

Attachment C
Red Deer Region Transmission System Development
Alternatives Details

REV 4

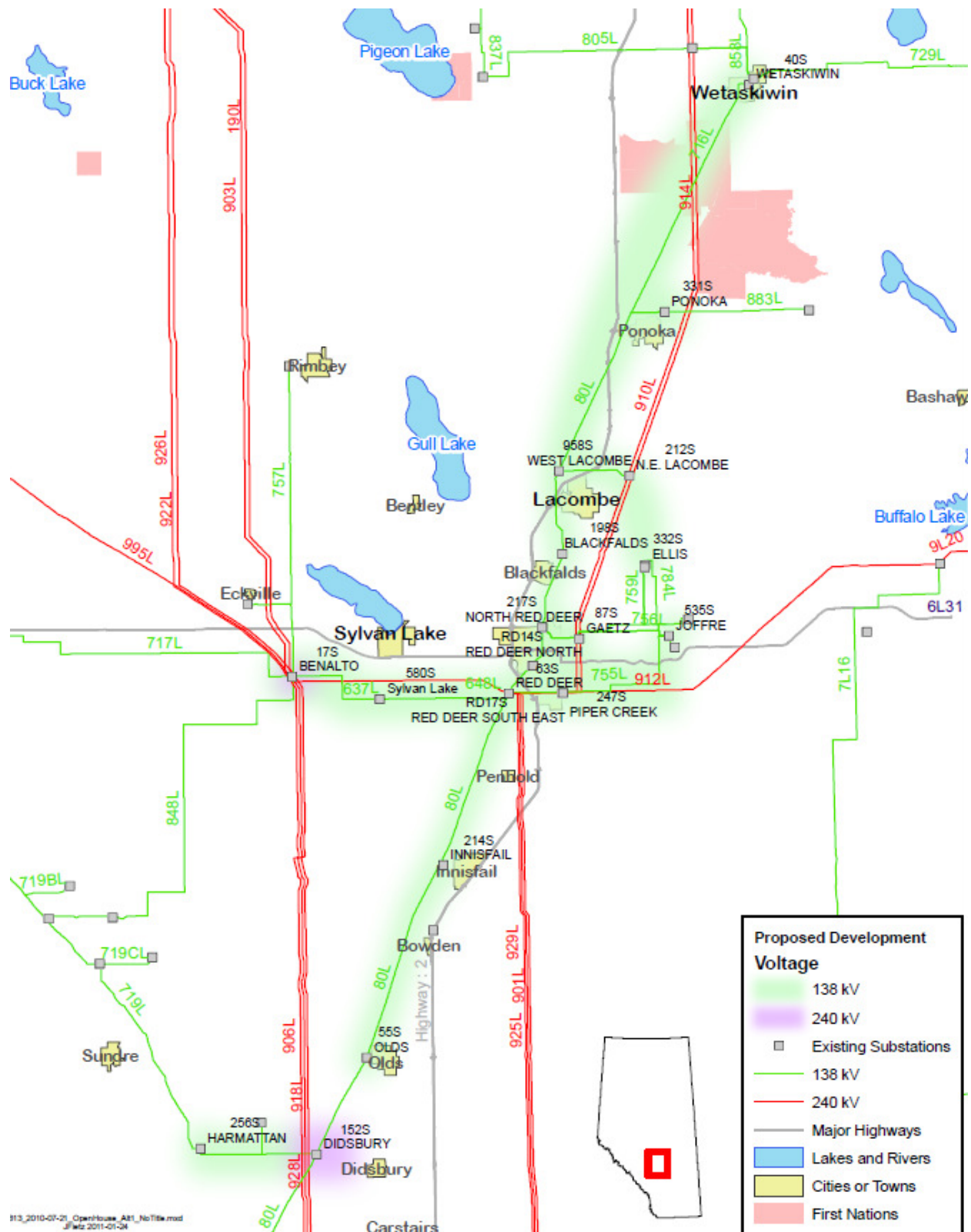
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C1. Alternative 1 Detail

Figure C-1: Red Deer Region Transmission System Development Alternative 1



1.1 Substations

- 240kV Didsbury substation

1.2 Major system transformers

- Didsbury – one 200MVA 240/138kV autotransformer
- Benalto 17S – one 200MVA 240/138kV autotransformer

1.3 Transmission lines upgrades

- Re-build 716L (~40km) from Wetaskiwin 40S to Ponoka 331S with 795kcmil ACSR conductor per phase.
- Re-build of approximately 152km of 138kV 80L line Utilizing 1x795Kcmil ACSR conductors as follows
 - Re-build 47km from Ponoka 331S to West Lacombe 958S,
 - Re-build 22km from West Lacombe 958S to Blackfalds 198S,
 - Re-build 15 km from Blackfalds 198S to N. Red Deer 217S,
 - Re-build 68km from Red Deer through Innisfail 214S to Olds 55S,
- Re-build of approximately 14km of 138kV 80L line Utilizing 1x1590Kcmil ACSR conductors as follows
 - Re-build 7km from N. Red Deer 217S to S. Red Deer 194S,
 - Re-build 7km from S. Red Deer 194S to Red deer 63S,
- Re-build 717L (~32km) from Red Deer 63S through Sylvan Lake 580S to Benalto 17S with 795 kcmil ACSR conductor per phase
- Rebuild 755L(~30km) Red Deer 63S through Piper Creek 247S to Joffre 535S) with 795 kcmil ACSR conductor per phase
- Re-build 80AL (~10km) from N.E. Lacombe 212S to W. Lacombe 958S with 795 kcmil ACSR conductor per phase
- Re-build 166 L (~7km) from Didsbury 152S to Harmattan 256S with 795kcmil ACSR conductor per phase.

1.4 New Transmission lines

- New 138kV transmission line (~17km) from N.E. Lacombe 212 to Ellis 332 utilizing 1x795Kcmil ACSR conductors.

1.5 Voltage supporting facilities

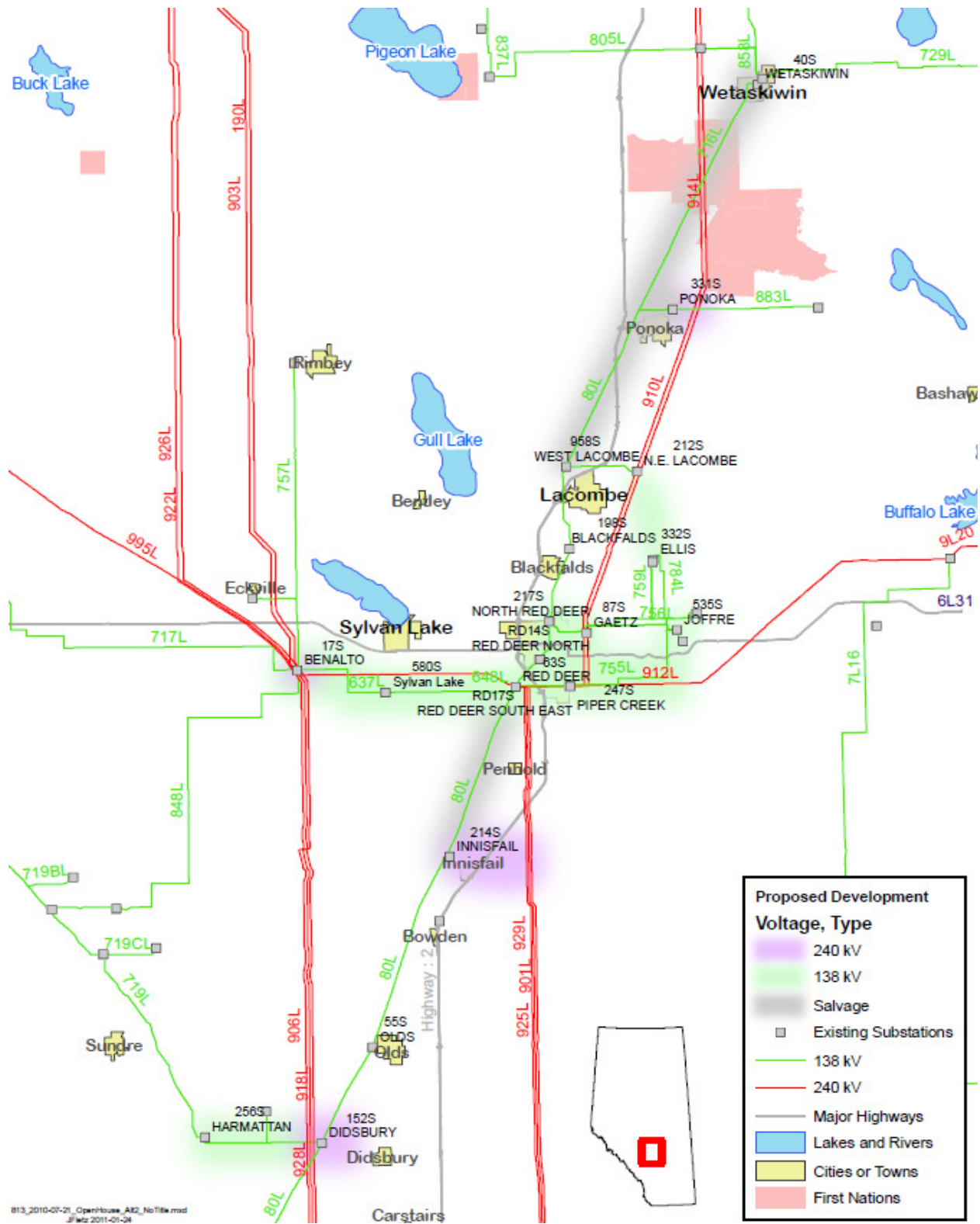
- Cap bank additions
 - 138kV 50MVAR at Joffre 535S
 - 138kV 50MVAR at Prentiss 276S
 - 138kV 25MVAR at Ellis 332S

1.6 Other system upgrades

- Split 138kV 768L/778L line (Gaetz 87S to N. Red Deer 217S) into two circuits by providing breakers at Gaetz 87S and N. Red Deer 217S.

C2. Alternative 2 Detail

Figure C-2: Red Deer Region Transmission System Development Alternative 2



2.1 Substations

- 240kV Didsbury substation
- 240kV Innisfail substation
- 240kV Ponoka substation

2.2 Major system transformers

- Didsbury – one 200MVA 240/138kV transformer
- Innisfail- one 200MVA 240/138kV transformer
- Benalto 17S – one 200MVA 240/138kV transformer
- Ponoka- two 200MVA 240/138kV transformer

2.3 Transmission lines upgrades

- Re-build of approximately 14km of 138kV 80L line with 1590 Kcmil ACSR conductor per phase as follows:
 - Re-build 7km from N. Red Deer 217S to S. Red Deer 194S,
 - Re-build 7km from S. Red Deer 194S to Red deer 63S,
- Re-build 717L (~32km) from Red Deer 63S through Sylvan Lake 580S to Benalto 17S with 795 kcmil ACSR conductor per phase
- Rebuild 755L(~30km) Red Deer 63S through Piper Creek 247S to Joffre 535S) with 795 kcmil ACSR conductor per phase
- Re-build 166 L (~7km) from Didsbury 152S to Harmattan 256S

2.4 New Transmission lines

- New 138kV transmission line (~17km) from N.E. Lacombe 212S to Ellis 332S with 795kcmil ACSR conductor per phase.

2.5 Voltage supporting facilities

- Cap bank additions
 - 138 kV 50MVAR at Joffre 535S
 - 138 kV 50MVAR at Prentiss 276S
 - 138 kV 25MVAR at Ellis 332S

2.6 Other system upgrades

- Split 138kV 768L/778L line (Gaetz 87S to N. Red Deer 217S) as two circuit by providing breakers at Gaetz 87S and N. Red Deer 217S.

2.7 Salvaging facilities

- Salvage 716L (~40km) from Wetaskiwin 40S to Ponoka 331S with 795kcmil ACSR conductor per phase.

- Salvage 80L section (~28km) from Ponoka 331S to West Lacombe 958S.
- Salvage 80L section (~25km) from Red Deer to Innisfail 214S.