



Korea  
National Oil Corporation

## ***Appendix B5***

### ***Baseline, Application and Planned Development Model Predictions***

**APPENDIX B5: BASELINE APPLICATION AND PLANNED  
DEVELOPMENT MODEL PREDICTIONS  
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## 1.0 INTRODUCTION

As required by Alberta Environment modelling guidelines, the highest receptor value of a pollutant at the required rank and averaging period was extracted from results of each modelling year. At each receptor, the maximum among the five modelling years was determined. In this appendix, [Tables B5-1 to B5-4](#) provides the model predictions for ground level pollutant concentrations at the maximum point of impingement, as well as the discrete receptors chosen for this assessment. The list of discrete receptors includes the Wood Buffalo Environmental Association (WBEA) air monitoring locations as well as specific community and recreational locations. Results are provided for the absolute maxima, as well as the values on which the Alberta Ambient Air Quality Objectives and Guidelines (AAAQO) are based to eliminate outlying data (e.g., 9<sup>th</sup> highest value, expressed as 99.9<sup>th</sup> percentile for 1-hour concentrations) as required by Alberta Environment modeling guidance (AENV 2009).

PAI and nitrogen deposition results are provided and the results are compared to the monitoring loads for PAI (CASA and AENV 1999) and critical loads for nitrogen (WHO 2000).

**Table B5-1: Predicted Sulphur Dioxide Concentrations in the AQRSA**

Receptor	Baseline ( $\mu\text{g}/\text{m}^3$ )	Application ( $\mu\text{g}/\text{m}^3$ )	Planned Development ( $\mu\text{g}/\text{m}^3$ )	Application over Baseline (%)	Planned Development over Baseline (%)
<b>Maximum 1-h</b>					
<b>Overall Maximum (MPOI)</b>	<b>895</b>	<b>895</b>	<b>909</b>	<b>0.0</b>	<b>1.6</b>
AMS #1 (Fort McKay)	228	228	305	0.0	33.8
AMS #2 (Mildred Lake)	535	535	557	0.0	4.1
AMS #4 (Buffalo Viewpoint)	281	281	285	0.0	1.4
AMS #5 (Mannix)	608	608	618	0.0	1.6
AMS #6 (Patricia McInnes)	144	144	153	0.0	6.3
AMS #7 (Athabasca Valley)	105	105	115	0.0	9.5
AMS #8 (Fort Chipewyan)	37	37	43	0.0	16.2
AMS #10 (Albian Mine)	235	235	272	0.0	15.7
AMS #11 (Lower Camp)	759	760	760	0.1	0.1
AMS #12 (Millennium)	166	166	182	0.0	9.6
AMS #13 (Syncrude UE1 )	236	236	413	0.0	75.0
AMS #14 (Anzac)	135	135	136	0.0	0.7
AMS #15 (Horizon)	204	204	204	0.0	0.0
R01: Trapper's Cabin	237	237	238	0.0	0.4
R02: Camp Site	323	323	323	0.0	0.0
R03: Fish Plant (Winefred Lake)	55	55	55	0.0	0.0
R04: Cabin (Winefred Lake)	61	61	63	0.0	3.3
R05: Cabin (NW Kirby Lake)	145	146	146	0.7	0.7
R06: West Hay Lake	146	147	147	0.7	0.7
R07: Cabins (North Hay Lake)	169	169	170	0.0	0.6
R08: Martin's Cabins	152	152	152	0.0	0.0
R09: Metis Trailer Camp	178	178	179	0.0	0.6
R10: Conklin	71	71	71	0.0	0.0
R11: Cabins (NW Christina Lake)	72	72	72	0.0	0.0
R12: Medicinal Plants	128	128	128	0.0	0.0
R13: Cabins near Gravel Pit	48	48	55	0.0	14.6
R14: Cabins	72	72	72	0.0	0.0
R15: Leismer	39	39	46	0.0	17.9
R16: East Chard	43	43	48	0.0	11.6
R17: Pingle	54	54	60	0.0	11.1
R18: Chard School	39	39	44	0.0	12.8
R19: Janvier	38	38	43	0.0	13.2
R20: IR 194B	74	75	75	1.4	1.4
R21: IR 194A	44	44	51	0.0	15.9
R22: Fishing Camp (Christina Lake)	184	185	186	0.5	1.1
R23: Fire Lookout 1	36	39	40	8.3	11.1
R24: Fire Lookout 2	52	52	62	0.0	19.2
R25: AltaGas House	116	117	118	0.9	1.7
R26: MEG Worker's Camp	255	255	353	0.0	38.4
R27: Grave Site (Christina Lake)	138	141	142	2.2	2.9
R28: Grave Site (Winefred Lake)	110	111	111	0.9	0.9
R29: Grist Lake Lodge 1	35	35	40	0.0	14.3
R30: Grist Lake South	36	36	40	0.0	11.1
R31: Winefred Lake Lodge 1	43	45	46	4.7	7.0
R32: Winefred Lake West	80	80	81	0.0	1.3
R33: EnCana Camp	262	262	264	0.0	0.8
R34: Winifred Cabin/Station/Lookout	37	39	41	5.4	10.8
R35: Campground (Christina Lake)	86	86	86	0.0	0.0
R36: Wild Rice Operation 1	46	47	48	2.2	4.3
R37: Wild Rice Operation 2	89	89	89	0.0	0.0
R38: Fire Lookout Tower	94	95	95	1.1	1.1
R39: Devenish	89	94	94	5.6	5.6
R40: Old Cabins & Settlement Area (Wiau Lake)	66	66	68	0.0	3.0
<b>AAAQO</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>



Receptor	Baseline ( $\mu\text{g}/\text{m}^3$ )	Application ( $\mu\text{g}/\text{m}^3$ )	Planned Development ( $\mu\text{g}/\text{m}^3$ )	Application over Baseline (%)	Planned Development over Baseline (%)
<b>99.9<sup>th</sup> Percentile 1-h</b>					
<b>Overall Maximum (MPOI)</b>	<b>322</b>	<b>322</b>	<b>343</b>	<b>0.0</b>	<b>6.5</b>
AMS #1 (Fort McKay)	108	108	117	0.0	8.3
AMS #2 (Mildred Lake)	314	314	315	0.0	0.3
AMS #4 (Buffalo Viewpoint)	218	218	219	0.0	0.5
AMS #5 (Mannix)	247	247	251	0.0	1.6
AMS #6 (Patricia McInnes)	67	67	80	0.0	19.4
AMS #7 (Athabasca Valley)	58	58	82	0.0	41.4
AMS #8 (Fort Chipewyan)	24	24	28	0.0	16.7
AMS #10 (Albian Mine)	104	104	128	0.0	23.1
AMS #11 (Lower Camp)	322	322	343	0.0	6.5
AMS #12 (Millennium)	91	91	104	0.0	14.3
AMS #13 (Syn crude UE1 )	138	138	143	0.0	3.6
AMS #14 (Anzac)	68	68	69	0.0	1.5
AMS #15 (Horizon)	88	88	95	0.0	8.0
R01: Trapper's Cabin	81	81	83	0.0	2.5
R02: Camp Site	59	60	61	1.7	3.4
R03: Fish Plant (Winefred Lake)	38	38	42	0.0	10.5
R04: Cabin (Winefred Lake)	31	32	35	3.2	12.9
R05: Cabin (NW Kirby Lake)	67	67	72	0.0	7.5
R06: West Hay Lake	69	69	72	0.0	4.3
R07: Cabins (North Hay Lake)	67	67	69	0.0	3.0
R08: Martin's Cabins	54	54	54	0.0	0.0
R09: Metis Trailer Camp	57	57	58	0.0	1.8
R10: Conklin	41	41	41	0.0	0.0
R11: Cabins (NW Christina Lake)	42	42	43	0.0	2.4
R12: Medicinal Plants	45	52	53	15.6	17.8
R13: Cabins near Gravel Pit	32	32	34	0.0	6.3
R14: Cabins	30	30	32	0.0	6.7
R15: Leismer	29	29	33	0.0	13.8
R16: East Chard	25	25	30	0.0	20.0
R17: Pingle	30	30	36	0.0	20.0
R18: Chard School	26	26	30	0.0	15.4
R19: Janvier	25	25	30	0.0	20.0
R20: IR 194B	41	43	43	4.9	4.9
R21: IR 194A	29	29	35	0.0	20.7
R22: Fishing Camp (Christina Lake)	68	69	70	1.5	2.9
R23: Fire Lookout 1	24	25	29	4.2	20.8
R24: Fire Lookout 2	35	35	43	0.0	22.9
R25: AltaGas House	70	70	70	0.0	0.0
R26: MEG Worker's Camp	217	217	299	0.0	37.8
R27: Grave Site (Christina Lake)	57	57	57	0.0	0.0
R28: Grave Site (Winefred Lake)	42	43	44	2.4	4.8
R29: Grist Lake Lodge 1	25	25	27	0.0	8.0
R30: Grist Lake South	24	24	27	0.0	12.5
R31: Winefred Lake Lodge 1	28	28	31	0.0	10.7
R32: Winefred Lake West	48	48	50	0.0	4.2
R33: EnCana Camp	118	118	120	0.0	1.7
R34: Winifred Cabin/Station/Lookout	25	25	28	0.0	12.0
R35: Campground (Christina Lake)	46	46	46	0.0	0.0
R36: Wild Rice Operation 1	28	28	32	0.0	14.3
R37: Wild Rice Operation 2	39	39	40	0.0	2.6
R38: Fire Lookout Tower	55	58	58	5.5	5.5
R39: Devenish	39	39	40	0.0	2.6
R40: Old Cabins & Settlement Area (Wiau Lake)	24	24	27	0.0	12.5
<b>AAAQO</b>	<b>450</b>	<b>450</b>	<b>450</b>	<b>-</b>	<b>-</b>

Receptor	Baseline ( $\mu\text{g}/\text{m}^3$ )	Application ( $\mu\text{g}/\text{m}^3$ )	Planned Development ( $\mu\text{g}/\text{m}^3$ )	Application over Baseline (%)	Planned Development over Baseline (%)
<b>Maximum 24-h</b>					
<b>Overall Maximum (MPOI)</b>	<b>105</b>	<b>105</b>	<b>105</b>	<b>0.0</b>	<b>0.0</b>
AMS #1 (Fort McKay)	35	35	47	0.0	34.3
AMS #2 (Mildred Lake)	95	95	96	0.0	1.1
AMS #4 (Buffalo Viewpoint)	60	60	61	0.0	1.7
AMS #5 (Mannix)	85	85	88	0.0	3.5
AMS #6 (Patricia McInnes)	36	36	42	0.0	16.7
AMS #7 (Athabasca Valley)	39	39	53	0.0	35.9
AMS #8 (Fort Chipewyan)	12	12	15	0.0	25.0
AMS #10 (Albian Mine)	48	48	63	0.0	31.3
AMS #11 (Lower Camp)	105	105	105	0.0	0.0
AMS #12 (Millennium)	38	38	41	0.0	7.9
AMS #13 (Syn crude UE1 )	41	41	46	0.0	12.2
AMS #14 (Anzac)	26	26	29	0.0	11.5
AMS #15 (Horizon)	40	40	47	0.0	17.5
R01: Trapper's Cabin	25	25	26	0.0	4.0
R02: Camp Site	30	30	30	0.0	0.0
R03: Fish Plant (Winefred Lake)	16	16	18	0.0	12.5
R04: Cabin (Winefred Lake)	15	15	16	0.0	6.7
R05: Cabin (NW Kirby Lake)	27	27	28	0.0	3.7
R06: West Hay Lake	25	25	28	0.0	12.0
R07: Cabins (North Hay Lake)	24	24	27	0.0	12.5
R08: Martin's Cabins	19	19	19	0.0	0.0
R09: Metis Trailer Camp	18	18	19	0.0	5.6
R10: Conklin	15	15	17	0.0	13.3
R11: Cabins (NW Christina Lake)	15	15	18	0.0	20.0
R12: Medicinal Plants	23	23	28	0.0	21.7
R13: Cabins near Gravel Pit	14	14	17	0.0	21.4
R14: Cabins	15	15	17	0.0	13.3
R15: Leismer	15	15	18	0.0	20.0
R16: East Chard	13	13	15	0.0	15.4
R17: Pingle	14	14	16	0.0	14.3
R18: Chard School	14	14	17	0.0	21.4
R19: Janvier	15	15	18	0.0	20.0
R20: IR 194B	19	19	20	0.0	5.3
R21: IR 194A	16	16	19	0.0	18.8
R22: Fishing Camp (Christina Lake)	31	31	31	0.0	0.0
R23: Fire Lookout 1	13	13	15	0.0	15.4
R24: Fire Lookout 2	18	18	21	0.0	16.7
R25: AltaGas House	34	34	35	0.0	2.9
R26: MEG Worker's Camp	53	53	72	0.0	35.8
R27: Grave Site (Christina Lake)	27	27	28	0.0	3.7
R28: Grave Site (Winefred Lake)	23	23	24	0.0	4.3
R29: Grist Lake Lodge 1	12	12	15	0.0	25.0
R30: Grist Lake South	12	12	15	0.0	25.0
R31: Winefred Lake Lodge 1	14	14	16	0.0	14.3
R32: Winefred Lake West	22	22	24	0.0	9.1
R33: EnCana Camp	29	29	30	0.0	3.4
R34: Winifred Cabin/Station/Lookout	13	13	15	0.0	15.4
R35: Campground (Christina Lake)	15	15	18	0.0	20.0
R36: Wild Rice Operation 1	14	14	15	0.0	7.1
R37: Wild Rice Operation 2	14	14	17	0.0	21.4
R38: Fire Lookout Tower	26	26	29	0.0	11.5
R39: Devenish	15	15	18	0.0	20.0
R40: Old Cabins & Settlement Area (Wiau Lake)	12	12	14	0.0	16.7
<b>AAAQO</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>



Receptor	Baseline ( $\mu\text{g}/\text{m}^3$ )	Application ( $\mu\text{g}/\text{m}^3$ )	Planned Development ( $\mu\text{g}/\text{m}^3$ )	Application over Baseline (%)	Planned Development over Baseline (%)
<b>99.9<sup>th</sup> Percentile 24-h</b>					
<b>Overall Maximum (MPOI)</b>	<b>92</b>	<b>92</b>	<b>95</b>	<b>0.0</b>	<b>3.3</b>
AMS #1 (Fort McKay)	33	33	38	0.0	15.2
AMS #2 (Mildred Lake)	92	92	92	0.0	0.0
AMS #4 (Buffalo Viewpoint)	54	54	55	0.0	1.9
AMS #5 (Mannix)	75	75	76	0.0	1.3
AMS #6 (Patricia McInnes)	25	25	31	0.0	24.0
AMS #7 (Athabasca Valley)	24	24	36	0.0	50.0
AMS #8 (Fort Chipewyan)	9	9	11	0.0	22.2
AMS #10 (Albian Mine)	38	38	58	0.0	52.6
AMS #11 (Lower Camp)	92	92	95	0.0	3.3
AMS #12 (Millennium)	33	33	39	0.0	18.2
AMS #13 (Syn crude UE1 )	32	32	34	0.0	6.3
AMS #14 (Anzac)	23	23	24	0.0	4.3
AMS #15 (Horizon)	36	36	41	0.0	13.9
R01: Trapper's Cabin	24	24	25	0.0	4.2
R02: Camp Site	17	17	18	0.0	5.9
R03: Fish Plant (Winefred Lake)	15	15	16	0.0	6.7
R04: Cabin (Winefred Lake)	12	12	14	0.0	16.7
R05: Cabin (NW Kirby Lake)	22	22	23	0.0	4.5
R06: West Hay Lake	20	20	21	0.0	5.0
R07: Cabins (North Hay Lake)	24	25	26	4.2	8.3
R08: Martin's Cabins	15	15	17	0.0	13.3
R09: Metis Trailer Camp	17	17	17	0.0	0.0
R10: Conklin	12	12	14	0.0	16.7
R11: Cabins (NW Christina Lake)	11	11	13	0.0	18.2
R12: Medicinal Plants	13	15	15	15.4	15.4
R13: Cabins near Gravel Pit	12	12	15	0.0	25.0
R14: Cabins	12	12	15	0.0	25.0
R15: Leismer	12	12	12	0.0	0.0
R16: East Chard	9	10	12	11.1	33.3
R17: Pingle	11	11	15	0.0	36.4
R18: Chard School	10	11	14	10.0	40.0
R19: Janvier	11	11	15	0.0	36.4
R20: IR 194B	14	14	16	0.0	14.3
R21: IR 194A	14	14	18	0.0	28.6
R22: Fishing Camp (Christina Lake)	25	25	25	0.0	0.0
R23: Fire Lookout 1	9	9	12	0.0	33.3
R24: Fire Lookout 2	16	16	20	0.0	25.0
R25: AltaGas House	31	31	31	0.0	0.0
R26: MEG Worker's Camp	39	40	53	2.6	35.9
R27: Grave Site (Christina Lake)	23	23	23	0.0	0.0
R28: Grave Site (Winefred Lake)	17	17	20	0.0	17.6
R29: Grist Lake Lodge 1	10	10	12	0.0	20.0
R30: Grist Lake South	10	10	12	0.0	20.0
R31: Winefred Lake Lodge 1	11	11	13	0.0	18.2
R32: Winefred Lake West	14	14	15	0.0	7.1
R33: EnCana Camp	23	23	24	0.0	4.3
R34: Winifred Cabin/Station/Lookout	10	10	12	0.0	20.0
R35: Campground (Christina Lake)	11	11	14	0.0	27.3
R36: Wild Rice Operation 1	10	11	13	10.0	30.0
R37: Wild Rice Operation 2	14	14	14	0.0	0.0
R38: Fire Lookout Tower	14	15	17	7.1	21.4
R39: Devenish	13	13	16	0.0	23.1
R40: Old Cabins & Settlement Area (Wiau Lake)	9	9	10	0.0	11.1
<b>AAAQO</b>	<b>150</b>	<b>150</b>	<b>150</b>	<b>-</b>	<b>-</b>

Receptor	Baseline ( $\mu\text{g}/\text{m}^3$ )	Application ( $\mu\text{g}/\text{m}^3$ )	Planned Development ( $\mu\text{g}/\text{m}^3$ )	Application over Baseline (%)	Planned Development over Baseline (%)
<b>Annual</b>					
<b>Overall Maximum (MPOI)</b>	<b>13.6</b>	<b>13.6</b>	<b>14.9</b>	<b>0.0</b>	<b>9.6</b>
AMS #1 (Fort McKay)	5.5	5.5	7.4	0.0	34.5
AMS #2 (Mildred Lake)	13.6	13.6	14.9	0.0	9.6
AMS #4 (Buffalo Viewpoint)	5.8	5.8	6.8	0.0	17.2
AMS #5 (Mannix)	9.7	9.7	11.2	0.0	15.5
AMS #6 (Patricia McInnes)	3.4	3.4	4.3	0.0	26.5
AMS #7 (Athabasca Valley)	4.7	4.7	7.8	0.0	66.0
AMS #8 (Fort Chipewyan)	0.7	0.7	0.9	0.0	28.6
AMS #10 (Albian Mine)	7.6	7.6	9.3	0.0	22.4
AMS #11 (Lower Camp)	7.5	7.5	8.4	0.0	12.0
AMS #12 (Millennium)	3.9	3.9	4.9	0.0	25.6
AMS #13 (Syn crude UE1 )	5.1	5.1	6.0	0.0	17.6
AMS #14 (Anzac)	2.5	2.5	3.1	0.0	24.0
AMS #15 (Horizon)	5.5	5.5	6.4	0.0	16.4
R01: Trapper's Cabin	2.8	3.0	3.2	7.1	14.3
R02: Camp Site	2.7	3.0	3.2	11.1	18.5
R03: Fish Plant (Winefred Lake)	1.9	2.0	2.2	5.3	15.8
R04: Cabin (Winefred Lake)	1.8	1.8	2.1	0.0	16.7
R05: Cabin (NW Kirby Lake)	2.8	2.9	3.1	3.6	10.7
R06: West Hay Lake	2.9	3.0	3.2	3.4	10.3
R07: Cabins (North Hay Lake)	3.3	3.4	3.6	3.0	9.1
R08: Martin's Cabins	2.5	2.7	3.0	8.0	20.0
R09: Metis Trailer Camp	2.4	2.7	3.0	12.5	25.0
R10: Conklin	1.4	1.4	1.7	0.0	21.4
R11: Cabins (NW Christina Lake)	1.6	1.7	2.0	6.3	25.0
R12: Medicinal Plants	1.6	1.7	1.9	6.3	18.8
R13: Cabins near Gravel Pit	1.3	1.4	1.6	7.7	23.1
R14: Cabins	1.3	1.3	1.6	0.0	23.1
R15: Leismer	1.4	1.4	1.7	0.0	21.4
R16: East Chard	1.4	1.4	1.7	0.0	21.4
R17: Pingle	1.5	1.5	1.9	0.0	26.7
R18: Chard School	1.5	1.6	2.0	6.7	33.3
R19: Janvier	1.6	1.7	2.2	6.3	37.5
R20: IR 194B	2.3	2.3	2.6	0.0	13.0
R21: IR 194A	1.5	1.6	1.9	6.7	26.7
R22: Fishing Camp (Christina Lake)	3.2	3.3	3.6	3.1	12.5
R23: Fire Lookout 1	1.3	1.3	1.5	0.0	15.4
R24: Fire Lookout 2	1.7	1.8	2.2	5.9	29.4
R25: AltaGas House	3.2	3.3	3.6	3.1	12.5
R26: MEG Worker's Camp	4.8	4.9	5.6	2.1	16.7
R27: Grave Site (Christina Lake)	3.1	3.2	3.5	3.2	12.9
R28: Grave Site (Winefred Lake)	2.3	2.4	2.7	4.3	17.4
R29: Grist Lake Lodge 1	1.3	1.3	1.5	0.0	15.4
R30: Grist Lake South	1.3	1.3	1.5	0.0	15.4
R31: Winefred Lake Lodge 1	1.6	1.6	1.9	0.0	18.8
R32: Winefred Lake West	2.4	2.5	2.7	4.2	12.5
R33: EnCana Camp	5.0	5.2	5.4	4.0	8.0
R34: Winifred Cabin/Station/Lookout	1.3	1.3	1.5	0.0	15.4
R35: Campground (Christina Lake)	1.5	1.5	1.8	0.0	20.0
R36: Wild Rice Operation 1	1.5	1.6	1.8	6.7	20.0
R37: Wild Rice Operation 2	1.9	2.0	2.3	5.3	21.1
R38: Fire Lookout Tower	1.4	1.5	1.7	7.1	21.4
R39: Devenish	1.2	1.2	1.4	0.0	16.7
R40: Old Cabins & Settlement Area (Wiau Lake)	0.8	0.9	1.0	12.5	25.0
<b>AAAQO</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>-</b>	<b>-</b>

**Notes:** AAAQO = Alberta Ambient Air Quality Objectives and Guidelines  
MPOI = Maximum point of impingement

**Table B5-2: Predicted Nitrogen Dioxide Concentrations in the AQRSA**

Receptor	Baseline ( $\mu\text{g}/\text{m}^3$ )	Application ( $\mu\text{g}/\text{m}^3$ )	Planned Development ( $\mu\text{g}/\text{m}^3$ )	Application over Baseline (%)	Planned Development over Baseline (%)
<b>Maximum 1-h</b>					
<b>Overall Maximum (MPOI)</b>	<b>1 012</b>	<b>1012</b>	<b>1031</b>	<b>0.0</b>	<b>1.9</b>
AMS #1 (Fort McKay)	294	294	296	0.0	0.7
AMS #2 (Mildred Lake)	303	303	303	0.0	0.0
AMS #4 (Buffalo Viewpoint)	325	325	335	0.0	3.1
AMS #5 (Mannix)	269	269	274	0.0	1.9
AMS #6 (Patricia McInnes)	183	183	184	0.0	0.5
AMS #7 (Athabasca Valley)	137	137	170	0.0	24.1
AMS #8 (Fort Chipewyan)	110	110	111	0.0	0.9
AMS #10 (Albian Mine)	640	640	658	0.0	2.8
AMS #11 (Lower Camp)	285	285	286	0.0	0.4
AMS #12 (Millennium)	297	297	298	0.0	0.3
AMS #13 (Syncrude UE1 )	311	311	314	0.0	1.0
AMS #14 (Anzac)	150	150	152	0.0	1.3
AMS #15 (Horizon)	861	861	872	0.0	1.3
R01: Trapper's Cabin	121	121	122	0.0	0.8
R02: Camp Site	114	114	117	0.0	2.6
R03: Fish Plant (Winefred Lake)	113	113	114	0.0	0.9
R04: Cabin (Winefred Lake)	113	113	114	0.0	0.9
R05: Cabin (NW Kirby Lake)	113	113	114	0.0	0.9
R06: West Hay Lake	115	115	116	0.0	0.9
R07: Cabins (North Hay Lake)	118	118	119	0.0	0.8
R08: Martin's Cabins	113	113	116	0.0	2.7
R09: Metis Trailer Camp	113	113	115	0.0	1.8
R10: Conklin	123	123	123	0.0	0.0
R11: Cabins (NW Christina Lake)	119	119	120	0.0	0.8
R12: Medicinal Plants	113	113	115	0.0	1.8
R13: Cabins near Gravel Pit	120	120	121	0.0	0.8
R14: Cabins	118	118	119	0.0	0.8
R15: Leismer	118	118	119	0.0	0.8
R16: East Chard	117	117	119	0.0	1.7
R17: Pingle	119	119	120	0.0	0.8
R18: Chard School	124	124	126	0.0	1.6
R19: Janvier	125	125	127	0.0	1.6
R20: IR 194B	123	123	129	0.0	4.9
R21: IR 194A	138	138	139	0.0	0.7
R22: Fishing Camp (Christina Lake)	119	119	121	0.0	1.7
R23: Fire Lookout 1	108	108	110	0.0	1.9
R24: Fire Lookout 2	141	141	142	0.0	0.7
R25: AltaGas House	119	119	121	0.0	1.7
R26: MEG Worker's Camp	119	119	121	0.0	1.7
R27: Grave Site (Christina Lake)	120	120	122	0.0	1.7
R28: Grave Site (Winefred Lake)	123	123	133	0.0	8.1
R29: Grist Lake Lodge 1	105	105	111	0.0	5.7
R30: Grist Lake South	106	106	111	0.0	4.7
R31: Winefred Lake Lodge 1	111	111	113	0.0	1.8
R32: Winefred Lake West	125	125	126	0.0	0.8
R33: EnCana Camp	118	118	120	0.0	1.7
R34: Winifred Cabin/Station/Lookout	109	109	110	0.0	0.9
R35: Campground (Christina Lake)	118	118	119	0.0	0.8
R36: Wild Rice Operation 1	111	111	113	0.0	1.8
R37: Wild Rice Operation 2	115	115	117	0.0	1.7
R38: Fire Lookout Tower	147	147	148	0.0	0.7
R39: Devenish	106	106	110	0.0	3.8
R40: Old Cabins & Settlement Area (Wiau Lake)	79	79	84	0.0	6.3
<b>AAAQO</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>



Receptor	Baseline ( $\mu\text{g}/\text{m}^3$ )	Application ( $\mu\text{g}/\text{m}^3$ )	Planned Development ( $\mu\text{g}/\text{m}^3$ )	Application over Baseline (%)	Planned Development over Baseline (%)
<b>99.9th Percentile 1-h</b>					
<b>Overall Maximum (MPOI)</b>	<b>748</b>	<b>748</b>	<b>761</b>	<b>0.0</b>	<b>1.7</b>
AMS #1 (Fort McKay)	212	212	213	0.0	0.5
AMS #2 (Mildred Lake)	225	225	227	0.0	0.9
AMS #4 (Buffalo Viewpoint)	219	219	220	0.0	0.5
AMS #5 (Mannix)	194	194	195	0.0	0.5
AMS #6 (Patricia McInnes)	147	147	147	0.0	0.0
AMS #7 (Athabasca Valley)	129	129	155	0.0	20.2
AMS #8 (Fort Chipewyan)	91	91	101	0.0	11.0
AMS #10 (Albian Mine)	368	368	385	0.0	4.6
AMS #11 (Lower Camp)	180	180	181	0.0	0.6
AMS #12 (Millennium)	232	232	232	0.0	0.0
AMS #13 (Syn crude UE1 )	181	182	183	0.6	1.1
AMS #14 (Anzac)	114	114	116	0.0	1.8
AMS #15 (Horizon)	748	748	761	0.0	1.7
R01: Trapper's Cabin	68	68	79	0.0	16.2
R02: Camp Site	78	78	83	0.0	6.4
R03: Fish Plant (Winefred Lake)	80	80	86	0.0	7.5
R04: Cabin (Winefred Lake)	74	74	93	0.0	25.7
R05: Cabin (NW Kirby Lake)	66	66	74	0.0	12.1
R06: West Hay Lake	64	65	78	1.6	21.9
R07: Cabins (North Hay Lake)	71	71	80	0.0	12.7
R08: Martin's Cabins	70	70	80	0.0	14.3
R09: Metis Trailer Camp	67	67	79	0.0	17.9
R10: Conklin	93	113	113	21.5	21.5
R11: Cabins (NW Christina Lake)	89	103	108	15.7	21.3
R12: Medicinal Plants	88	95	105	8.0	19.3
R13: Cabins near Gravel Pit	90	109	110	21.1	22.2
R14: Cabins	80	80	83	0.0	3.8
R15: Leismer	72	72	75	0.0	4.2
R16: East Chard	74	74	81	0.0	9.5
R17: Pingle	80	80	88	0.0	10.0
R18: Chard School	80	80	88	0.0	10.0
R19: Janvier	86	86	94	0.0	9.3
R20: IR 194B	79	79	112	0.0	41.8
R21: I*R 194A	70	70	82	0.0	17.1
R22: Fishing Camp (Christina Lake)	75	75	84	0.0	12.0
R23: Fire Lookout 1	53	53	62	0.0	17.0
R24: Fire Lookout 2	87	90	95	3.4	9.2
R25: AltaGas House	74	74	81	0.0	9.5
R26: MEG Worker's Camp	91	110	110	20.9	20.9
R27: Grave Site (Christina Lake)	74	74	85	0.0	14.9
R28: Grave Site (Winefred Lake)	87	87	113	0.0	29.9
R29: Grist Lake Lodge 1	46	46	62	0.0	34.8
R30: Grist Lake South	48	48	62	0.0	29.2
R31: Winefred Lake Lodge 1	62	62	70	0.0	12.9
R32: Winefred Lake West	70	70	84	0.0	20.0
R33: EnCana Camp	71	71	83	0.0	16.9
R34: Winifred Cabin/Station/Lookout	50	50	61	0.0	22.0
R35: Campground (Christina Lake)	90	110	110	22.2	22.2
R36: Wild Rice Operation 1	61	61	68	0.0	11.5
R37: Wild Rice Operation 2	74	74	86	0.0	16.2
R38: Fire Lookout Tower	94	113	114	20.2	21.3
R39: Devenish	70	70	78	0.0	11.4
R40: Old Cabins & Settlement Area (Wiau Lake)	40	42	50	5.0	25.0
<b>AAAQO</b>	<b>400</b>	<b>400</b>	<b>400</b>	<b>-</b>	<b>-</b>



Receptor	Baseline ( $\mu\text{g}/\text{m}^3$ )	Application ( $\mu\text{g}/\text{m}^3$ )	Planned Development ( $\mu\text{g}/\text{m}^3$ )	Application over Baseline (%)	Planned Development over Baseline (%)
<b>Maximum 24-h</b>					
<b>Overall Maximum (MPOI)</b>	<b>323</b>	<b>323</b>	<b>326</b>	<b>0.0</b>	<b>0.9</b>
AMS #1 (Fort McKay)	143	143	146	0.0	2.1
AMS #2 (Mildred Lake)	128	128	129	0.0	0.8
AMS #4 (Buffalo Viewpoint)	120	120	121	0.0	0.8
AMS #5 (Mannix)	128	128	129	0.0	0.8
AMS #6 (Patricia McInnes)	97	97	98	0.0	1.0
AMS #7 (Athabasca Valley)	96	96	110	0.0	14.6
AMS #8 (Fort Chipewyan)	73	73	84	0.0	15.1
AMS #10 (Albian Mine)	194	194	199	0.0	2.6
AMS #11 (Lower Camp)	111	111	112	0.0	0.9
AMS #12 (Millennium)	145	145	145	0.0	0.0
AMS #13 (Syn crude UE1 )	124	124	128	0.0	3.2
AMS #14 (Anzac)	62	62	69	0.0	11.3
AMS #15 (Horizon)	323	323	326	0.0	0.9
R01: Trapper's Cabin	31	31	42	0.0	35.5
R02: Camp Site	31	32	41	3.2	32.3
R03: Fish Plant (Winefred Lake)	34	35	42	2.9	23.5
R04: Cabin (Winefred Lake)	35	35	45	0.0	28.6
R05: Cabin (NW Kirby Lake)	36	36	46	0.0	27.8
R06: West Hay Lake	37	37	47	0.0	27.0
R07: Cabins (North Hay Lake)	38	39	48	2.6	26.3
R08: Martin's Cabins	32	33	42	3.1	31.3
R09: Metis Trailer Camp	33	33	42	0.0	27.3
R10: Conklin	52	52	57	0.0	9.6
R11: Cabins (NW Christina Lake)	41	41	48	0.0	17.1
R12: Medicinal Plants	40	40	47	0.0	17.5
R13: Cabins near Gravel Pit	33	34	37	3.0	12.1
R14: Cabins	29	29	35	0.0	20.7
R15: Leismer	31	31	37	0.0	19.4
R16: East Chard	33	33	38	0.0	15.2
R17: Pingle	33	33	40	0.0	21.2
R18: Chard School	36	36	45	0.0	25.0
R19: Janvier	37	37	50	0.0	35.1
R20: IR 194B	34	35	54	2.9	58.8
R21: IR 194A	43	43	46	0.0	7.0
R22: Fishing Camp (Christina Lake)	32	32	40	0.0	25.0
R23: Fire Lookout 1	30	30	41	0.0	36.7
R24: Fire Lookout 2	46	46	51	0.0	10.9
R25: AltaGas House	32	32	41	0.0	28.1
R26: MEG Worker's Camp	42	42	47	0.0	11.9
R27: Grave Site (Christina Lake)	32	32	40	0.0	25.0
R28: Grave Site (Winefred Lake)	37	37	54	0.0	45.9
R29: Grist Lake Lodge 1	32	32	42	0.0	31.3
R30: Grist Lake South	32	32	42	0.0	31.3
R31: Winefred Lake Lodge 1	35	35	45	0.0	28.6
R32: Winefred Lake West	34	34	49	0.0	44.1
R33: EnCana Camp	30	30	39	0.0	30.0
R34: Winifred Cabin/Station/Lookout	30	30	41	0.0	36.7
R35: Campground (Christina Lake)	54	54	57	0.0	5.6
R36: Wild Rice Operation 1	34	34	45	0.0	32.4
R37: Wild Rice Operation 2	30	30	37	0.0	23.3
R38: Fire Lookout Tower	42	42	54	0.0	28.6
R39: Devenish	35	35	41	0.0	17.1
R40: Old Cabins & Settlement Area (Wiau Lake)	21	21	28	0.0	33.3
<b>AAAQO</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>



Receptor	Baseline ( $\mu\text{g}/\text{m}^3$ )	Application ( $\mu\text{g}/\text{m}^3$ )	Planned Development ( $\mu\text{g}/\text{m}^3$ )	Application over Baseline (%)	Planned Development over Baseline (%)
<b>99.9<sup>th</sup> Percentile 24-h</b>					
<b>Overall Maximum (MPOI)</b>	<b>279</b>	<b>279</b>	<b>287</b>	<b>0.0</b>	<b>2.9</b>
AMS #1 (Fort McKay)	116	116	118	0.0	1.7
AMS #2 (Mildred Lake)	114	114	114	0.0	0.0
AMS #4 (Buffalo Viewpoint)	117	117	117	0.0	0.0
AMS #5 (Mannix)	116	116	116	0.0	0.0
AMS #6 (Patricia McInnes)	92	92	93	0.0	1.1
AMS #7 (Athabasca Valley)	95	95	104	0.0	9.5
AMS #8 (Fort Chipewyan)	38	38	43	0.0	13.2
AMS #10 (Albian Mine)	179	179	181	0.0	1.1
AMS #11 (Lower Camp)	110	110	111	0.0	0.9
AMS #12 (Millennium)	132	132	133	0.0	0.8
AMS #13 (Syn crude UE1 )	110	110	112	0.0	1.8
AMS #14 (Anzac)	60	60	68	0.0	13.3
AMS #15 (Horizon)	279	279	287	0.0	2.9
R01: Trapper's Cabin	28	28	36	0.0	28.6
R02: Camp Site	27	27	36	0.0	33.3
R03: Fish Plant (Winefred Lake)	34	34	39	0.0	14.7
R04: Cabin (Winefred Lake)	28	28	39	0.0	39.3
R05: Cabin (NW Kirby Lake)	29	29	36	0.0	24.1
R06: West Hay Lake	32	33	41	3.1	28.1
R07: Cabins (North Hay Lake)	33	33	43	0.0	30.3
R08: Martin's Cabins	28	28	40	0.0	42.9
R09: Metis Trailer Camp	28	28	40	0.0	42.9
R10: Conklin	48	48	53	0.0	10.4
R11: Cabins (NW Christina Lake)	34	34	41	0.0	20.6
R12: Medicinal Plants	34	34	42	0.0	23.5
R13: Cabins near Gravel Pit	31	32	36	3.2	16.1
R14: Cabins	23	24	30	4.3	30.4
R15: Leismer	27	27	33	0.0	22.2
R16: East Chard	31	31	37	0.0	19.4
R17: Pingle	33	33	39	0.0	18.2
R18: Chard School	35	35	43	0.0	22.9
R19: Janvier	37	37	46	0.0	24.3
R20: IR 194B	29	29	42	0.0	44.8
R21: IR 194A	30	30	34	0.0	13.3
R22: Fishing Camp (Christina Lake)	28	28	33	0.0	17.9
R23: Fire Lookout 1	21	21	28	0.0	33.3
R24: Fire Lookout 2	33	33	38	0.0	15.2
R25: AltaGas House	28	28	33	0.0	17.9
R26: MEG Worker's Camp	39	39	46	0.0	17.9
R27: Grave Site (Christina Lake)	28	28	34	0.0	21.4
R28: Grave Site (Winefred Lake)	28	28	47	0.0	67.9
R29: Grist Lake Lodge 1	25	25	33	0.0	32.0
R30: Grist Lake South	25	25	33	0.0	32.0
R31: Winefred Lake Lodge 1	29	29	39	0.0	34.5
R32: Winefred Lake West	31	31	37	0.0	19.4
R33: EnCana Camp	27	27	34	0.0	25.9
R34: Winifred Cabin/Station/Lookout	21	21	27	0.0	28.6
R35: Campground (Christina Lake)	34	34	41	0.0	20.6
R36: Wild Rice Operation 1	27	27	36	0.0	33.3
R37: Wild Rice Operation 2	27	27	35	0.0	29.6
R38: Fire Lookout Tower	35	35	40	0.0	14.3
R39: Devenish	27	27	33	0.0	22.2
R40: Old Cabins & Settlement Area (Wiau Lake)	18	18	23	0.0	27.8
<b>AAAQO</b>	<b>200</b>	<b>200</b>	<b>200</b>	<b>-</b>	<b>-</b>



Receptor	Baseline ( $\mu\text{g}/\text{m}^3$ )	Application ( $\mu\text{g}/\text{m}^3$ )	Planned Development ( $\mu\text{g}/\text{m}^3$ )	Application over Baseline (%)	Planned Development over Baseline (%)
<b>Annual</b>					
<b>Overall Maximum (MPOI)</b>	<b>110</b>	<b>110</b>	<b>113</b>	<b>0.0</b>	<b>2.7</b>
AMS #1 (Fort McKay)	76.9	76.9	77.9	0.0	1.3
AMS #2 (Mildred Lake)	76.6	76.6	76.8	0.0	0.3
AMS #4 (Buffalo Viewpoint)	46.8	46.8	49.3	0.0	5.3
AMS #5 (Mannix)	68.2	68.6	71.3	0.6	4.5
AMS #6 (Patricia McInnes)	17.9	18.1	21.3	1.1	19.0
AMS #7 (Athabasca Valley)	32.9	32.9	52.8	0.0	60.5
AMS #8 (Fort Chipewyan)	2.8	2.8	3.2	0.0	14.3
AMS #10 (Albian Mine)	82.5	82.5	83.1	0.0	0.7
AMS #11 (Lower Camp)	49.6	49.6	52.0	0.0	4.8
AMS #12 (Millennium)	69.7	69.7	72.0	0.0	3.3
AMS #13 (Syn crude UE1 )	61.1	61.6	65.2	0.8	6.7
AMS #14 (Anzac)	7.2	7.2	9.4	0.0	30.6
AMS #15 (Horizon)	109.7	109.7	113.2	0.0	3.2
R01: Trapper's Cabin	4.6	4.7	5.8	2.2	26.1
R02: Camp Site	4.6	4.8	5.9	4.3	28.3
R03: Fish Plant (Winefred Lake)	5.4	5.5	6.6	1.9	22.2
R04: Cabin (Winefred Lake)	5.4	5.4	6.6	0.0	22.2
R05: Cabin (NW Kirby Lake)	5.2	5.3	6.4	1.9	23.1
R06: West Hay Lake	4.8	4.9	6.0	2.1	25.0
R07: Cabins (North Hay Lake)	5.0	5.1	6.2	2.0	24.0
R08: Martin's Cabins	4.4	4.6	5.7	4.5	29.5
R09: Metis Trailer Camp	4.4	4.6	5.7	4.5	29.5
R10: Conklin	5.7	5.7	6.8	0.0	19.3
R11: Cabins (NW Christina Lake)	5.3	5.3	6.5	0.0	22.6
R12: Medicinal Plants	4.6	4.7	5.9	2.2	28.3
R13: Cabins near Gravel Pit	6.9	6.9	8.2	0.0	18.8
R14: Cabins	5.1	5.1	6.3	0.0	23.5
R15: Leismer	4.7	4.8	6.2	2.1	31.9
R16: East Chard	3.9	3.9	5.4	0.0	38.5
R17: Pingle	4.2	4.2	5.9	0.0	40.5
R18: Chard School	5.0	5.0	7.2	0.0	44.0
R19: Janvier	5.6	5.7	8.6	1.8	53.6
R20: IR 194B	5.5	5.5	8.1	0.0	47.3
R21: IR 194A	4.0	4.1	5.4	2.5	35.0
R22: Fishing Camp (Christina Lake)	5.0	5.2	6.4	4.0	28.0
R23: Fire Lookout 1	3.2	3.3	4.1	3.1	28.1
R24: Fire Lookout 2	4.4	4.5	6.0	2.3	36.4
R25: AltaGas House	5.1	5.2	6.5	2.0	27.5
R26: MEG Worker's Camp	8.0	8.1	9.7	1.3	21.3
R27: Grave Site (Christina Lake)	5.0	5.2	6.5	4.0	30.0
R28: Grave Site (Winefred Lake)	5.6	5.7	7.6	1.8	35.7
R29: Grist Lake Lodge 1	3.5	3.6	4.4	2.9	25.7
R30: Grist Lake South	3.5	3.5	4.4	0.0	25.7
R31: Winefred Lake Lodge 1	4.6	4.7	5.8	2.2	26.1
R32: Winefred Lake West	5.2	5.3	6.5	1.9	25.0
R33: EnCana Camp	5.5	5.7	6.9	3.6	25.5
R34: Winifred Cabin/Station/Lookout	3.2	3.3	4.1	3.1	28.1
R35: Campground (Christina Lake)	5.0	5.1	6.2	2.0	24.0
R36: Wild Rice Operation 1	4.2	4.3	5.4	2.4	28.6
R37: Wild Rice Operation 2	4.9	5.1	6.4	4.1	30.6
R38: Fire Lookout Tower	4.7	4.7	5.9	0.0	25.5
R39: Devenish	3.1	3.1	4.0	0.0	29.0
R40: Old Cabins & Settlement Area (Wiau Lake)	2.3	2.3	3.0	0.0	30.4
<b>AAAQO</b>	<b>60</b>	<b>60</b>	<b>60</b>	<b>-</b>	<b>-</b>

**Notes:** AAAQO = Alberta Ambient Air Quality Objectives and Guidelines  
MPOI = Maximum point of impingement

**Table B5-3: Predicted Particulate Matter Concentrations in the AQRSA**

Receptor	Baseline ( $\mu\text{g}/\text{m}^3$ )	Application ( $\mu\text{g}/\text{m}^3$ )	Planned Development ( $\mu\text{g}/\text{m}^3$ )	Application over Baseline (%)	Planned Development over Baseline (%)
<b>Maximum 1-h</b>					
<b>Overall Maximum (MPOI)</b>	<b>645</b>	<b>645</b>	<b>646</b>	<b>0.0</b>	<b>0.2</b>
AMS #1 (Fort McKay)	101	101	138	0.0	36.6
AMS #2 (Mildred Lake)	62	62	62	0.0	0.0
AMS #4 (Buffalo Viewpoint)	60	60	63	0.0	5.0
AMS #5 (Mannix)	66	66	69	0.0	4.5
AMS #6 (Patricia McInnes)	84	84	162	0.0	92.9
AMS #7 (Athabasca Valley)	285	285	553	0.0	94.0
AMS #8 (Fort Chipewyan)	6	6	13	0.0	116.7
AMS #10 (Albian Mine)	229	229	233	0.0	1.7
AMS #11 (Lower Camp)	98	98	99	0.0	1.0
AMS #12 (Millennium)	104	104	104	0.0	0.0
AMS #13 (Syncrude UE1 )	98	98	99	0.0	1.0
AMS #14 (Anzac)	45	45	77	0.0	71.1
AMS #15 (Horizon)	645	645	646	0.0	0.2
R01: Trapper's Cabin	14	14	14	0.0	0.0
R02: Camp Site	8	8	12	0.0	50.0
R03: Fish Plant (Winefred Lake)	8	8	10	0.0	25.0
R04: Cabin (Winefred Lake)	7	7	11	0.0	57.1
R05: Cabin (NW Kirby Lake)	7	7	10	0.0	42.9
R06: West Hay Lake	8	8	12	0.0	50.0
R07: Cabins (North Hay Lake)	8	8	11	0.0	37.5
R08: Martin's Cabins	7	7	13	0.0	85.7
R09: Metis Trailer Camp	7	7	11	0.0	57.1
R10: Conklin	9	9	12	0.0	33.3
R11: Cabins (NW Christina Lake)	9	9	13	0.0	44.4
R12: Medicinal Plants	8	8	13	0.0	62.5
R13: Cabins near Gravel Pit	11	11	15	0.0	36.4
R14: Cabins	11	11	15	0.0	36.4
R15: Leismer	12	12	17	0.0	41.7
R16: East Chard	11	11	15	0.0	36.4
R17: Pingle	11	11	18	0.0	63.6
R18: Chard School	13	13	22	0.0	69.2
R19: Janvier	21	21	42	0.0	100.0
R20: IR 194B	12	13	25	8.3	108.3
R21: IR 194A	24	24	33	0.0	37.5
R22: Fishing Camp (Christina Lake)	9	9	11	0.0	22.2
R23: Fire Lookout 1	6	6	8	0.0	33.3
R24: Fire Lookout 2	25	25	33	0.0	32.0
R25: AltaGas House	9	9	11	0.0	22.2
R26: MEG Worker's Camp	9	9	11	0.0	22.2
R27: Grave Site (Christina Lake)	9	9	11	0.0	22.2
R28: Grave Site (Winefred Lake)	14	14	29	0.0	107.1
R29: Grist Lake Lodge 1	6	6	9	0.0	50.0
R30: Grist Lake South	6	6	8	0.0	33.3
R31: Winefred Lake Lodge 1	8	8	12	0.0	50.0
R32: Winefred Lake West	13	13	16	0.0	23.1
R33: EnCana Camp	9	9	11	0.0	22.2
R34: Winifred Cabin/Station/Lookout	6	6	8	0.0	33.3
R35: Campground (Christina Lake)	9	9	12	0.0	33.3
R36: Wild Rice Operation 1	8	8	12	0.0	50.0
R37: Wild Rice Operation 2	9	9	14	0.0	55.6
R38: Fire Lookout Tower	10	10	14	0.0	40.0
R39: Devenish	8	8	12	0.0	50.0
R40: Old Cabins & Settlement Area (Wiau Lake)	5	5	7	0.0	40.0
<b>AAAQO</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>



Receptor	Baseline ( $\mu\text{g}/\text{m}^3$ )	Application ( $\mu\text{g}/\text{m}^3$ )	Planned Development ( $\mu\text{g}/\text{m}^3$ )	Application over Baseline (%)	Planned Development over Baseline (%)
<b>99.9th Percentile 1-h</b>					
<b>Overall Maximum (MPOI)</b>	<b>560</b>	<b>560</b>	<b>560</b>	<b>0.0</b>	<b>0.0</b>
AMS #1 (Fort McKay)	54	55	81	1.9	50.0
AMS #2 (Mildred Lake)	53	53	53	0.0	0.0
AMS #4 (Buffalo Viewpoint)	36	36	37	0.0	2.8
AMS #5 (Mannix)	48	48	49	0.0	2.1
AMS #6 (Patricia McInnes)	55	55	106	0.0	92.7
AMS #7 (Athabasca Valley)	228	228	444	0.0	94.7
AMS #8 (Fort Chipewyan)	5	5	8	0.0	60.0
AMS #10 (Albian Mine)	116	116	121	0.0	4.3
AMS #11 (Lower Camp)	44	44	44	0.0	0.0
AMS #12 (Millennium)	66	66	66	0.0	0.0
AMS #13 (Syn crude UE1 )	34	34	37	0.0	8.8
AMS #14 (Anzac)	12	12	22	0.0	83.3
AMS #15 (Horizon)	560	560	560	0.0	0.0
R01: Trapper's Cabin	4	4	5	0.0	25.0
R02: Camp Site	4	4	5	0.0	25.0
R03: Fish Plant (Winefred Lake)	4	4	5	0.0	25.0
R04: Cabin (Winefred Lake)	4	4	6	0.0	50.0
R05: Cabin (NW Kirby Lake)	4	4	5	0.0	25.0
R06: West Hay Lake	3	3	5	0.0	66.7
R07: Cabins (North Hay Lake)	4	4	5	0.0	25.0
R08: Martin's Cabins	4	4	5	0.0	25.0
R09: Metis Trailer Camp	4	4	5	0.0	25.0
R10: Conklin	4	4	5	0.0	25.0
R11: Cabins (NW Christina Lake)	4	4	5	0.0	25.0
R12: Medicinal Plants	4	4	5	0.0	25.0
R13: Cabins near Gravel Pit	4	4	5	0.0	25.0
R14: Cabins	4	4	5	0.0	25.0
R15: Leismer	4	4	5	0.0	25.0
R16: East Chard	4	4	6	0.0	50.0
R17: Pingle	5	5	7	0.0	40.0
R18: Chard School	8	8	16	0.0	100.0
R19: Janvier	15	15	31	0.0	106.7
R20: IR 194B	6	6	11	0.0	83.3
R21: IR 194A	5	5	6	0.0	20.0
R22: Fishing Camp (Christina Lake)	5	5	6	0.0	20.0
R23: Fire Lookout 1	3	3	4	0.0	33.3
R24: Fire Lookout 2	6	6	8	0.0	33.3
R25: AltaGas House	4	4	6	0.0	50.0
R26: MEG Worker's Camp	5	5	6	0.0	20.0
R27: Grave Site (Christina Lake)	5	5	6	0.0	20.0
R28: Grave Site (Winefred Lake)	6	6	12	0.0	100.0
R29: Grist Lake Lodge 1	3	3	5	0.0	66.7
R30: Grist Lake South	3	3	5	0.0	66.7
R31: Winefred Lake Lodge 1	3	3	5	0.0	66.7
R32: Winefred Lake West	4	4	6	0.0	50.0
R33: EnCana Camp	4	4	6	0.0	50.0
R34: Winifred Cabin/Station/Lookout	3	3	4	0.0	33.3
R35: Campground (Christina Lake)	4	4	5	0.0	25.0
R36: Wild Rice Operation 1	3	3	5	0.0	66.7
R37: Wild Rice Operation 2	4	4	6	0.0	50.0
R38: Fire Lookout Tower	4	4	5	0.0	25.0
R39: Devenish	3	3	5	0.0	66.7
R40: Old Cabins & Settlement Area (Wiau Lake)	3	3	4	0.0	33.3
<b>AAAQO</b>	<b>80</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>



Receptor	Baseline ( $\mu\text{g}/\text{m}^3$ )	Application ( $\mu\text{g}/\text{m}^3$ )	Planned Development ( $\mu\text{g}/\text{m}^3$ )	Application over Baseline (%)	Planned Development over Baseline (%)
<b>Maximum 24-h</b>					
<b>Overall Maximum (MPOI)</b>	<b>195</b>	<b>195</b>	<b>258</b>	<b>0.0</b>	<b>32.3</b>
AMS #1 (Fort McKay)	30	30	48	0.0	60.0
AMS #2 (Mildred Lake)	25	25	25	0.0	0.0
AMS #4 (Buffalo Viewpoint)	15	15	16	0.0	6.7
AMS #5 (Mannix)	24	24	24	0.0	0.0
AMS #6 (Patricia McInnes)	26	26	51	0.0	96.2
AMS #7 (Athabasca Valley)	133	133	258	0.0	94.0
AMS #8 (Fort Chipewyan)	4	4	5	0.0	25.0
AMS #10 (Albian Mine)	44	44	46	0.0	4.5
AMS #11 (Lower Camp)	18	18	20	0.0	11.1
AMS #12 (Millennium)	35	35	35	0.0	0.0
AMS #13 (Syn crude UE1 )	18	18	22	0.0	22.2
AMS #14 (Anzac)	5	5	8	0.0	60.0
AMS #15 (Horizon)	195	195	196	0.0	0.5
R01: Trapper's Cabin	2	2	3	0.0	50.0
R02: Camp Site	2	2	3	0.0	50.0
R03: Fish Plant (Winefred Lake)	2	2	3	0.0	50.0
R04: Cabin (Winefred Lake)	2	2	3	0.0	50.0
R05: Cabin (NW Kirby Lake)	2	2	3	0.0	50.0
R06: West Hay Lake	2	2	3	0.0	50.0
R07: Cabins (North Hay Lake)	2	2	3	0.0	50.0
R08: Martin's Cabins	2	2	3	0.0	50.0
R09: Metis Trailer Camp	2	2	3	0.0	50.0
R10: Conklin	2	2	3	0.0	50.0
R11: Cabins (NW Christina Lake)	2	2	3	0.0	50.0
R12: Medicinal Plants	2	2	3	0.0	50.0
R13: Cabins near Gravel Pit	2	2	3	0.0	50.0
R14: Cabins	2	2	2	0.0	0.0
R15: Leismer	2	2	3	0.0	50.0
R16: East Chard	2	2	3	0.0	50.0
R17: Pingle	2	2	4	0.0	100.0
R18: Chard School	5	5	9	0.0	80.0
R19: Janvier	7	7	14	0.0	100.0
R20: IR 194B	2	2	4	0.0	100.0
R21: IR 194A	2	2	4	0.0	100.0
R22: Fishing Camp (Christina Lake)	2	2	3	0.0	50.0
R23: Fire Lookout 1	2	2	3	0.0	50.0
R24: Fire Lookout 2	3	3	4	0.0	33.3
R25: AltaGas House	2	2	3	0.0	50.0
R26: MEG Worker's Camp	2	2	3	0.0	50.0
R27: Grave Site (Christina Lake)	2	2	3	0.0	50.0
R28: Grave Site (Winefred Lake)	3	3	4	0.0	33.3
R29: Grist Lake Lodge 1	2	2	3	0.0	50.0
R30: Grist Lake South	2	2	3	0.0	50.0
R31: Winefred Lake Lodge 1	2	2	3	0.0	50.0
R32: Winefred Lake West	2	2	4	0.0	100.0
R33: EnCana Camp	2	2	3	0.0	50.0
R34: Winifred Cabin/Station/Lookout	2	2	3	0.0	50.0
R35: Campground (Christina Lake)	2	2	3	0.0	50.0
R36: Wild Rice Operation 1	2	2	3	0.0	50.0
R37: Wild Rice Operation 2	2	2	3	0.0	50.0
R38: Fire Lookout Tower	2	2	3	0.0	50.0
R39: Devenish	2	2	2	0.0	0.0
R40: Old Cabins & Settlement Area (Wiau Lake)	1	1	2	0.0	100.0
<b>AAAQO</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>



Receptor	Baseline ( $\mu\text{g}/\text{m}^3$ )	Application ( $\mu\text{g}/\text{m}^3$ )	Planned Development ( $\mu\text{g}/\text{m}^3$ )	Application over Baseline (%)	Planned Development over Baseline (%)
<b>98<sup>th</sup> Percentile 24-h</b>					
<b>Overall Maximum (MPOI)</b>	<b>164</b>	<b>164</b>	<b>164</b>	<b>0.0</b>	<b>0.0</b>
AMS #1 (Fort McKay)	29	29	38	0.0	31.0
AMS #2 (Mildred Lake)	23	23	23	0.0	0.0
AMS #4 (Buffalo Viewpoint)	13	13	14	0.0	7.7
AMS #5 (Mannix)	19	19	20	0.0	5.3
AMS #6 (Patricia McInnes)	24	24	45	0.0	87.5
AMS #7 (Athabasca Valley)	81	81	157	0.0	93.8
AMS #8 (Fort Chipewyan)	2	2	3	0.0	50.0
AMS #10 (Albian Mine)	38	38	39	0.0	2.6
AMS #11 (Lower Camp)	14	14	15	0.0	7.1
AMS #12 (Millennium)	27	27	27	0.0	0.0
AMS #13 (Syn crude UE1 )	15	15	17	0.0	13.3
AMS #14 (Anzac)	5	5	8	0.0	60.0
AMS #15 (Horizon)	164	164	164	0.0	0.0
R01: Trapper's Cabin	2	2	2	0.0	0.0
R02: Camp Site	2	2	2	0.0	0.0
R03: Fish Plant (Winefred Lake)	2	2	2	0.0	0.0
R04: Cabin (Winefred Lake)	2	2	3	0.0	50.0
R05: Cabin (NW Kirby Lake)	2	2	2	0.0	0.0
R06: West Hay Lake	2	2	3	0.0	50.0
R07: Cabins (North Hay Lake)	2	2	3	0.0	50.0
R08: Martin's Cabins	2	2	2	0.0	0.0
R09: Metis Trailer Camp	2	2	2	0.0	0.0
R10: Conklin	2	2	2	0.0	0.0
R11: Cabins (NW Christina Lake)	2	2	2	0.0	0.0
R12: Medicinal Plants	2	2	2	0.0	0.0
R13: Cabins near Gravel Pit	2	2	3	0.0	50.0
R14: Cabins	2	2	2	0.0	0.0
R15: Leismer	2	2	3	0.0	50.0
R16: East Chard	2	2	3	0.0	50.0
R17: Pingle	2	2	3	0.0	50.0
R18: Chard School	3	3	6	0.0	100.0
R19: Janvier	6	6	12	0.0	100.0
R20: IR 194B	2	2	3	0.0	50.0
R21: IR 194A	2	2	3	0.0	50.0
R22: Fishing Camp (Christina Lake)	2	2	3	0.0	50.0
R23: Fire Lookout 1	1	1	2	0.0	100.0
R24: Fire Lookout 2	3	3	4	0.0	33.3
R25: AltaGas House	2	2	3	0.0	50.0
R26: MEG Worker's Camp	2	2	3	0.0	50.0
R27: Grave Site (Christina Lake)	2	2	3	0.0	50.0
R28: Grave Site (Winefred Lake)	2	2	4	0.0	100.0
R29: Grist Lake Lodge 1	2	2	3	0.0	50.0
R30: Grist Lake South	2	2	3	0.0	50.0
R31: Winefred Lake Lodge 1	2	2	3	0.0	50.0
R32: Winefred Lake West	2	2	3	0.0	50.0
R33: EnCana Camp	2	2	3	0.0	50.0
R34: Winifred Cabin/Station/Lookout	1	1	2	0.0	100.0
R35: Campground (Christina Lake)	2	2	2	0.0	0.0
R36: Wild Rice Operation 1	2	2	3	0.0	50.0
R37: Wild Rice Operation 2	2	2	3	0.0	50.0
R38: Fire Lookout Tower	1	1	2	0.0	100.0
R39: Devenish	1	1	2	0.0	100.0
R40: Old Cabins & Settlement Area (Wiau Lake)	1	1	2	0.0	100.0
<b>AAAQO</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>-</b>	<b>-</b>



Receptor	Baseline ( $\mu\text{g}/\text{m}^3$ )	Application ( $\mu\text{g}/\text{m}^3$ )	Planned Development ( $\mu\text{g}/\text{m}^3$ )	Application over Baseline (%)	Planned Development over Baseline (%)
<b>Annual</b>					
<b>Overall Maximum (MPOI)</b>	<b>31.3</b>	<b>31.3</b>	<b>38.4</b>	<b>0.0</b>	<b>22.7</b>
AMS #1 (Fort McKay)	7.2	7.3	12.2	0.0	31.0
AMS #2 (Mildred Lake)	4.3	4.3	4.6	0.0	0.0
AMS #4 (Buffalo Viewpoint)	2.3	2.3	2.5	0.0	7.7
AMS #5 (Mannix)	3.6	3.6	4.0	0.0	5.3
AMS #6 (Patricia McInnes)	2.6	2.6	4.5	0.0	87.5
AMS #7 (Athabasca Valley)	16.9	16.9	32.4	0.0	93.8
AMS #8 (Fort Chipewyan)	0.2	0.2	0.3	0.0	50.0
AMS #10 (Albian Mine)	5.0	5.0	5.4	0.0	2.6
AMS #11 (Lower Camp)	2.6	2.6	2.8	0.0	7.1
AMS #12 (Millennium)	4.0	4.0	4.5	0.0	0.0
AMS #13 (Syn crude UE1 )	2.6	2.6	2.9	0.0	13.3
AMS #14 (Anzac)	0.9	0.9	1.4	0.0	60.0
AMS #15 (Horizon)	31.3	31.3	32.0	0.0	0.0
R01: Trapper's Cabin	0.2	0.2	0.3	0.0	0.0
R02: Camp Site	0.2	0.2	0.3	0.0	0.0
R03: Fish Plant (Winefred Lake)	0.2	0.2	0.3	0.0	0.0
R04: Cabin (Winefred Lake)	0.2	0.2	0.3	0.0	50.0
R05: Cabin (NW Kirby Lake)	0.2	0.2	0.3	0.0	0.0
R06: West Hay Lake	0.2	0.2	0.3	0.0	50.0
R07: Cabins (North Hay Lake)	0.2	0.2	0.3	0.0	50.0
R08: Martin's Cabins	0.2	0.2	0.3	0.0	0.0
R09: Metis Trailer Camp	0.2	0.2	0.3	0.0	0.0
R10: Conklin	0.2	0.2	0.3	0.0	0.0
R11: Cabins (NW Christina Lake)	0.2	0.2	0.3	0.0	0.0
R12: Medicinal Plants	0.2	0.2	0.3	0.0	0.0
R13: Cabins near Gravel Pit	0.2	0.2	0.4	0.0	50.0
R14: Cabins	0.2	0.2	0.3	0.0	0.0
R15: Leismer	0.2	0.2	0.4	0.0	50.0
R16: East Chard	0.2	0.2	0.4	0.0	50.0
R17: Pingle	0.2	0.2	0.4	0.0	50.0
R18: Chard School	0.7	0.7	1.5	0.0	100.0
R19: Janvier	1.3	1.3	2.6	0.0	100.0
R20: IR 194B	0.3	0.3	0.5	0.0	50.0
R21: IR 194A	0.2	0.2	0.4	0.0	50.0
R22: Fishing Camp (Christina Lake)	0.2	0.2	0.4	0.0	50.0
R23: Fire Lookout 1	0.2	0.2	0.2	0.0	100.0
R24: Fire Lookout 2	0.3	0.3	0.4	0.0	33.3
R25: AltaGas House	0.2	0.2	0.4	0.0	50.0
R26: MEG Worker's Camp	0.3	0.3	0.5	0.0	50.0
R27: Grave Site (Christina Lake)	0.2	0.2	0.4	0.0	50.0
R28: Grave Site (Winefred Lake)	0.3	0.3	0.5	0.0	100.0
R29: Grist Lake Lodge 1	0.2	0.2	0.2	0.0	50.0
R30: Grist Lake South	0.2	0.2	0.2	0.0	50.0
R31: Winefred Lake Lodge 1	0.2	0.2	0.3	0.0	50.0
R32: Winefred Lake West	0.2	0.2	0.3	0.0	50.0
R33: EnCana Camp	0.2	0.2	0.4	0.0	50.0
R34: Winifred Cabin/Station/Lookout	0.2	0.2	0.2	0.0	100.0
R35: Campground (Christina Lake)	0.2	0.2	0.3	0.0	0.0
R36: Wild Rice Operation 1	0.2	0.2	0.3	0.0	50.0
R37: Wild Rice Operation 2	0.2	0.2	0.4	0.0	50.0
R38: Fire Lookout Tower	0.2	0.2	0.3	0.0	100.0
R39: Devenish	0.2	0.2	0.3	0.0	100.0
R40: Old Cabins & Settlement Area (Wiau Lake)	0.1	0.2	0.3	0.0	100.0
<b>AAAQO</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

**Table B5-4: Predicted Carbon Monoxide Concentrations in the AQRSA**

Receptor	Baseline ( $\mu\text{g}/\text{m}^3$ )	Application ( $\mu\text{g}/\text{m}^3$ )	Planned Development ( $\mu\text{g}/\text{m}^3$ )	Application over Baseline (%)	Planned Development over Baseline (%)
<b>Maximum 1-h</b>					
<b>Overall Maximum (MPOI)</b>	<b>7 265</b>	<b>7 265</b>	<b>7 265</b>	<b>0.0</b>	<b>0.0</b>
AMS #1 (Fort McKay)	1 618	1 618	1 850	0.0	14.3
AMS #2 (Mildred Lake)	1 747	1 747	1 747	0.0	0.0
AMS #4 (Buffalo Viewpoint)	1 284	1 284	1 288	0.0	0.3
AMS #5 (Mannix)	1 311	1 311	1 323	0.0	0.9
AMS #6 (Patricia McInnes)	709	709	966	0.0	36.2
AMS #7 (Athabasca Valley)	1 675	1 675	3 227	0.0	92.7
AMS #8 (Fort Chipewyan)	89	89	102	0.0	14.6
AMS #10 (Albian Mine)	4 911	4 911	5 066	0.0	3.2
AMS #11 (Lower Camp)	1 969	1 969	1 981	0.0	0.6
AMS #12 (Millennium)	2 271	2 271	2 283	0.0	0.5
AMS #13 (Syncrude UE1 )	2 572	2 572	2 600	0.0	1.1
AMS #14 (Anzac)	575	575	641	0.0	11.5
AMS #15 (Horizon)	6 536	6 536	6 544	0.0	0.1
R01: Trapper's Cabin	164	164	173	0.0	5.5
R02: Camp Site	171	172	178	0.6	4.1
R03: Fish Plant (Winefred Lake)	107	107	124	0.0	15.9
R04: Cabin (Winefred Lake)	103	103	126	0.0	22.3
R05: Cabin (NW Kirby Lake)	113	113	118	0.0	4.4
R06: West Hay Lake	123	123	130	0.0	5.7
R07: Cabins (North Hay Lake)	123	123	136	0.0	10.6
R08: Martin's Cabins	156	156	159	0.0	1.9
R09: Metis Trailer Camp	185	185	188	0.0	1.6
R10: Conklin	347	347	360	0.0	3.7
R11: Cabins (NW Christina Lake)	257	257	262	0.0	1.9
R12: Medicinal Plants	488	488	493	0.0	1.0
R13: Cabins near Gravel Pit	447	447	451	0.0	0.9
R14: Cabins	810	810	819	0.0	1.1
R15: Leismer	231	231	233	0.0	0.9
R16: East Chard	165	165	189	0.0	14.5
R17: Pingle	158	158	178	0.0	12.7
R18: Chard School	188	188	215	0.0	14.4
R19: Janvier	214	214	258	0.0	20.6
R20: IR 194B	173	173	284	0.0	64.2
R21: IR 194A	333	333	389	0.0	16.8
R22: Fishing Camp (Christina Lake)	131	131	159	0.0	21.4
R23: Fire Lookout 1	78	78	94	0.0	20.5
R24: Fire Lookout 2	380	380	428	0.0	12.6
R25: AltaGas House	133	133	161	0.0	21.1
R26: MEG Worker's Camp	225	225	226	0.0	0.4
R27: Grave Site (Christina Lake)	136	136	164	0.0	20.6
R28: Grave Site (Winefred Lake)	164	164	318	0.0	93.9
R29: Grist Lake Lodge 1	71	71	91	0.0	28.2
R30: Grist Lake South	72	72	90	0.0	25.0
R31: Winefred Lake Lodge 1	101	101	126	0.0	24.8
R32: Winefred Lake West	173	173	203	0.0	17.3
R33: EnCana Camp	120	120	151	0.0	25.8
R34: Winifred Cabin/Station/Lookout	80	80	96	0.0	20.0
R35: Campground (Christina Lake)	271	271	277	0.0	2.2
R36: Wild Rice Operation 1	101	101	126	0.0	24.8
R37: Wild Rice Operation 2	190	190	193	0.0	1.6
R38: Fire Lookout Tower	1 335	1 335	1 344	0.0	0.7
R39: Devenish	442	442	448	0.0	1.4
R40: Old Cabins & Settlement Area (Wiau Lake)	72	72	82	0.0	13.9
<b>AAAQO</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

**Notes:** AAAQO = Alberta Ambient Air Quality Objectives and Guidelines  
MPOI = Maximum point of impingement



Receptor	Baseline ( $\mu\text{g}/\text{m}^3$ )	Application ( $\mu\text{g}/\text{m}^3$ )	Planned Development ( $\mu\text{g}/\text{m}^3$ )	Application over Baseline (%)	Planned Development over Baseline (%)
<b>99.9th Percentile 1-h</b>					
<b>Overall Maximum (MPOI)</b>	<b>5 556</b>	<b>5 556</b>	<b>5 663</b>	<b>0.0</b>	<b>1.9</b>
AMS #1 (Fort McKay)	905	905	972	0.0	7.4
AMS #2 (Mildred Lake)	1 002	1 002	1 003	0.0	0.1
AMS #4 (Buffalo Viewpoint)	775	775	778	0.0	0.4
AMS #5 (Mannix)	942	942	973	0.0	3.3
AMS #6 (Patricia McInnes)	414	414	653	0.0	57.7
AMS #7 (Athabasca Valley)	1 350	1 350	2 579	0.0	91.0
AMS #8 (Fort Chipewyan)	66	66	81	0.0	22.7
AMS #10 (Albian Mine)	2 488	2 488	2 573	0.0	3.4
AMS #11 (Lower Camp)	783	783	788	0.0	0.6
AMS #12 (Millennium)	1 351	1 351	1 352	0.0	0.1
AMS #13 (Syn crude UE1 )	641	641	673	0.0	5.0
AMS #14 (Anzac)	155	155	199	0.0	28.4
AMS #15 (Horizon)	5 556	5 556	5 663	0.0	1.9
R01: Trapper's Cabin	70	71	80	1.4	14.3
R02: Camp Site	81	81	87	0.0	7.4
R03: Fish Plant (Winefred Lake)	54	54	63	0.0	16.7
R04: Cabin (Winefred Lake)	55	55	82	0.0	49.1
R05: Cabin (NW Kirby Lake)	57	59	66	3.5	15.8
R06: West Hay Lake	57	58	67	1.8	17.5
R07: Cabins (North Hay Lake)	61	63	71	3.3	16.4
R08: Martin's Cabins	90	91	96	1.1	6.7
R09: Metis Trailer Camp	116	116	121	0.0	4.3
R10: Conklin	126	126	133	0.0	5.6
R11: Cabins (NW Christina Lake)	133	133	134	0.0	0.8
R12: Medicinal Plants	149	149	155	0.0	4.0
R13: Cabins near Gravel Pit	149	149	167	0.0	12.1
R14: Cabins	152	152	166	0.0	9.2
R15: Leismer	108	108	113	0.0	4.6
R16: East Chard	61	61	73	0.0	19.7
R17: Pingle	67	67	78	0.0	16.4
R18: Chard School	65	65	119	0.0	83.1
R19: Janvier	93	94	181	1.1	94.6
R20: IR 194B	67	67	125	0.0	86.6
R21: IR 194A	62	62	78	0.0	25.8
R22: Fishing Camp (Christina Lake)	66	66	77	0.0	16.7
R23: Fire Lookout 1	47	47	57	0.0	21.3
R24: Fire Lookout 2	68	68	85	0.0	25.0
R25: AltaGas House	64	64	76	0.0	18.8
R26: MEG Worker's Camp	92	92	106	0.0	15.2
R27: Grave Site (Christina Lake)	66	66	75	0.0	13.6
R28: Grave Site (Winefred Lake)	73	73	136	0.0	86.3
R29: Grist Lake Lodge 1	47	47	60	0.0	27.7
R30: Grist Lake South	47	47	59	0.0	25.5
R31: Winefred Lake Lodge 1	46	46	64	0.0	39.1
R32: Winefred Lake West	57	57	78	0.0	36.8
R33: EnCana Camp	62	62	76	0.0	22.6
R34: Winifred Cabin/Station/Lookout	46	46	54	0.0	17.4
R35: Campground (Christina Lake)	123	123	126	0.0	2.4
R36: Wild Rice Operation 1	46	46	64	0.0	39.1
R37: Wild Rice Operation 2	110	110	117	0.0	6.4
R38: Fire Lookout Tower	626	626	637	0.0	1.8
R39: Devenish	270	270	279	0.0	3.3
R40: Old Cabins & Settlement Area (Wiau Lake)	55	55	60	0.0	9.1
<b>AAAQO</b>	<b>15 000</b>	<b>15 000</b>	<b>15 000</b>	<b>-</b>	<b>-</b>

Receptor	Baseline ( $\mu\text{g}/\text{m}^3$ )	Application ( $\mu\text{g}/\text{m}^3$ )	Planned Development ( $\mu\text{g}/\text{m}^3$ )	Application over Baseline (%)	Planned Development over Baseline (%)
<b>Maximum 8-h</b>					
<b>Overall Maximum (MPOI)</b>	<b>3 991</b>	<b>3 991</b>	<b>4 146</b>	<b>0.0</b>	<b>3.9</b>
AMS #1 (Fort McKay)	526	526	606	0.0	15.2
AMS #2 (Mildred Lake)	581	581	581	0.0	0.0
AMS #4 (Buffalo Viewpoint)	322	322	345	0.0	7.1
AMS #5 (Mannix)	755	755	767	0.0	1.6
AMS #6 (Patricia McInnes)	216	216	380	0.0	75.9
AMS #7 (Athabasca Valley)	924	924	1797	0.0	94.5
AMS #8 (Fort Chipewyan)	60	60	74	0.0	23.3
AMS #10 (Albian Mine)	1909	1909	1986	0.0	4.0
AMS #11 (Lower Camp)	511	511	533	0.0	4.3
AMS #12 (Millennium)	1362	1362	1371	0.0	0.7
AMS #13 (Syn crude UE1 )	405	405	413	0.0	2.0
AMS #14 (Anzac)	75	75	97	0.0	29.3
AMS #15 (Horizon)	3991	3991	4146	0.0	3.9
R01: Trapper's Cabin	40	40	53	0.0	32.5
R02: Camp Site	44	48	53	9.1	20.5
R03: Fish Plant (Winefred Lake)	38	38	52	0.0	36.8
R04: Cabin (Winefred Lake)	46	46	71	0.0	54.3
R05: Cabin (NW Kirby Lake)	40	45	57	12.5	42.5
R06: West Hay Lake	38	38	56	0.0	47.4
R07: Cabins (North Hay Lake)	39	39	58	0.0	48.7
R08: Martin's Cabins	43	44	54	2.3	25.6
R09: Metis Trailer Camp	56	59	63	5.4	12.5
R10: Conklin	65	65	67	0.0	3.1
R11: Cabins (NW Christina Lake)	64	64	65	0.0	1.6
R12: Medicinal Plants	45	45	59	0.0	31.1
R13: Cabins near Gravel Pit	74	74	83	0.0	12.2
R14: Cabins	217	217	223	0.0	2.8
R15: Leismer	70	70	72	0.0	2.9
R16: East Chard	43	43	51	0.0	18.6
R17: Pingle	42	42	50	0.0	19.0
R18: Chard School	59	59	102	0.0	72.9
R19: Janvier	67	67	118	0.0	76.1
R20: IR 194B	41	41	57	0.0	39.0
R21: IR 194A	45	45	54	0.0	20.0
R22: Fishing Camp (Christina Lake)	43	43	56	0.0	30.2
R23: Fire Lookout 1	28	28	39	0.0	39.3
R24: Fire Lookout 2	48	48	58	0.0	20.8
R25: AltaGas House	43	43	57	0.0	32.6
R26: MEG Worker's Camp	44	44	59	0.0	34.1
R27: Grave Site (Christina Lake)	44	44	57	0.0	29.5
R28: Grave Site (Winefred Lake)	41	41	63	0.0	53.7
R29: Grist Lake Lodge 1	31	31	45	0.0	45.2
R30: Grist Lake South	32	32	45	0.0	40.6
R31: Winefred Lake Lodge 1	38	38	55	0.0	44.7
R32: Winefred Lake West	40	40	54	0.0	35.0
R33: EnCana Camp	41	41	55	0.0	34.1
R34: Winifred Cabin/Station/Lookout	28	28	39	0.0	39.3
R35: Campground (Christina Lake)	54	54	57	0.0	5.6
R36: Wild Rice Operation 1	37	37	57	0.0	54.1
R37: Wild Rice Operation 2	44	44	58	0.0	31.8
R38: Fire Lookout Tower	431	431	434	0.0	0.7
R39: Devenish	91	91	93	0.0	2.2
R40: Old Cabins & Settlement Area (Wiau Lake)	31	31	41	0.0	32.3
<b>AAAQO</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>



Receptor	Baseline ( $\mu\text{g}/\text{m}^3$ )	Application ( $\mu\text{g}/\text{m}^3$ )	Planned Development ( $\mu\text{g}/\text{m}^3$ )	Application over Baseline (%)	Planned Development over Baseline (%)
<b>99.9<sup>th</sup> Percentile 8-h</b>					
<b>Overall Maximum (MPOI)</b>	<b>2 835</b>	<b>2 835</b>	<b>2 838</b>	<b>0.0</b>	<b>0.1</b>
AMS #1 (Fort McKay)	451	451	558	0.0	23.7
AMS #2 (Mildred Lake)	458	458	458	0.0	0.0
AMS #4 (Buffalo Viewpoint)	297	297	301	0.0	1.3
AMS #5 (Mannix)	594	594	600	0.0	1.0
AMS #6 (Patricia McInnes)	189	189	367	0.0	94.2
AMS #7 (Athabasca Valley)	884	884	1 717	0.0	94.2
AMS #8 (Fort Chipewyan)	54	54	62	0.0	14.8
AMS #10 (Albian Mine)	1 277	1 278	1 295	0.1	1.4
AMS #11 (Lower Camp)	320	320	324	0.0	1.3
AMS #12 (Millennium)	811	811	819	0.0	1.0
AMS #13 (Syn crude UE1 )	315	315	318	0.0	1.0
AMS #14 (Anzac)	69	69	93	0.0	34.8
AMS #15 (Horizon)	2 835	2 835	2 838	0.0	0.1
R01: Trapper's Cabin	34	34	50	0.0	47.1
R02: Camp Site	37	39	50	5.4	35.1
R03: Fish Plant (Winefred Lake)	34	34	48	0.0	41.2
R04: Cabin (Winefred Lake)	38	38	54	0.0	42.1
R05: Cabin (NW Kirby Lake)	36	36	50	0.0	38.9
R06: West Hay Lake	37	37	55	0.0	48.6
R07: Cabins (North Hay Lake)	37	37	54	0.0	45.9
R08: Martin's Cabins	38	39	49	2.6	28.9
R09: Metis Trailer Camp	40	40	54	0.0	35.0
R10: Conklin	48	48	49	0.0	2.1
R11: Cabins (NW Christina Lake)	46	46	58	0.0	26.1
R12: Medicinal Plants	44	44	53	0.0	20.5
R13: Cabins near Gravel Pit	49	50	59	2.0	20.4
R14: Cabins	54	54	57	0.0	5.6
R15: Leismer	50	50	55	0.0	10.0
R16: East Chard	38	38	50	0.0	31.6
R17: Pingle	35	35	47	0.0	34.3
R18: Chard School	47	47	83	0.0	76.6
R19: Janvier	57	57	113	0.0	98.2
R20: IR 194B	34	34	49	0.0	44.1
R21: IR 194A	39	39	48	0.0	23.1
R22: Fishing Camp (Christina Lake)	37	37	52	0.0	40.5
R23: Fire Lookout 1	25	25	32	0.0	28.0
R24: Fire Lookout 2	43	43	53	0.0	23.3
R25: AltaGas House	37	37	52	0.0	40.5
R26: MEG Worker's Camp	41	41	54	0.0	31.7
R27: Grave Site (Christina Lake)	37	37	52	0.0	40.5
R28: Grave Site (Winefred Lake)	36	36	57	0.0	58.3
R29: Grist Lake Lodge 1	25	25	34	0.0	36.0
R30: Grist Lake South	25	25	34	0.0	36.0
R31: Winefred Lake Lodge 1	30	30	40	0.0	33.3
R32: Winefred Lake West	36	36	49	0.0	36.1
R33: EnCana Camp	35	35	50	0.0	42.9
R34: Winifred Cabin/Station/Lookout	25	26	33	4.0	32.0
R35: Campground (Christina Lake)	44	44	52	0.0	18.2
R36: Wild Rice Operation 1	28	28	38	0.0	35.7
R37: Wild Rice Operation 2	36	36	49	0.0	36.1
R38: Fire Lookout Tower	214	214	216	0.0	0.9
R39: Devenish	69	69	81	0.0	17.4
R40: Old Cabins & Settlement Area (Wiau Lake)	30	30	39	0.0	30.0
<b>AAAQO</b>	<b>6 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

Receptor	Baseline ( $\mu\text{g}/\text{m}^3$ )	Application ( $\mu\text{g}/\text{m}^3$ )	Planned Development ( $\mu\text{g}/\text{m}^3$ )	Application over Baseline (%)	Planned Development over Baseline (%)
<b>Annual</b>					
<b>Overall Maximum (MPOI)</b>	<b>328.3</b>	<b>328.3</b>	<b>358.0</b>	<b>0.0</b>	<b>9.0</b>
AMS #1 (Fort McKay)	78.3	78.3	108.2	0.0	38.2
AMS #2 (Mildred Lake)	69.8	69.8	72.8	0.0	4.3
AMS #4 (Buffalo Viewpoint)	34.7	34.7	37.6	0.0	8.4
AMS #5 (Mannix)	58.5	58.5	62.4	0.0	6.7
AMS #6 (Patricia McInnes)	24.9	25.0	37.8	0.4	51.8
AMS #7 (Athabasca Valley)	106.6	106.6	197.9	0.0	85.6
AMS #8 (Fort Chipewyan)	2.5	2.5	3.4	0.0	36.0
AMS #10 (Albian Mine)	83.0	83.0	88.5	0.0	6.6
AMS #11 (Lower Camp)	41.3	41.3	43.8	0.0	6.1
AMS #12 (Millennium)	74.4	74.4	79.1	0.0	6.3
AMS #13 (Syn crude UE1 )	39.8	39.8	43.4	0.0	9.0
AMS #14 (Anzac)	9.3	9.3	14.3	0.0	53.8
AMS #15 (Horizon)	328.4	328.4	358.0	0.0	9.0
R01: Trapper's Cabin	4.2	4.3	5.6	2.4	33.3
R02: Camp Site	4.6	4.8	6.1	4.3	32.6
R03: Fish Plant (Winefred Lake)	4.4	4.5	5.7	2.3	29.5
R04: Cabin (Winefred Lake)	4.3	4.4	5.6	2.3	30.2
R05: Cabin (NW Kirby Lake)	4.5	4.6	5.8	2.2	28.9
R06: West Hay Lake	4.3	4.4	5.6	2.3	30.2
R07: Cabins (North Hay Lake)	4.4	4.5	5.8	2.3	31.8
R08: Martin's Cabins	4.3	4.5	5.8	4.7	34.9
R09: Metis Trailer Camp	4.4	4.7	6.0	6.8	36.4
R10: Conklin	5.6	5.6	7.1	0.0	26.8
R11: Cabins (NW Christina Lake)	5.2	5.3	6.8	1.9	30.8
R12: Medicinal Plants	5.1	5.2	6.7	2.0	31.4
R13: Cabins near Gravel Pit	6.5	6.5	8.4	0.0	29.2
R14: Cabins	5.9	5.9	7.4	0.0	25.4
R15: Leismer	5.0	5.0	6.8	0.0	36.0
R16: East Chard	4.2	4.2	6.1	0.0	45.2
R17: Pingle	4.3	4.3	6.3	0.0	46.5
R18: Chard School	7.3	7.3	12.4	0.0	69.9
R19: Janvier	10.5	10.5	19.2	0.0	82.9
R20: IR 194B	4.7	4.8	7.3	2.1	55.3
R21: IR 194A	3.9	3.9	5.5	0.0	41.0
R22: Fishing Camp (Christina Lake)	4.6	4.7	6.2	2.2	34.8
R23: Fire Lookout 1	2.9	2.9	3.8	0.0	31.0
R24: Fire Lookout 2	4.3	4.4	6.2	2.3	44.2
R25: AltaGas House	4.6	4.8	6.2	4.3	34.8
R26: MEG Worker's Camp	7.5	7.6	9.4	1.3	25.3
R27: Grave Site (Christina Lake)	4.7	4.8	6.3	2.1	34.0
R28: Grave Site (Winefred Lake)	4.8	4.9	6.9	2.1	43.8
R29: Grist Lake Lodge 1	3.0	3.1	4.0	3.3	33.3
R30: Grist Lake South	3.0	3.0	4.0	0.0	33.3
R31: Winefred Lake Lodge 1	3.8	3.9	5.1	2.6	34.2
R32: Winefred Lake West	4.4	4.5	5.8	2.3	31.8
R33: EnCana Camp	4.7	4.8	6.2	2.1	31.9
R34: Winifred Cabin/Station/Lookout	2.9	2.9	3.8	0.0	31.0
R35: Campground (Christina Lake)	5.1	5.2	6.6	2.0	29.4
R36: Wild Rice Operation 1	3.6	3.6	4.8	0.0	33.3
R37: Wild Rice Operation 2	4.9	5.1	6.7	4.1	36.7
R38: Fire Lookout Tower	9.4	9.5	10.9	1.1	16.0
R39: Devenish	4.0	4.0	5.2	0.0	30.0
R40: Old Cabins & Settlement Area (Wiau Lake)	2.7	2.7	3.9	0.0	44.4
<b>AAAQO</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

**Notes:** AAAQO = Alberta Ambient Air Quality Objectives and Guidelines  
MPOI = Maximum point of impingement



**Table B5-5: Annual Potential Acid Deposition  
Predicted by CALPUFF for the Baseline Scenario**

Deposition Parameter	Baseline	Application	Planned Development
Maximum Annual Average Deposition in the AQRSA (keq H <sup>+</sup> /ha/y)	13.13	13.13	13.24
Maximum Annual Average Deposition in the AQLSA (keq H <sup>+</sup> /ha/y)	0.59	0.60	0.63
Area above 0.17 keq H <sup>+</sup> /ha/y (ha)	3 090	3 112	4 058
Area above 0.22 keq H <sup>+</sup> /ha/y (ha)	2 006	2 016	2 713
Area above 0.25 keq H <sup>+</sup> /ha/y (ha)	1 683	1 687	2 184
Area above 0.50 keq H <sup>+</sup> /ha/y (ha)	633	634	734
Area above 1.00 keq H <sup>+</sup> /ha/y (ha)	297	297	324

**Table B5-6: CALPUFF Predicted  
One-Degree Averaged Potential Acid Input (PAI) Values**

Latitude (°)	Longitude (°)	Baseline (keq H <sup>+</sup> /ha/y)	Application (keq H <sup>+</sup> /ha/y)	Planned Development (keq H <sup>+</sup> /ha/y)
109	54	0.037	0.037	0.042
110	54	0.064	0.065	0.073
111	54	0.046	0.046	0.053
112	54	0.030	0.030	0.034
109	55	0.084	0.085	0.106
110	55	0.177	0.215	0.256
111	55	0.122	0.127	0.162
112	55	0.066	0.066	0.079
109	56	0.113	0.113	0.136
110	56	0.215	0.215	0.271
111	56	0.311	0.311	0.381
112	56	0.151	0.151	0.175
113	56	0.094	0.095	0.106
109	57	0.115	0.115	0.127
110	57	0.282	0.282	0.305
111	57	1.356	1.357	1.444
112	57	0.165	0.165	0.183
113	57	0.058	0.058	0.064
109	58	0.074	0.074	0.081
110	58	0.102	0.102	0.111
111	58	0.094	0.094	0.102
112	58	0.057	0.057	0.063
113	58	0.035	0.035	0.038
109	59	0.032	0.032	0.035
110	59	0.045	0.045	0.049
111	59	0.045	0.045	0.049
112	59	0.035	0.035	0.037
113	59	0.023	0.023	0.024



**Table B5-7: Annual Nitrogen Deposition Predicted by CALPUFF**

<b>Deposition Parameter</b>	<b>Baseline</b>	<b>Application</b>	<b>Planned Development</b>
Maximum Annual Average Deposition in the AQRSA (kg/ha/y)	172	172	174
Maximum Annual Average Deposition in the AQLSA (kg/ha/y)	4.1	4.1	4.5
Area above 5 kg/ha/y (ha)	676	676	779
Area above 10 kg/ha/y (ha)	344	344	366
Area above 15 kg/ha/y (ha)	239	239	254
Area above 20 kg/ha/y (ha)	162	162	173

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