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February 14, 2019

British Columbia Public Interest Advocacy Centre  
Suite 803 470 Granville Street  
Vancouver, B.C.  
V6C 1V5

Attention: Ms. Leigha Worth, Executive Director

Dear Ms. Worth:

**Re: FortisBC Inc. (FBC)**

**Project No. 1598987**

**Application for a Certificate of Public Convenience and Necessity (CPCN) for the Grand Forks Terminal Station Reliability Project (the Application)**

**Response to the British Columbia Public Interest Advocacy Centre representing the British Columbia Old Age Pensioners' Organization, Active Support Against Poverty, Disability Alliance BC, Council of Senior Citizens' Organizations of BC, and the Tenant Resource and Advisory Centre *et al.* (BCOAPO) Information Request (IR) No. 1**

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On November 19, 2018, FBC filed the Application referenced above. In accordance with the British Columbia Utilities Commission Order G-250-18 setting out the Regulatory Timetable for the review of the Application, FBC respectfully submits the attached response to BCOAPO IR No. 1.

If further information is required, please contact the undersigned.

Sincerely,

**FORTISBC INC.**

***Original signed:***

Doug Slater

Attachments

cc (email only): Commission Secretary  
Registered Parties

FortisBC Inc. (FBC or the Company) Application for a Certificate of Public Convenience and Necessity (CPCN) for the Grand Forks Terminal Station Reliability Project (the Application)	Submission Date: February 15, 2019
Response to British Columbia Public Interest Advocacy Centre representing the British Columbia Old Age Pensioners' Organization, Disability Alliance BC, Council of Senior Citizens' Organizations of BC, and the Tenant Resource and Advisory Centre <i>et al.</i> (BCOAPO) Information Request (IR) No. 1	Page 1

**1.0 Reference: Exhibit B-1, page 2 (lines 11-15)**

**Preamble:** “In the event of an outage to GFT T1, the system is designed for a 63 kV backup supply from Warfield Terminal Station (WTS) via the 63 kV transmission lines 9L and 10L. However, due to the condition of transmission lines 9L and 10L, this backup 63 kV supply is not sufficiently reliable”.

1.1 Is there a standard, in terms of frequency and/or duration of outage that transmission lines must meet in order to be considered “sufficiently reliable”?

**Response:**

There is no standard, in terms of frequency and/or duration of outage, that transmission lines must meet in order to be considered sufficiently reliable.

The reliability criteria that is driving the Project is the inability of the 63kV system in the Grand Forks area to meet the N-1 contingency planning criteria, as required by FBC’s standards for an interconnected system. In the event of an outage to GFT T1, the condition of the backup supply to the Grand Forks 63 kV system (9 L and 10 L) is poor, which could result in widespread and prolonged outages to area customers.

1.1.1 If yes, what is it and how does the performance of these two lines compare to this “performance standard”?

**Response:**

Please refer to the response to BCOAPO IR 1.1.1.

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**2.0 Reference: compare to this “performance standard”?**

**Exhibit B-1, page 3 (lines 8-16)**

**Preamble:** “In the event of a failure to GFT T1, it would likely take more than a year to procure and install a replacement transformer. In the meantime, the on-site spare transformer would be used as an emergency backup. It could take three to four weeks to install the on-site spare transformer”.

2.1 Please explain more fully why it is expected to take 3-4 weeks to install the on-site spare transformer.

**Response:**

FBC has prepared a preliminary contingency plan designed to address the unforeseen failure of GFT T1.

The process is complex due to the number of substation components, the voltage levels involved, and the requirement for specialized contractors (at short notice in the event of a failure) for a scope of work that includes:

- Transformer relocation;
- Transformer oil removal and processing;
- Transformer assembly and high voltage connections; and
- Control wiring and transformer acceptance testing.

Based on the contingency plan for the work described above, it would take approximately 3-4 weeks to install the transformer. The installation of OLI T1 cannot begin until GFT T1 has been removed.

2.2 Has FortisBC ever had to install the on-site spare transformer as a result of a failure to GFT T1? If yes, how long did it take to install?

**Response:**

No, the on-site spare transformer (OLI T1) has never been installed as a result of a failure to GFT T1.

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**3.0 Reference: Exhibit B-1, page 12 (lines 3-7) and page 24 (lines 10-14)**

**Preamble:** At page 12 the Application notes that GFT T1 has sufficient capacity to meet forecasted distribution demand in the Grand Forks area load over the system planning horizon of 20 years. However, as noted on page 24, for purposes of determining the financial analysis of the three alternatives a 40 year time horizon was used.

3.1 Do all three alternatives provide the same capability to meet forecasted growth in the Grand Forks area load?

**Response:**

Alternative A and B provide the same capability to meet forecast load growth in the Grand Forks area over the 20-year planning horizon. Alternative C does not.

The current 20-year load forecast indicates growth in the Grand Forks area to be as follows,

Transformer	Forecast Load (kVA)		
	2019	2031	2038
GFT T1	40,538	45,154	48,024

Alternative C does not meet forecast load growth in the Grand Forks area. In the event of a GFT T1 outage, even when rehabilitated, 9L and 10L can only support a maximum Grand Forks area load of 45 MW. The current 20-year load forecast indicates the Grand Forks area load will exceed 45 MW by 2031. FBC considered whether the addition of reactive compensation could be added in 2031 to supply the needed voltage support but concluded this would not be a feasible long term solution because the increase in reactive compensation required is disproportionately large compared to the increase in load.

The following addresses BCOAPO IR 1.3.1.1. As mentioned in the Application,<sup>1</sup> FBC selected a 40 year analysis period to determine the financial impact of the three alternatives over an expected 40-year life of a new transformer, based on industry standards. However, when forecasting load, the typical system planning horizon is 20 years. FBC does not have load forecast data beyond the 20-year planning horizon.

<sup>1</sup> Section 3.4, page 23, lines 10-11

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1                    3.1.1    If not, how do they differ and are all three alternatives considered to  
2                                    provide sufficient capacity to meet forecast growth in the area load over  
3                                    the next forty years?  
4

5    **Response:**

6    Please refer to the response to BCOAPO IR 1.3.1.

7

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1     **4.0     Reference:     Exhibit B-1, page 14 (lines 3-11)**

2             **Preamble:**     “During seasonal peaks, both lines must operate in parallel to meet the  
3     load requirements in the event of an outage or failure to GFT T1. However, mountainous  
4     terrain, particularly in winter, can make it impossible to operate 9L and 10L in parallel  
5     since the lines traverse the Rossland Mountain Range, restricting physical access and  
6     making it extremely difficult to visually assess and rehabilitate 10L before it can be  
7     energized. As such, 9L and 10L are not a reliable secondary 63 kV supply for the Grand  
8     Forks area”.

9             4.1     Please confirm that the “seasonal peaks” occur in the winter time.

10

11     **Response:**

12     Not confirmed. Seasonal peaks occur in the winter and the summer. GFT T1 has a higher winter  
13     peak load than summer peak load. Over the past five years, the maximum winter peak load was  
14     34 MW and the maximum summer peak load was 29 MW.

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18             4.2     Please confirm that currently 9L and 10L can operate in parallel but that since  
19     10L is normally de-energized between CHR tap and CSC substation it must be  
20     visually assessed and rehabilitated to minimum operating standards before it can  
21     be energized. If not confirmed, please clarify.

22

23     **Response:**

24     Confirmed.

25

26

27

28             4.3     Please also confirm that the reliability issue with respect to supply using 9L and  
29     10L arises from the fact that, during the winter months, it can be extremely  
30     difficult to access L10 so as to carry out the necessary visual inspection and any  
31     required rehabilitation. If not confirmed, please clarify.

32

33     **Response:**

34     Confirmed.

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1 In the event of an outage to GFT T1, the Grand Forks area load is supplied from Warfield  
2 Terminal Station (WTS) via the 63 kV transmission lines 9L and 10L. If 10L cannot be visually  
3 assessed and rehabilitated to minimum operating standards, it cannot be energized. Given the  
4 mountainous terrain, this can be particularly difficult in the winter months. In order to supply the  
5 seasonal peak load from WTS via 9L and 10L, both 9L and 10L must operate in parallel. With  
6 only 9L in service, customer outages may be required until GFT T1 is restored.

7

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**5.0 Reference: Exhibit B-1, page 15 (lines 7-24) and Appendix B, page 19**

5.1 Is GFT T1 fully depreciated? If not, what is its remaining (accounting) life?

**Response:**

GFT T1 is not fully depreciated. It has an estimated 7 years of remaining accounting life.

5.2 The ABB Report (Appendix B, page 19) suggests that GFT T1 has been lightly loaded during its lifetime. To what extent do loading levels impact the expected 40 year lifespan of a transformer?

**Response:**

Please refer to the response to BCUC IR 1.2.1. As mentioned in the response, loading levels are only one of the factors that influence a transformer's lifespan. Thus, it is difficult to predict the impact which loading levels, or any other factors, would have on the expected 40 year lifespan of a transformer.



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**6.0 Reference: Exhibit B-1, page 15 (line 26) to page 16 (line 11); page 21 (lines 5-21); page 22 (lines 7-16); page 23 (lines 2-21); page 33 (lines 6-27) and Appendix D, page 6**

6.1 Was the work identified in Appendix D undertaken and OLI T1 refurbished following the ABB assessment in 2013?

**Response:**

Major work was completed on OLI T1 under the PCB (Polychlorinated Biphenyls) decontamination program in 2014. Additionally, FBC implemented those ABB recommendations that affected the use of OLI T1 as an emergency backup.

Inspection of the load tap changer by ABB revealed the possibility that acetylene was originating from the tap changer compartment. Given these findings, FBC investigated repairing the load tap changer. Based on the known history of the unit, the only realistic operation would have been an onsite load tap changer replacement. Considering OLI T1 was an emergency spare at the time, FBC deemed this approach too costly.

FBC plans to replace the load tap changer if OLI T1 is refurbished and installed as the second transformer at GFT.

6.1.1 If not, is the refurbishment included in the scope of Alternative A as described at page 21? If not included in the scope, please explain why?

**Response:**

Please refer to the response to BCOAPO IR 1.6.1.

6.1.2 If not, is the refurbishment included in the scope of Alternative B as described at pages 22 and 33? If not included in the scope, please explain why?

**Response:**

Please refer to the response to BCOAPO IR 1.6.1.

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6.1.3 If not, is the refurbishment included in the scope of Alternative C as described at page 23? If not included in the scope, please explain why?

**Response:**

Please refer to the response to BCOAPO IR 1.6.1.

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1    **7.0    Reference:    Exhibit B-1, page 18 (lines 2-5) and page 44 (lines 4-12)**

2            7.1    For what transmission facilities (e.g. voltage levels) do the (N-0) and (N-1) criteria  
3                   apply?

4  
5    **Response:**

6    A transmission facility operates at voltages equal to 60kV or higher.

7    The normal operation (N-0) contingency planning criteria applies to all transmission facilities.

8    The single contingency (N-1) planning criteria apply to all transmission facilities that are part of  
9    the FBC interconnected system, which excludes radial transmission lines.

10

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1    **8.0    Reference:    Exhibit B-1, page 21 (line 22) and page 22 (line 16)**

2            8.1    Please explain why, when Alternative B involves the purchasing and installing a  
3                    new transformer as opposed to Alternative A where an existing on-site  
4                    transformer (OLI T1) is being installed, the capital cost of Alternative B is only  
5                    \$0.9 M higher than that for Alternative A? (Note: to the extent possible, please  
6                    respond without reference to details that are confidential)

7  
8    **Response:**

9    The primary difference in the costs of two alternatives is related to capital cost of a second new  
10   transformer in Alternative B compared to significant refurbishment costs related to energize on-  
11   site spare OLI T1 in Alternative A. Please refer to the response to BCUC Confidential IR 1.4.1  
12   for additional details.

13

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**9.0 Reference: Exhibit B-1, page 20 (lines 20-26); page 26 (Project Risk) and page 28 (lines 1-6)**

9.1 Will the re-purposed portions of lines 9L and 10L under Alternatives A and B use the same ROW as the existing 9L and 10L lines?

**Response:**

The existing statutory rights of way (SRWs) will be used wherever possible.

9.1.1 If the ROW will change, please explain why?

**Response:**

FBC will require updated or new SRWs where there are insufficient land rights for the proposed alignment and/or activities.

9.2 In Table 3-3, the discussion of Project Risk under Alternative A and B makes reference to confirming the distribution ROW for the portion of 9L and 10L that will be repurposed for distribution. Please explain what is meant by “confirm” and why there is a risk associated with it.

**Response:**

Please refer to the response to BCUC IR 1.9.2.

9.3 If the ROW will not change, please explain why the ROW needs to be confirmed

**Response:**

The Statutory Right of Way (SRW) will not need to be confirmed unless there are proposed changes to the associated infrastructure.

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1    **10.0    Reference:    Exhibit B-1, page 23 (lines 29-30) and page 16 (lines 7-11)**

2            10.1    Please explain more fully why, under Alternative C, there is only a limited  
3                    reduction in transmission outages when GFT T1 is out of service, since both 9L  
4                    and 10L will be energized and known to be operational at the time of an outage  
5                    to GFT T1.

6  
7    **Response:**

8    Under Alternative C, even though the lines will be rehabilitated, the transmission route is not  
9    changing and will still run over the Rossland Mountain Range. Due to the high elevation, harsh  
10   terrain and relative proximity to trees, the lines experience frequent and occasionally long  
11   duration outages, particularly during the winter season due to snow unloading and tree contacts.  
12   Therefore, when GFT T1 is out of service, and the Grand Forks area is supplied from Warfield  
13   Terminal Station (WTS) via the 63 kV transmission lines 9L and 10L, the lines will be subject to  
14   outages.

15  
16

17

18            10.2    Could preparatory work be undertaken at GFT that would shorten the time  
19                    required to install OLI T1 and/or reduce the likely of damage in the process of  
20                    installing it in the event of an outage?

21

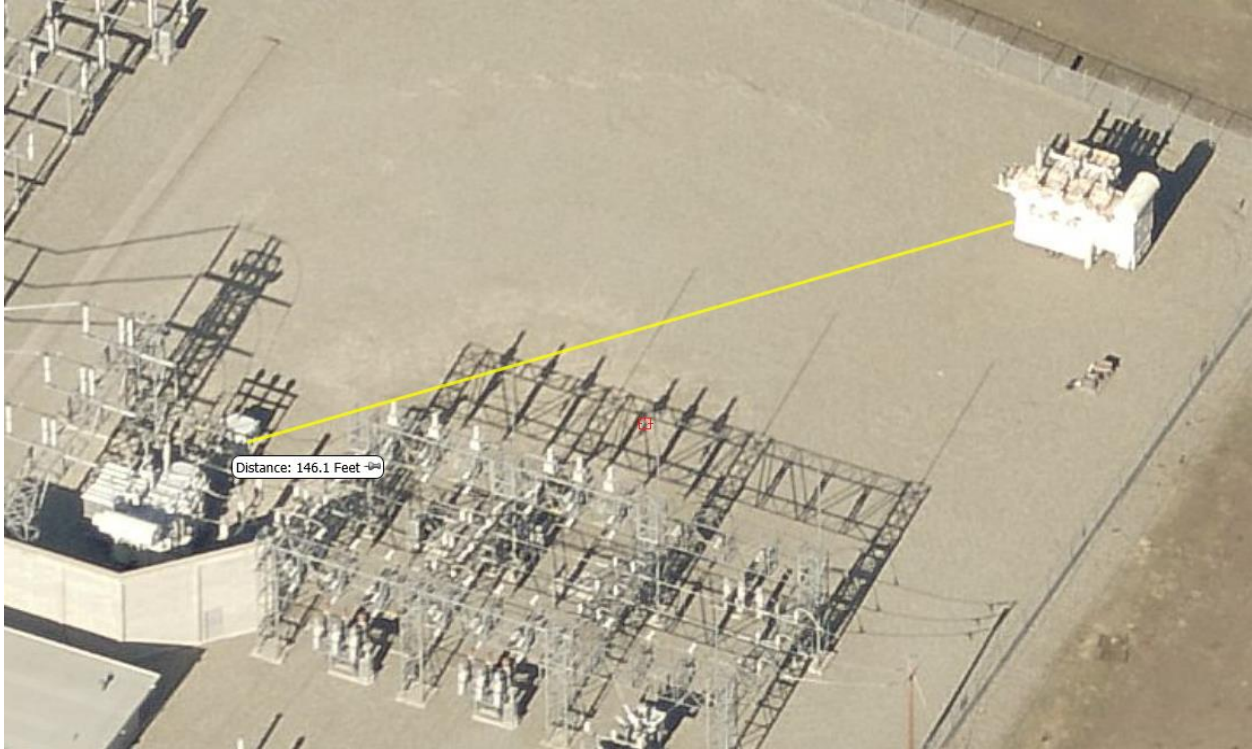
22    **Response:**

23    A portion of this response is being filed confidentially with the BCUC. FBC is requesting that  
24    this information be filed on a confidential basis pursuant to Section 18 of the BCUC's Rules of  
25    Practice and Procedure regarding confidential documents adopted by Order G-15-19, as it  
26    contains commercially sensitive information that if disclosed, could negatively impact future  
27    contract negotiations.

28    As shown in the figure below, OLI T1 transformer is stored in the back corner of the GFT  
29    substation. Due to its large size and weight, it will need to be maneuvered onto the transformer  
30    foundation by using a crane and "skid" method. To save on installation time, a site visit could be  
31    scheduled with the contractors involved, to make sure all equipment and safety procedures are  
32    set up prior to a move.

33    Damage is always a risk when moving large equipment. FBC uses contractors that have the  
34    acquired skills and experience for this type of work. Costs associated with a lift of this distance  
35    and placement on the transformer foundation (excluding installation) are expected to be  
36    approximately [REDACTED]

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10.2.1 If so, what type of work would be involved and what would be the cost?

**Response:**

Please refer to the response to BCOAPO IR 1.10.2.

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**11.0 Reference: Exhibit B-1, page 21 (lines 1-3); page 21 (line 22); page 23 (line 21) and page 39 (lines 19-21)**

**Preamble:** The Application states that cost estimates were developed to an AACE14 Class 3 definition for all three alternatives. The accuracy range for Alternative B is Low: -10% to -20% and High: +10% to +20%.

**11.1** Is the accuracy range the same for all three alternatives?

**Response:**

Yes, the accuracy range is the same for all three alternatives.

**11.1.1** If not, what is the accuracy range for the other two alternatives?

**Response:**

Please refer to the response to BCOAPO IR 1.11.1.

**11.1.2** If yes, please explain how this can be the case when Alternative B involves the purchase of a new transformer that is yet to be procured while Alternative A does not involve a similar purchase.

**Response:**

FBC notes an error in the preamble to the question, which incorrectly states the accuracy of AACE Class 3 estimate on the high side to be +10% to +20%. The expected accuracy of an AACE Class 3 cost estimate is as defined in AACE: Low: -10% to -20% and High: +10% to +30% as stated at page 39, lines 20-21 of the Application.

Each of the alternatives is individually estimated to the accuracy of AACE Class 3. The estimates are dependent on the specific components of each alternative and are not related to the other alternatives or their component parts.



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1    **12.0    Reference:    Exhibit B-1, page 43 (lines 3-10)**

2            12.1    Please clarify whether the \$3.22 M represents the gross book value or the net  
3                    book value for the portion of the 9L and 10L transmission lines that will be  
4                    removed.

5  
6    **Response:**

7    The \$3.22 million represents the gross book value of the portion of the 9L and 10L transmission  
8    lines that will be removed.

9  
10

11  
12                    12.1.1    If it is the gross book value, please provide the net book value.

13  
14    **Response:**

15    The net book value of the portion of 9L and 10L transmission lines to be removed is \$2.39  
16    million.

17

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**13.0 Reference: Exhibit B-1, page 30 (lines 21-31); page 31 (lines 1-27) and Appendix D**

13.1 Please confirm whether FortisBC held any meetings with Indigenous communities whose territory is located along the transmission line route other than a meeting with the Osoyoos Indian Band (OIB) on July 4, 2018.

**Response:**

FBC did not hold any meetings with Indigenous communities other than with the Osoyoos Indian Band. The Osoyoos Band was the only community FBC contacted that asked for a meeting.

13.1.1 If yes, please provide the details of these meetings.

**Response:**

Please refer to the response to BCOAPO IR 1.13.1.

13.2 Please confirm whether subsequent to filing any responses or inquiries were received from the letters sent to Indigenous communities on July 13, 2018.

**Response:**

FBC has not received any responses or inquiries from the letters sent on July 13, 2018 to Indigenous communities subsequent to filing.

13.2.1 If yes, please provide the details of these responses and inquiries.

**Response:**

Please refer to the response to BCOAPO IR 1.13.2.

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3  
4 13.3 Please provide mapping that has been attached to the letters sent to Indigenous  
5 communities on July 13, 2018.  
6

7 **Response:**

8 Please refer to Attachment 13.3 for copies of the files that were attached to the letters sent to  
9 Indigenous communities on July 13, 2018.  
10  
11

12  
13 13.4 Has FortisBC completed its field pole assessment and identified the poles that  
14 need replacement?  
15

16 **Response:**

17 Yes, the condition assessment of the 63 kV transmission lines 9L and 10L between CHR and  
18 CSC is complete. As part of the assessment, poles that require replacement were identified.  
19 The condition assessment results are provided in Confidential Appendix C (9L and 10L  
20 Condition Assessment Report).  
21  
22

23  
24 13.4.1 If yes, have Shapefiles and Keyhole Markup language Zipped (KMZ)  
25 files of the poles that need replacement been prepared and provided to  
26 Indigenous communities?  
27

28 **Response:**

29 No, the Shapefiles and Keyhole Markup language Zipped (KMZ) files have not been provided.  
30 FBC will provide the shapefiles and KMZ files to the Indigenous communities once CPCN is  
31 approved and the alternative is confirmed. This will give FBC sufficient time to consult with  
32 Indigenous communities and discuss which specific locations they may want to be present for  
33 during ground disturbance.  
34  
35

FortisBC Inc. (FBC or the Company) Application for a Certificate of Public Convenience and Necessity (CPCN) for the Grand Forks Terminal Station Reliability Project (the Application)	Submission Date: February 15, 2019
Response to British Columbia Public Interest Advocacy Centre representing the British Columbia Old Age Pensioners' Organization, Disability Alliance BC, Council of Senior Citizens' Organizations of BC, and the Tenant Resource and Advisory Centre <i>et al.</i> (BCOAPO) Information Request (IR) No. 1	Page 19

1  
2 13.4.2 If not, what is estimated time of completion of the assessment?  
3

4 **Response:**

5 Please refer to the response BCOAPO IR 1.13.4.1.

6

FortisBC Inc. (FBC or the Company) Application for a Certificate of Public Convenience and Necessity (CPCN) for the Grand Forks Terminal Station Reliability Project (the Application)	Submission Date: February 15, 2019
Response to British Columbia Public Interest Advocacy Centre representing the British Columbia Old Age Pensioners' Organization, Disability Alliance BC, Council of Senior Citizens' Organizations of BC, and the Tenant Resource and Advisory Centre <i>et al.</i> (BCOAPO) Information Request (IR) No. 1	Page 20

1 **14.0 Reference: Exhibit B-1, page 31 (lines 28-31) and Exhibits E-1, E-2, E-3, E-4, E-5,**  
2 **E-6**

3 14.1 Has FortisBC changed its position about necessity of public consultation in light  
4 of six letters of comments from the residents concerned about any increase in  
5 the noise and light level caused by the Project,  
6

7 **Response:**

8 Please refer to the response to BCUC IR 1.6.1.

9 FBC considers community impacts when designing and constructing substations equipment  
10 within residential areas. FBC confirms that the project will not increase light levels at the  
11 station. In addition, FBC plans to construct an engineered sound wall around the new GFT T2  
12 transformer similar to that installed around the existing transformer to absorb and re-direct any  
13 sound away from the Copper Ridge residential area, which will minimize noise from the new  
14 transformer.

15 As mentioned in response to BCUC IR 1.6.1, FBC believes that a broader public consultation is  
16 not required at this time, but rather FBC will directly contact those residents and commercial  
17 businesses that would have some limited impact during construction. FBC has already begun  
18 contacting residents in the area to discuss their concerns with the project.

19

20

21

22

23 14.1.1 If yes, please provide the details.

24

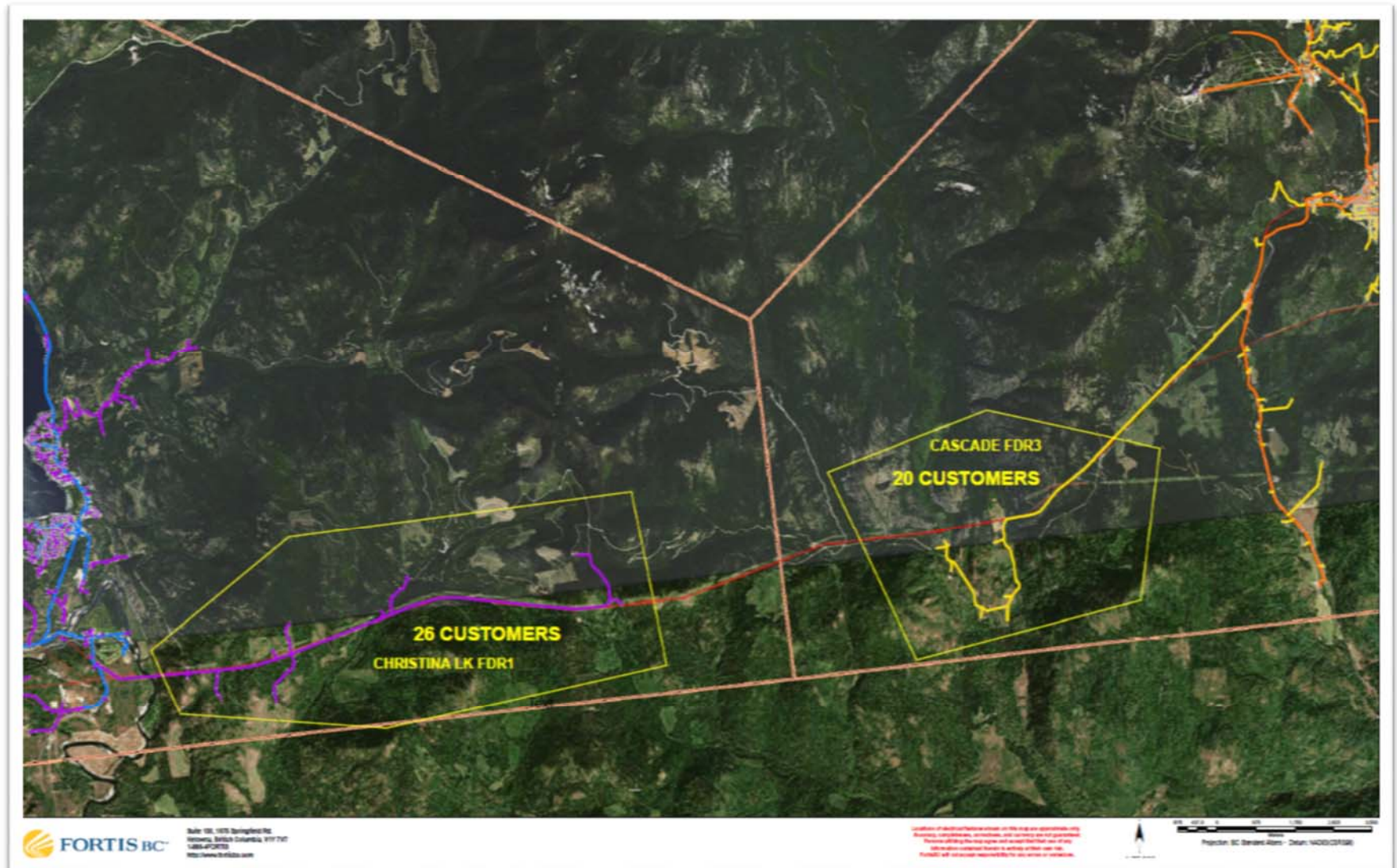
25 **Response:**

26 Please refer to the response BCOAPO IR 1.14.1.

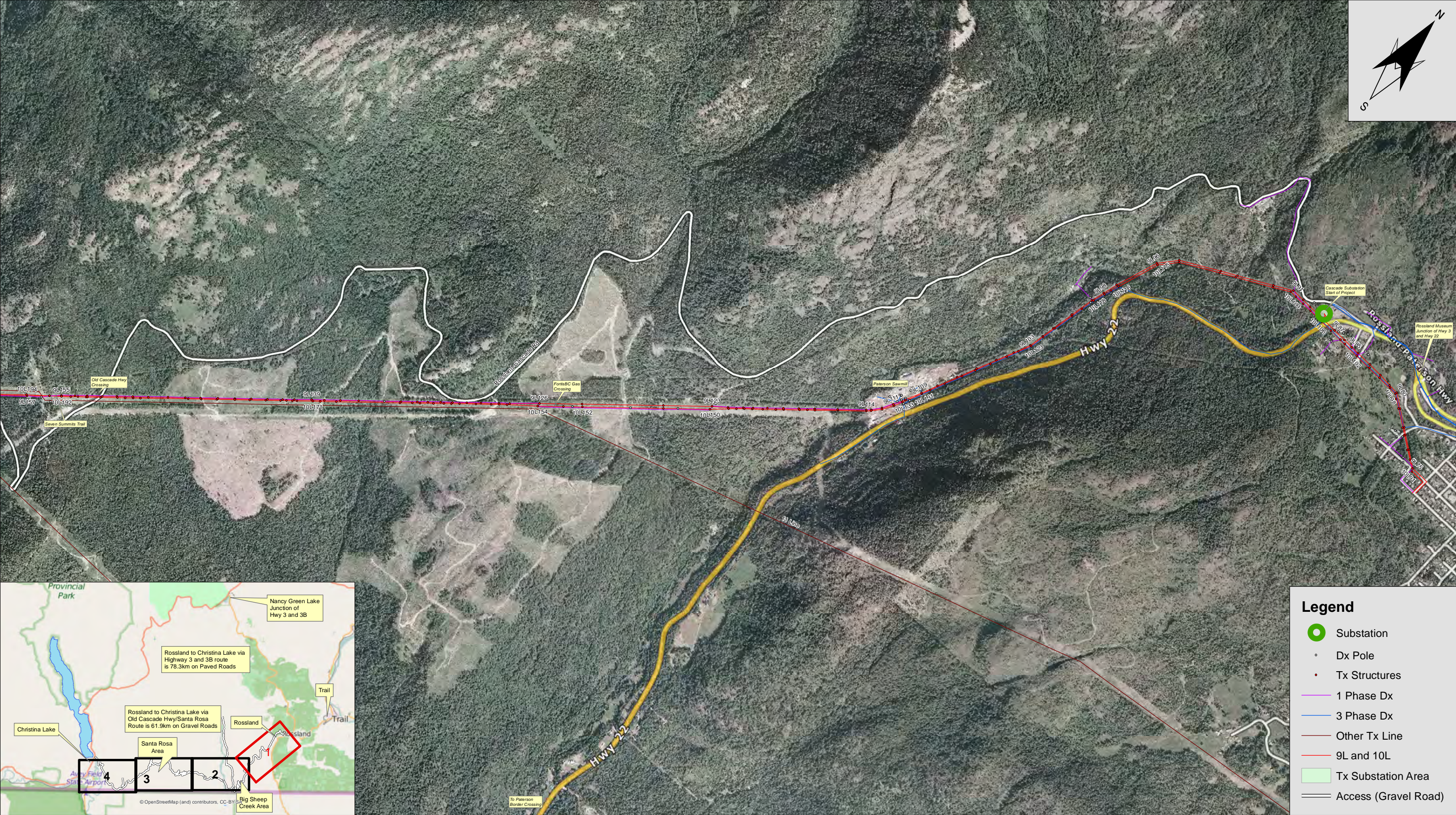
27



## General Locations for Pole Replacement







R0	MJ	2016-08-04	New Map
Rev	By	Date	Description

Map Info:

0 140 280 420  
Meters

Scale: 1:20,000

Coordinate System:  
NAD 83 UTM Zone 11

Engineering Stamp:

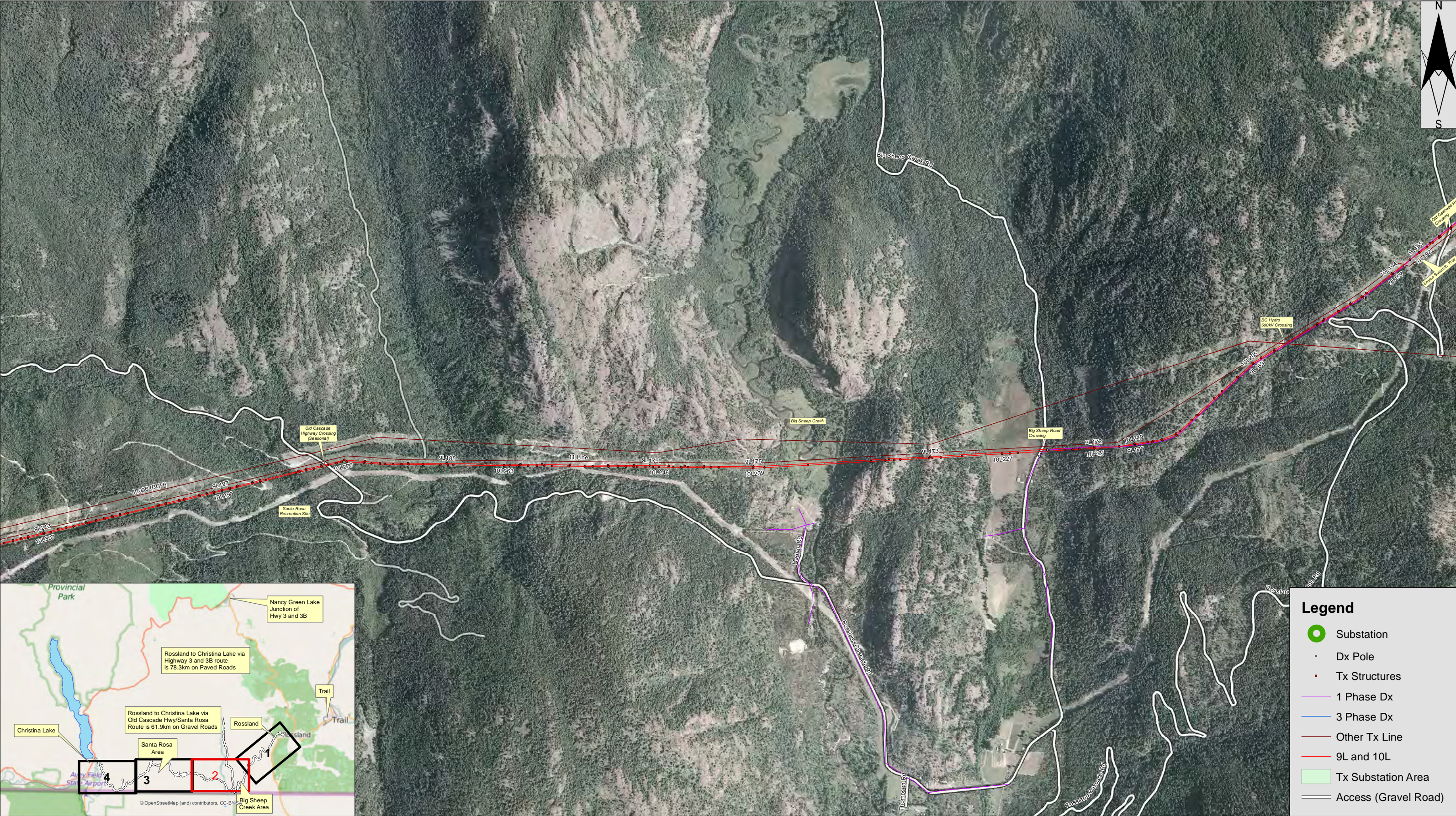
Client Approval:

By: \_\_\_\_\_ Date: \_\_\_\_\_

Appendix IX  
9L and 10L (CSC to CHR)  
General Line Layout  
Page 1 of 4

Doc No. <b>T01-PP-P1645.003</b>	<b>R0</b>
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				Map Info:
R0	MJ	2016-08-04	New Map	
Rev	By	Date	Description	

0140280420Meters

Scale: 1:20,000

Coordinate System:  
NAD 83 UTM Zone 11

DBS ENERGY SERVICES

FORTIS BC

Engineering Stamp:

Client Approval

By

Date

Appendix IX

9L and 10L (CSC to CHR)

General Line Layout

Page 2 of 4

Doc No. T01-PP-P1645.003

R0





			Map Info:
R0	MJ	2016-08-04	New Map
Rev	By	Date	Description

0 140 280 420  
Meters

Scale: 1:20,000

Coordinate System:  
NAD 83 UTM Zone 11

**DBS ENERGY SERVICES**

**FORTIS BC**

Engineering Stamp:

Client Approval

By: \_\_\_\_\_ Date: \_\_\_\_\_

Appendix IX

9L and 10L (CSC to CHR)

General Line Layout

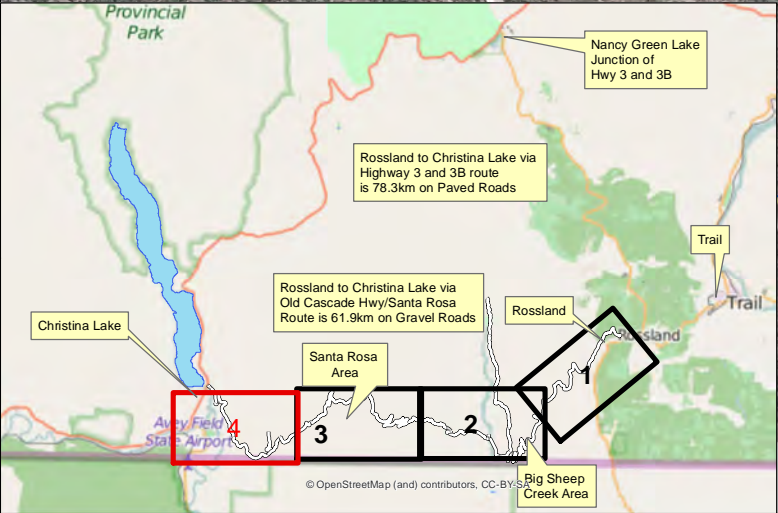
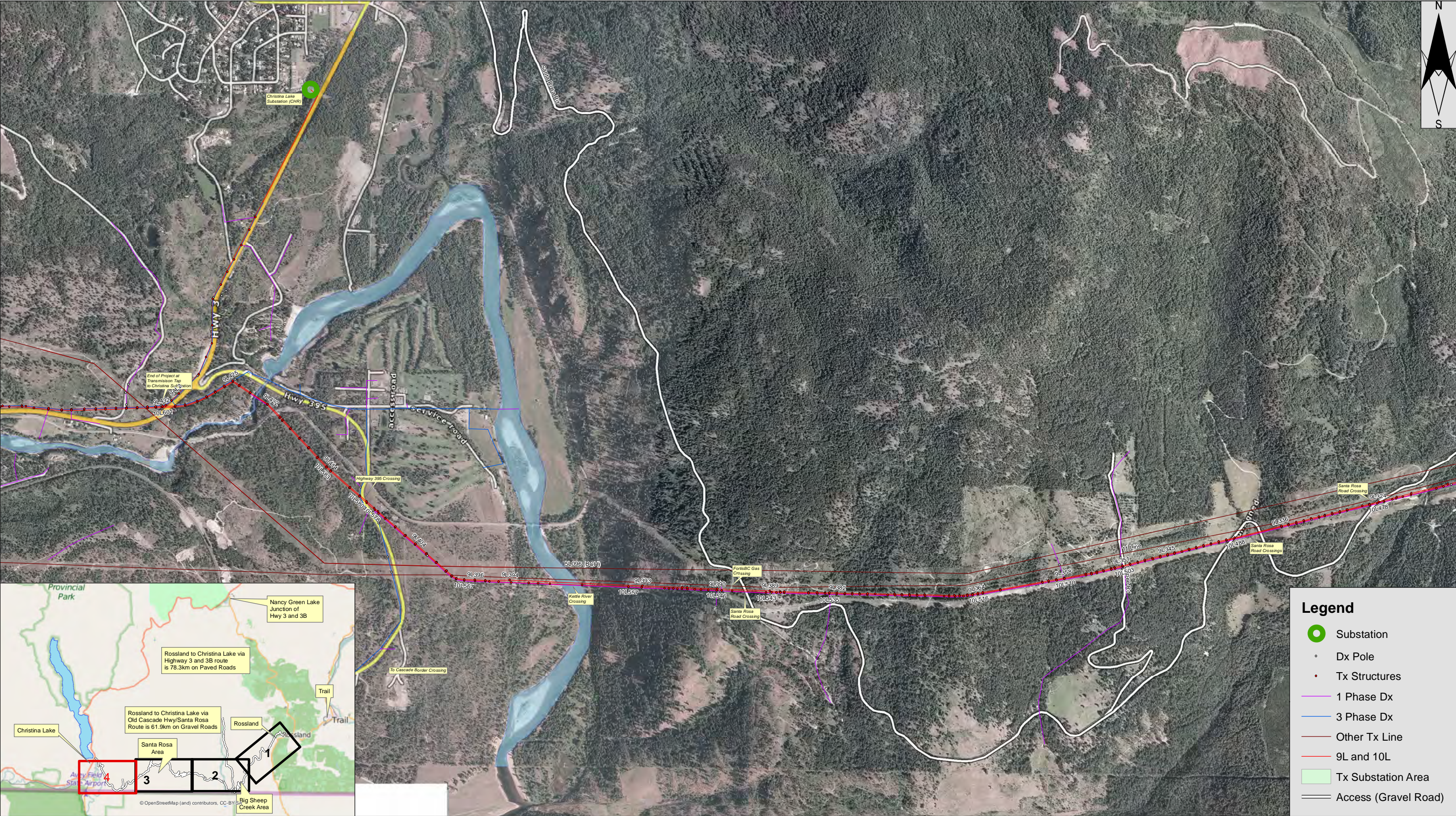
Page 3 of 4

Doc No:

**T01-PP-P1645.003**

**R0**





				Map Info:
R0	MJ	2016-08-04	New Map	
Rev	By	Date	Description	

0 140 280 420  
Meters

Scale: 1:20,000

Coordinate System:  
NAD 83 UTM Zone 11



Engineering Stamp:

Client Approval:

By: \_\_\_\_\_ Date: \_\_\_\_\_