Alberta Environment and Sustainable Resource Development). 2012. *Terms of Reference Environmental Impact Assessment Report for Cenovus FCCL Ltd.'s Proposed Christina Lake Thermal Project - Phase H and Eastern Expansion Approximately 20 Km From Conklin, Alberta*. Issued by Alberta Environment and Sustainable Resource Development November 15, 2012. Edmonton, AB. 19 pp.

Golder (Golder Associates Ltd.). 2012. *Wildlife Monitoring Program Christina Lake Thermal Project.* Submitted to Cenovus FCCL Ltd. Calgary, AB. June 26, 2012.

8. AER Supplemental Information Request Round 2, Question 1, Page 7.

In AER SIR 1a it is stated Between September and October 2014 CPDFN and Cenovus exchanged e-mails in order to coordinate a meeting so that Cenovus could provide CPDFN with both a schedule update for SIR Round 2, (including when Cenovus believed it would receive the questions and its schedule for responding to the Regulator), and Cenovus' progress and updated schedule for responding to CPDFN regarding its technical review. On October 21, 2014 Cenovus and CPDFN were able to hold an update meeting via telephone. Cenovus explained at that time that it was anticipating receiving the SIR Round 2 questions either at the end of October or in early November and that Cenovus was working towards a date for approximately the end of November for responding to CPDFN's technical review.

Cenovus is currently in the ongoing process of reviewing CPDFN's issues and concerns, including its technical comments and recommendations, in more detail and continues to work with CPDFN to understand and address its concerns.

Cenovus stated that they were working towards a date for approximately the end of November for responding to CPDFN's technical review. This time period has now passed (as of February 2015).

a. Provide an update on the status of Cenovus' response to CPDFN's technical review.

Response:

a. Cenovus provided the Chipewyan Prairie Dene First Nation (CPDFN) with a working copy of the technical review responses for discussion on March 13, 2015. Cenovus will review the technical review responses with CPDFN and continue to work with CPDFN to understand and address its concerns regarding the Project.