

TABLE OF CONTENTS

1	Introduction	1
1.1	The Multiplex	1
1.2	Site Options	1
1.3	Project Purpose and Objectives	4
1.4	Project Scope	4
2	Methods	4
2.1	Review of Existing Information	4
2.2	Wildlife	5
2.2.1	General Wildlife Use	5
2.2.2	Special Status Species	5
2.2.3	Movement and Corridors	5
2.3	Vegetation	6
2.3.1	Ecosites and Plant Communities	6
2.3.2	Rare Plants	6
2.3.3	Old-Growth	7
2.4	Geology and Soils	7
2.4.1	Geology	7
2.4.2	Soils	7
2.5	Hydrology	8
2.6	Land Use	9
2.7	Environmental Technology Potential	9
2.7.1	Geothermal	9
2.7.2	Solar	9
2.7.3	Wind	10
2.8	Mapping	10
3	Current Conditions	11
3.1	Wildlife	11
3.1.1	General Wildlife Use	11
3.1.2	Special Status Species	15
3.1.3	Wildlife Movement and Corridors	16
3.2	Vegetation	21
3.2.1	Ecosites and Plant Communities	21
3.2.2	Rare Plants	36
3.2.3	Old-growth	36
3.3	Geology and Soils	39
3.3.1	Geology	39
3.3.2	Soil Types	39
3.4	Hydrology	45
3.4.1	Surface Hydrology	45
3.4.2	Groundwater	52
3.4.3	Relative Hydrological Capacity	52
3.4.4	Hydrological Connectivity	54
3.5	Land Use	58
3.5.1	Historical Land Use	58
3.5.2	Human Use	59

3.5.3	Level of Demand	63
3.5.4	Visual Impact	63
3.6	Environmental Technology Potential	64
3.6.1	Geothermal	64
3.6.2	Solar	65
3.6.3	Wind	67
4	Evaluation of Site Options	68
4.1	Wildlife	68
4.1.1	Option 1: Further development of existing recreation centre site...	68
4.1.2	Option 2: Development of Elkwoods site and reclamation of existing recreation centre site	69
4.2	Vegetation	70
4.2.1	Option 1: Further development of existing recreation centre site...	70
4.2.2	Option 2: Development of Elkwoods site and reclamation of existing recreation centre site	71
4.3	Geology and Soils	71
4.3.1	Option 1: Further development of existing recreation centre site...	72
4.3.2	Option 2: Development of Elkwoods site and reclamation of existing recreation centre site	72
4.4	Hydrology	72
4.4.1	Option 1: Further development of existing recreation centre site...	72
4.4.2	Option 2: Development of Elkwoods site and reclamation of existing recreation centre site	74
4.5	Land Use	75
4.5.1	Option 1: Further development of existing recreation centre site...	75
4.5.2	Option 2: Development of Elkwoods site and reclamation of existing recreation centre site	75
4.6	Environmental Technology Potential	75
4.6.1	Geothermal	75
4.6.2	Solar	75
4.6.3	Wind	76
4.7	Comparative Matrix of Option 1 and Option 2.....	77
5	Recommendations to Minimize Net Environmental Impact.....	80
5.1	Option 1: Further development of existing recreation centre	80
5.2	Option 2: Development of Elkwoods site and reclamation of existing recreation centre	82
6	Conclusions	84
7	References	85
7.1	Personal Communications.....	88

TABLES

Table 1. Alberta special status species known or likely to occur within the potential sites.	15
Table 2. Plant communities found on existing recreation centre site.	25
Table 3. Plant communities found on Elkwoods site.	35
Table 4. Detailed soil data for existing recreation centre.	40
Table 5. Detailed soil data for Elkwoods.	41
Table 6. Classification of Forty Mile Creek and Whiskey Creek.	45
Table 7. Predicted insolation at the two potential sites.	66
Table 8. Net environmental impact comparison for Option 1 and Option 2.	77

FIGURES

Figure 1. Proposed site locations.	3
Figure 2. Ungulate telemetry from 1997 to 2007.	18
Figure 3. Grizzly bear telemetry from 1994 to 2003.	19
Figure 4. Cougar and wolf backtracking from 1993 to 2007.	20
Figure 5. Plant communities and rare plant locations at existing recreation centre.	22
Figure 6. Map of plant communities and potential old-growth patches on the Elkwoods site.	38
Figure 7. Soil pit locations at the existing recreation centre site.	43
Figure 8. Soil pit locations at the Elkwoods site.	44
Figure 9. Forested Pervious Land Cover.	52
Figure 10. Residential Land Cover.	53
Figure 11. Commercial Land Cover.	53
Figure 12. Hydrological capacity of the existing recreation centre site.	55
Figure 13. Hydrological capacity of the Elkwoods site.	56
Figure 14. Hydrological conditions of both sites.	57

PHOTOS

Photo 1 – Forty Mile Creek near confluence with Whiskey Creek at the existing recreation centre site.	11
Photo 2 – Forest thinning and available ungulate forage on the existing recreation centre site.	12
Photo 3 – Old white spruce with sign of woodpecker foraging at Elkwoods site.	14
Photo 4 – Three-toed woodpecker observed foraging on the Elkwoods site.	15
Photo 5 – Panoramic view of the 160 m wide portion of the Fenland-Indian Ground wildlife corridor, north of the industrial compound facing west.	17
Photo 6 - White spruce/ prickly rose/ hairy wild rye community at the existing recreation centre site.	23
Photo 7 - Canada thistle infestation to the west of existing recreation centre (photo taken looking north).	23
Photo 8 - White spruce/ prickly rose/ horsetail community at the existing recreation centre site.	24

Photo 9 - Water sedge/common tall manna grass/ large-leaved white water crowfoot community along Whiskey Creek at the existing recreation centre site.27

Photo 10 - Prickly rose/ hairy wild rye community under power line at existing recreation centre site.28

Photo 11 - Richardson needle grass/ small-leaved everlasting community on and around the dune at existing recreation centre.29

Photo 12 - Disturbed area south of skateboard park at existing recreation centre with high cover of invasive non-native plants.29

Photo 13 - Disturbed area north of existing recreation centre.30

Photo 14 - White spruce/prickly rose/ horsetail community at Elkwoods.31

Photo 15 - White spruce / buffaloberry/ hairy wild rye community at Elkwoods. .32

Photo 16 - Water sedge/ small bottle sedge / mare’s tail community at Elkwoods.32

Photo 17 - Shrubby cinquefoil/ june grass / small-leaved everlasting grassland community at Elkwoods.33

Photo 18 - Power line ROW at Elkwoods site.34

Photo 19 - Provincially rare Eaton’s aster found on existing recreation centre site.36

Photo 20 - Old-growth white spruce forests at the Elkwoods site.37

Photo 21 - Whiskey Creek where the natural course has been altered at the existing recreation centre site.46

Photo 22 – Stormwater outfall into Whiskey Creek at the existing recreation centre site.47

Photo 23 - Blue-green algae in Whiskey Creek at the existing recreation centre site.48

Photo 25 – Remains of Whiskey Creek in the southeast corner of the Elkwoods site.49

Photo 26 – Emergent horsetail wetland in the southwest corner of the Elkwoods site.51

Photo 27 –Emergent sedge wetland in the southwest corner of the Elkwoods site.51

Photo 27 – Monitoring well on CP Rail site at the existing recreation centre site.60

Photo 28 – Sand dune at the existing recreation centre site.60

Photo 29 – Skatepark and recreation centre.61

Photo 30 – Sewage lift station at the existing recreation centre site.61

Photo 31 – Pedestrian/cycling trail and single set of railway tracks at Elkwoods site.62

Photo 32 – Garbage on site, attempt at small dam at Elkwoods site.63

APPENDIX

APPENDIX A: WETLAND CLASSIFICATION 89

APPENDIX B: AIR PHOTOS 91