Kananaskis Improvement District

Wildfire Mitigation Strategy

Prepared for:

KANANASKIS IMPROVEMENT DISTRICT

January 2015

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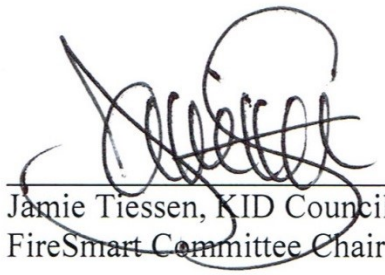
Endorsement

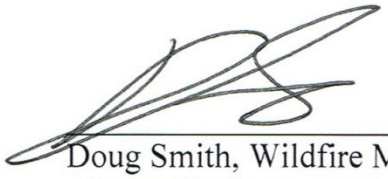
The Kananaskis Improvement District Wildfire Mitigation Strategy (January 2015) has been reviewed and endorsed by the Kananaskis Improvement District FireSmart Committee and is approved by the following.



Jamie Tiessen, KID Council Member
FireSmart Committee Chair

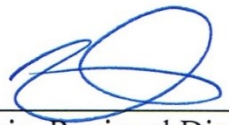
Motion No.

Feb 3/2015
Date



Doug Smith, Wildfire Manager
Alberta Environment & Sustainable Resource Development
Wildfire Management Branch

Feb 3/2015
Date



Mark Storie, Regional Director, Kananaskis Region
Alberta Environment & Sustainable Resource Development
Parks Division

May 8/15
Date

1 Introduction

The Kananaskis Improvement District (KID) Wildland/Urban Interface Plan was developed in 2008 to identify the threat of wildfire to development and provide practical and operational wildland/urban interface risk mitigation strategies to reduce that threat. The plan provided guidance with projects and priorities to the KID FireSmart program over the past six years however the KID FireSmart Committee has identified the need to update the plan to:

- Re-assess interface hazard and risk
- Identify FireSmart program accomplishments
- Set new FireSmart priorities for the next five year period (2015-2020)

The goal of the Kananaskis Improvement District Wildfire Mitigation Strategy (2015) is to provide a working document that land and fire managers, municipal administration and elected officials, and local residents and businesses can use to guide *FireSmart* development practices in the project area.

This Wildfire Mitigation Strategy was developed using standardized FireSmart hazard assessment protocols (FireSmart Guidebook for Community Protection, 2012) and mitigative measures were developed based on the seven disciplines of wildland/urban interface approach:

1. Vegetation management
2. Development
3. Public education
4. Legislation
5. Interagency cooperation
6. Cross-training
7. Emergency planning

An implementation plan is included in this Plan to assist stakeholders to budget and complete projects based on the priorities identified.

The KID Wildfire Mitigation Strategy recommendations focus on mitigative options at the structure and community levels with the intent of reducing wildfire intensity and rate of spread as wildfire approaches development and improving structure survival as the wildfire enters the community. The Kananaskis Country Vegetation Management Strategy (2008) and the Evan-Thomas Vegetation Management Strategy (2015 Draft) address vegetation management at the landscape-level surrounding the developed areas.

The Kananaskis Improvement District Wildfire Mitigation Strategy should be reviewed and updated at **five year intervals** to ensure it is based on current conditions.

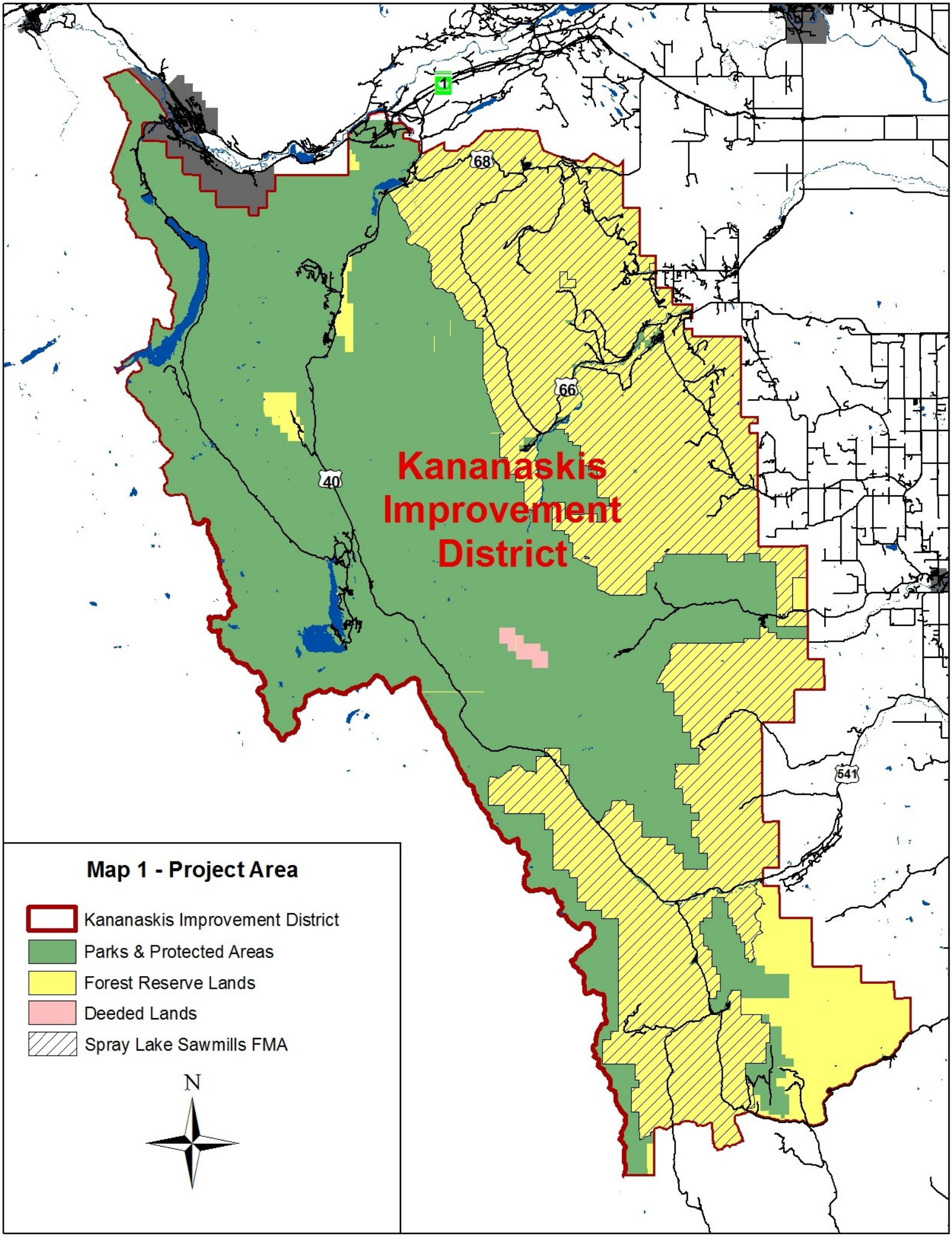
2 Planning Area

The planning area includes all lands within the Kananaskis Improvement District (Map 1). Land ownership within KID includes primarily Provincial crown lands with one parcel of private deeded lands.

Crown land management is provided by the Alberta government and development authority is provided by Kananaskis Improvement District.

Structural fire suppression is the responsibility of Kananaskis Improvement District and wildfire management is the responsibility of the Alberta government.

There are numerous stakeholders in the planning area associated with various residential, recreational/tourism, forest management, oil and gas, power generation and transmission, and land management land uses. Spray Lake Sawmills (1980) Ltd. holds the Forest Management Agreement on lands within Kananaskis Improvement District.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68
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40
541
Kananaskis Improvement District
Map 1 - Project Area
Kananaskis Improvement District
Parks & Protected Areas
Forest Reserve Lands
Deeded Lands
Spray Lake Sawmills FMA
N

3 Hazard & Risk Assessment

The hazard and risk assessment process assesses wildfire hazard through analysis of wildland fuels and weather data and the risk of wildfire ignition through analysis of fire incidence.

3.1 Wildfire Hazard

3.1.1 Wildland Fuel Types

Fire behaviour prediction (FBP) fuel types were used to analyze the fire behaviour potential within Kananaskis Improvement District (Map 2).

The planning area is dominated with fire-origin pine and spruce fuels (C-2, C-3, C-4, C-7) with patches of mixedwood (M-1/M-2) and deciduous fuels (D-1) along the eastern edge of KID. FireSmart understory fuels reduction around several of the KID developments has reduced the hazard level and the Evan-Thomas, Mt. Nestor, and Buller Mountain prescribed burns have provided fuelbreaks to reduce the potential for landscape-level wildfire.

3.1.2 Fire Weather Analysis

Twenty years (1995-2014) of fire weather data from the Elbow (B7), Boundary (B4), and Highwood (B1) auto-weather stations was used to analyze the wildfire spread-event days and the predominant wind directions during those days.

Spread-event days are defined as a day when the fire actively spreads, likely with high fire intensity, and adds a sizeable increment to the existing fire area. These days typically occur when Fire Weather Index (FWI) values are greater than 19 (Podur & Wotton, 2011). Fire weather data indicates that an average of 32 spread-event days exist per year with the majority from July to September.

The predominant wind directions during the spread event days are from the southwest, west, and northwest quadrants.

Wildland fuel types and fire weather data indicates that the potential for extreme wildfire behaviour exists.

3.2 Wildfire Ignition Potential

The assessment of recent fire incidence was completed using the fire incidence database from Alberta Environment and Sustainable Resource Development (ESRD) for the ten-year period from 2005 to 2014.

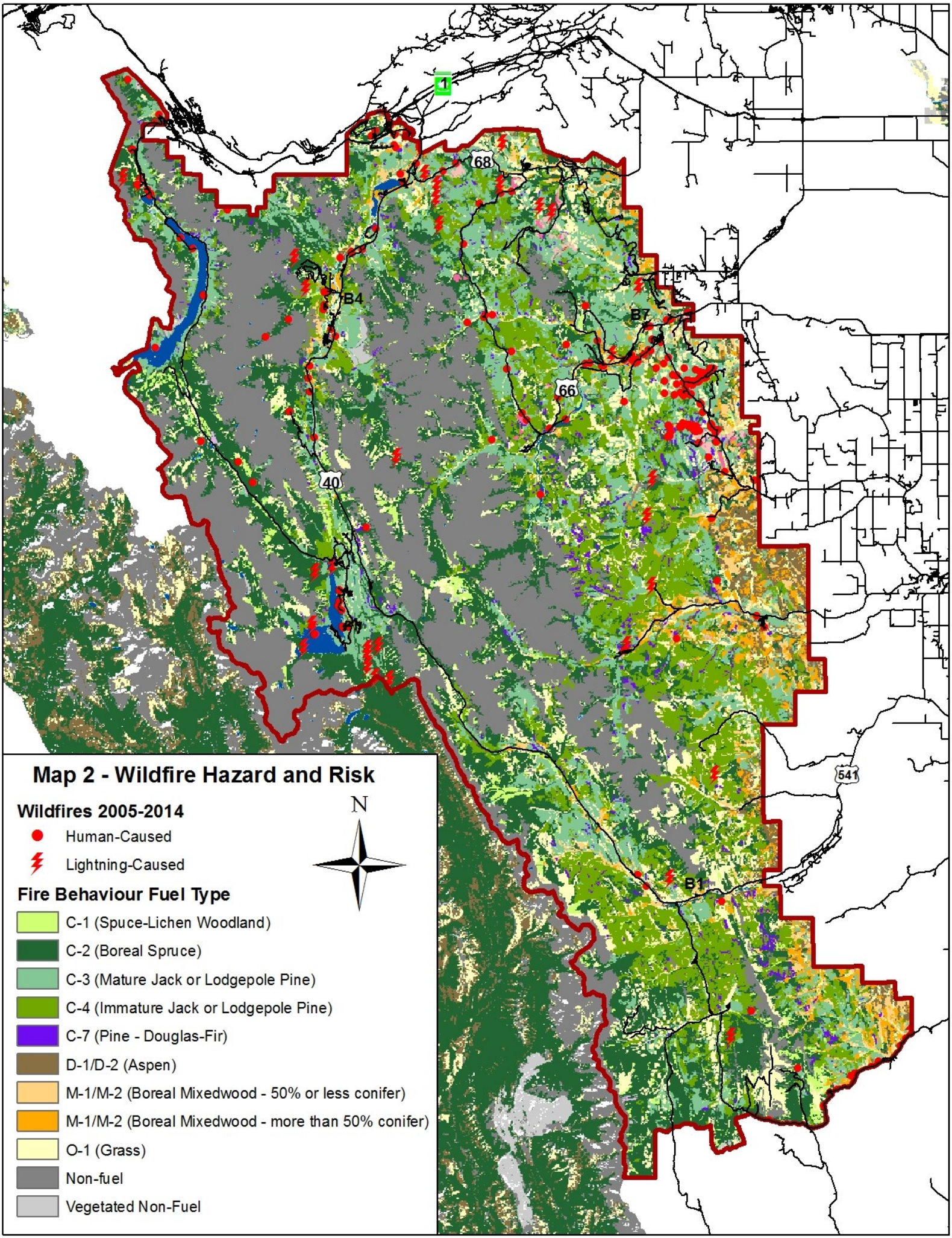
Fire incidence data indicates that 539 wildfires were discovered within Kananaskis Improvement District. Ninety-four percent (94%) were human-caused and six percent (6%) were lightning-caused (Table 1 and Map 2).

Table 1: Fire Incidence by Cause (2005 – 2014)

Wildfire Cause	Number of Fires	Percent of Total
Human	507	94%
Lightning	32	6%
Totals	**539**	**100.0%**

The majority of the human-caused wildfires were abandoned campfires in the major recreation corridors and were contained at less than 0.1 hectares. There were also 10 wildfires caused by powerlines from 2005 to 2011.

The risk of wildfire in the planning area exists and most frequently occurs in areas accessible to the recreating public.



Map 2 - Wildfire Hazard and Risk

Wildfires 2005-2014

- Human-Caused
- Lightning-Caused

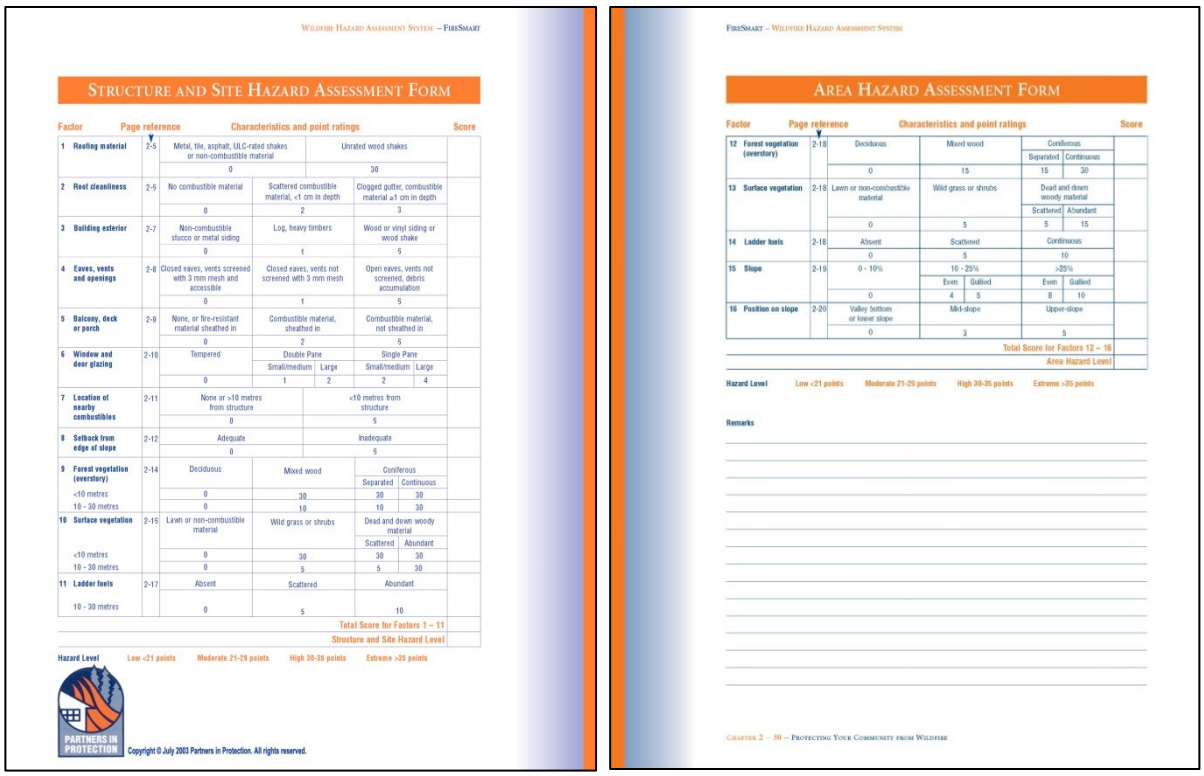
Fire Behaviour Fuel Type

- C-1 (Spuce-Lichen Woodland)
- C-2 (Boreal Spruce)
- C-3 (Mature Jack or Lodgepole Pine)
- C-4 (Immature Jack or Lodgepole Pine)
- C-7 (Pine - Douglas-Fir)
- D-1/D-2 (Aspen)
- M-1/M-2 (Boreal Mixedwood - 50% or less conifer)
- M-1/M-2 (Boreal Mixedwood - more than 50% conifer)
- O-1 (Grass)
- Non-fuel
- Vegetated Non-Fuel

3.3 FireSmart Hazard Assessments

FireSmart Structure and Site (PZ1-2) and Area (PZ3) hazard assessments (Figure 1) were conducted on all KID development areas.

Hazard levels for each development (Table 2) are based on average conditions for the development therefore individual structures within the development may have lower or higher hazard levels based on the specific characteristics of that structure.



WILDFIRE HAZARD ASSESSMENT SYSTEM – FIRESMART

STRUCTURE AND SITE HAZARD ASSESSMENT FORM

Factor	Page reference	Characteristics and point ratings				Score
1 Roofing material	2-5	Metal, tile, asphalt, ULC-rated shakes or non-combustible material		Unrated wood shakes		
		0		30		
2 Roof cleanliness	2-5	No combustible material	Scattered combustible material, <1 cm in depth	Clogged gutter, combustible material ≥1 cm in depth		
		0	2	3		
3 Building exterior	2-7	Non-combustible stucco or metal siding	Log, heavy timbers	Wood or vinyl siding or wood shake		
		0	1	5		
4 Eaves, vents and openings	2-8	Closed eaves, vents screened with 3 mm mesh and accessible	Closed eaves, vents not screened with 3 mm mesh	Open eaves, vents not screened, debris accumulation		
		0	1	5		
5 Balcony, deck or porch	2-9	None, or fire-resistant material sheathed in	Combustible material, sheathed in	Combustible material, not sheathed in		
		0	2	5		
6 Window and door glazing	2-10	Tempered	Double Pane		Single Pane	
			Small/medium	Large	Small/medium	Large
		0	1	2	2	4
7 Location of nearby combustibles	2-11	None or >10 metres from structure		<10 metres from structure		
		0		5		
8 Setback from edge of slope	2-12	Adequate		Inadequate		
		0		5		
9 Forest vegetation (overstory)	2-14	Deciduous	Mixed wood	Coniferous		
				Separated	Continuous	
<10 metres		0	30	30	30	
10 - 30 metres		0	10	10	30	
10 Surface vegetation	2-15	Lawn or non-combustible material	Wild grass or shrubs	Dead and down woody material		
				Scattered	Abundant	
<10 metres		0	30	30	30	
10 - 30 metres		0	5	5	30	
11 Ladder fuels	2-17	Absent	Scattered	Abundant		
10 - 30 metres		0	5	10		
						Total Score for Factors 1 – 11
						Structure and Site Hazard Level

Hazard Level: Low <21 points | Moderate 21-29 points | High 30-35 points | Extreme >35 points

PARTNERS IN PROTECTION

FIRESMART – WILDFIRE HAZARD ASSESSMENT SYSTEM

AREA HAZARD ASSESSMENT FORM

Factor	Page reference	Characteristics and point ratings				Score
12 Forest vegetation (overstory)	2-18	Deciduous	Mixed wood	Coniferous		
				Separated	Continuous	
		0	15	15	30	
13 Surface vegetation	2-18	Lawn or non-combustible material	Wild grass or shrubs	Dead and down woody material		
				Scattered	Abundant	
		0	5	5	15	
14 Ladder fuels	2-18	Absent	Scattered	Continuous		
		0	5	10		
15 Slope	2-19	0 - 10%	10 - 25%	>25%		
			Even	Gullied	Even	Gullied
		0	4	5	8	10
16 Position on slope	2-20	Valley bottom or lower slope	Mid-slope	Upper-slope		
		0	3	5		
						Total Score for Factors 12 – 16
						Area Hazard Level

Hazard Level: Low <21 points | Moderate 21-29 points | High 30-35 points | Extreme >35 points

Remarks

Figure 1: FireSmart Hazard Assessment Forms

Several developments have seen a decrease in Structure/Site hazard score due to the replacement of combustible wood-shake with fire-rated roofing materials and the reduction of wildland fuels in Priority Zones 1 and 2 and several have seen a decrease in the Area hazard score due to the KID fuels reduction projects that have occurred.

Other developments still have High/Extreme hazard ratings, despite significant FireSmart fuel modification, for the following reasons:

- **Lack of adequate Zone 1 clearance from combustible wildland fuels**
- **Need for additional Zone 2-3 fuel modification in understory reduction areas**
- **Flammable exterior structure materials (roofing, siding, decking)**
- **Combustible material piles within 10 metres of the structure**
- **Setback from edge of slope**

Table 2: FireSmart Hazard Assessments

Development Area	Structure & Site Hazard (0-30 metres)	Area Hazard (30-100 metres)
Aster Patrol Cabin	Extreme	High
Barrier Powerplant	Low	Moderate
Barrier Visitor Information Centre	Extreme	Moderate
Boulton Creek	Extreme	Extreme
Boundary Ranch	Extreme	Extreme
Bow Valley Prov Park Housing/Administration	High	Extreme
Camp Adventure	Extreme	Moderate
Camp Cadicasu	Extreme	High
Camp Chief Hector YMCA	Extreme	High
Camp Horizon	Extreme	High
Canmore Nordic Centre	Moderate	Moderate
Elbow Fire Base	Extreme	Moderate
Elbow Highway Maintenance Yard	Low	Low
Elbow Valley Visitor Info Centre	Extreme	High
Mt. Engadine Lodge	Extreme	Extreme
Evan-Thomas Water & Wastewater Treatment Plant	Extreme	High
Fortress Junction Gas Station	Extreme	Extreme
Fortress Mountain Ski Hill	Moderate	Moderate
Highwood Fire Base	Extreme	Extreme
Highwood House	Moderate	High
Junior Forest Warden Camp	Extreme	Extreme
Kananaskis Emergency Services Centre	Moderate	Moderate
Kananaskis Country Golf Course	Extreme	High
Kananaskis Golf Course Subdivision	Extreme	High
Kananaskis Village	Extreme	High
Kananaskis Wilderness Hostel	Moderate	Moderate
King Creek Housing/PLPP Administration Centre	Extreme	High
Lower Kananaskis Lake Cabin Subdivision	Extreme	High
McLean Creek Campers Centre	Extreme	Extreme
Mt. Kidd Mobile Home Park	Extreme	High
Mt. Kidd RV Park & Camper Centre	Extreme	Extreme
Nakiska Ski Resort	Extreme	Extreme
PLPP Maintenance Compound	High	Extreme
PLPP Visitor Information Centre	Extreme	Extreme
Pocaterra Hut	Extreme	Extreme
Pocaterra Powerplant/Housing	Extreme	Extreme
Ribbon Creek Patrol Cabin	Extreme	Extreme
Sheep River Administration Centre	Extreme	Extreme
Sundance Lodges	Extreme	Extreme
Three-Isle Patrol Cabin	Extreme	Extreme
Three Sisters Powerplant	Low	Moderate
Tim Horton Children's Ranch	Moderate	High
Tombstone Patrol Cabin	Extreme	Extreme
Turbine Patrol Cabin	Extreme	Extreme
U of Calgary Field Station	Extreme	High
William Watson Lodge	Extreme	High

High to Extreme Structure & Site hazard levels are mainly due to combustible exterior structure materials, exposed undersides on decks and porches, and lack of adequate Priority Zone 1 and 2 vegetation management.

4 Vegetation Management Options

The goal of vegetation management is to create a fuel-reduced buffer between structures and flammable wildland vegetation to reduce the intensity and rate of spread of wildfire approaching or leaving the development. Vegetation management options are proposed at the appropriate scale, based on hazard and risk, to reduce the threat of wildfire to developed areas. **While fuel modification projects reduce the threat of wildfire to developments, they do not ensure structure survival under all hazard conditions.**

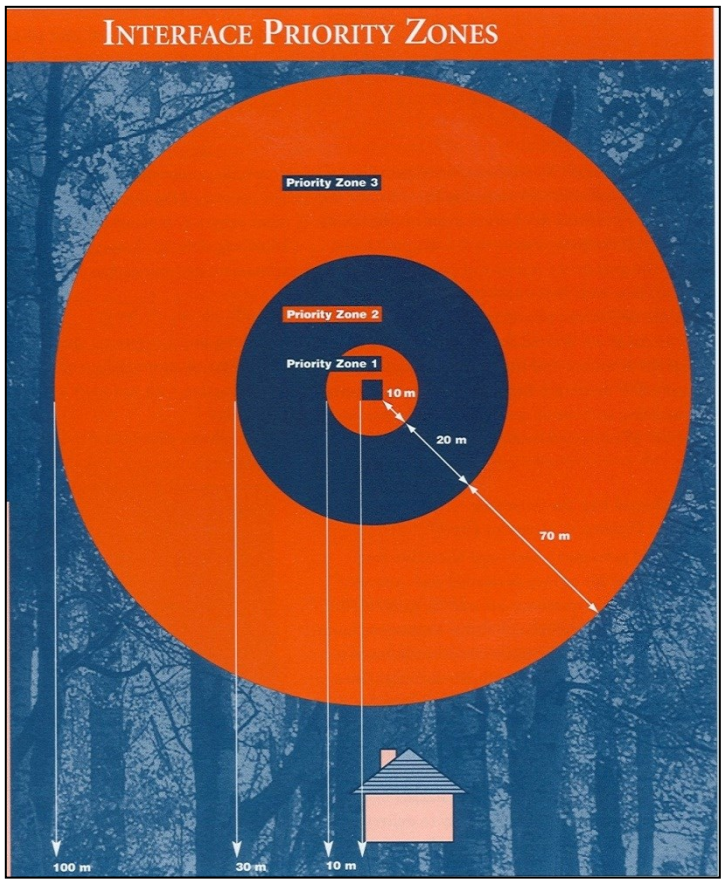


Figure 2 – Interface Priority Zones

Vegetation management consists of one or any combination of the following options:

- Fuel removal
- Fuel reduction
- Species conversion

Complete descriptions of the methods included in each of the above options are included in *"Fire-Smart Protecting Your Community from Wildfire"* (Partners in Protection 2003).

FireSmart standards refer to three interface priority zones (Figure 2) with vegetation management for interface structures recommended in Priority Zones 1 and 2 at a minimum and in Priority Zone 3 based on hazard and risk.

4.1 Existing Vegetation Management

The following vegetation management projects have occurred (Maps 3A-3L):

- Priority Zone 1-2 FireSmart tree flagging has been completed on 39 of 70 lots at the Lower Kananaskis Lake Cottage Subdivision however not all of the flagged lots have completed the work
- Approximately 300 hectares of Priority Zone 2-3 FireSmart fuels reduction projects have been completed by KID, ESRD, and facility operators (Table 3)
- Approximately 2000 hectares of landscape-level prescribed fires have been conducted by ESRD and Banff National Park in the Spray, Kananaskis, and Sheep River valleys
- The West Bragg Creek containment area was developed to provide containment options for wildfire approaching West Bragg Creek developments from the west (Map 3F)

The majority of the FireSmart fuel modification projects were completed as understory reduction prescriptions to reduce the potential of overstory blowdown. These prescriptions are intended to see two or more entries over the long-term to eventually reduce fuels to acceptable levels. Some of the completed projects are ready for the second entry.

Recommendation 1: Begin the second entries on all understory fuels reduction projects once all priority fuel modification projects have been completed.

4.2 Vegetation Management Maintenance

Fuel modification area maintenance schedules depend on many factors including fuel type, soil and moisture conditions, and specific weather events. Maintenance of all fuel modification areas must be completed at the appropriate intervals to ensure fuelbreak effectiveness is maintained into the future.

The responsibility for fuel modification maintenance has not been determined by the FireSmart Committee.

Inspections of all projects are recommended at five-year intervals with maintenance occurring as necessary. Maintenance methods are site dependent and may include hand-crews, low-intensity prescribed burning, and/or mechanical treatments.

Recommendation 2: Determine who is responsible for fuel modification maintenance and ensure that all completed fuel modification projects are inspected on a regular basis and maintained as necessary.

Table 3: Existing FireSmart Vegetation Management

Location	*Completed By	Year	Area (Ha)	Type	Method	*GOA Land Manager	Comments
Lower Kananaskis Lake Cabin Subdivision South Fireguard	Parks	1994	2.8	Removal	Hand Burn	Parks	Maintenance completed by KID winter/2014
Camp Horizon South	Forestry	2002	3.3	Reduction	Mechanical Burn	Forestry	Maintenance conducted by Forestry 2009/10
Elbow Firebase	Forestry	2002	5.7	Reduction	Mechanical Burn	Forestry	Maintenance ongoing with Forestry fire crews
Kananaskis Emergency Services Centre	Forestry	2002	6.1	Reduction	Mechanical Burn & Chip	Forestry	Maintenance ongoing with Forestry fire crews
Canmore Nordic Centre West	Forestry	2003-04	117.7	Removal	Mechanical Burn	Parks	Maintenance completed on 63 ha in 2014
Kananaskis Golf Course Subdivision	KID & Forestry	2007-09	4.6	Reduction	Hand Burn	Parks	
Mt. Kidd Mobile Home Park	KID & Forestry	2008-10	7.3	Reduction	Hand Burn	Parks	
Lower Kananaskis Lake Cabin Subdivision Community Reserves	KID	2009	3.1	Reduction	Hand Burn	Forestry	
Lower Kananaskis Lake Cabin Subdivision East & North Fuelbreaks	KID	2010	21.1	Reduction	Hand Burn	Parks	North-end of east fuelbreak requires some final pick-and-pile debris cleanup
BVPP Housing/Administration Centre	KID	2010	5.0	Reduction	Hand Chip	Parks	
King Creek Housing/PLPP Administration Centre	KID	2010	8.1	Reduction	Hand Chip & Burn	Parks	
Kananaskis Village Hotels and Residences	KID	2010	23.1	Reduction	Hand Chip	Parks	
Kananaskis Emergency Services Centre Douglas Fir Restoration Project	Forestry	2010	8.4	Reduction	Mechanical Burn	Forestry & Parks	
Tim Horton Children's Ranch	KID	2011	7.1	Reduction	Hand Chip	Forestry	
Camp Chief Hector YMCA South Boundary	KID	2010-11	26.8	Reduction	Hand Burn	Parks	
Camp Horizon East & West	KID	2013	7.4	Reduction	Hand Burn	Forestry	
Camp Cadicasu	KID	2013	5.3	Reduction	Hand Burn	Forestry	
West Bragg Creek Containment Area	Forestry	2013		Removal	Harvest Burn	Forestry	
William Watson Lodge	KID	2014	14.2	Reduction	Hand Burn	Parks	
U of Calgary Field Station	KID	2014	13.8	Reduction	Hand Burn	Forestry	
Camp Adventure	KID	2014	6.4	Reduction	Hand Burn	Forestry & Parks	
	Total Area (Ha)		**297.3**				

*Parks – Alberta Environment and Sustainable Resource Development, Parks Division
Forestry – Alberta Environment and Sustainable Resource Development, Forestry and Emergency Response Division
KID – Kananaskis Improvement District

4.3 Proposed Vegetation Management

Vegetation management is proposed at the structure (Priority Zone 1-2) and community (Priority Zone 2-3) levels to provide FireSmart clearance adjacent to structures.

4.3.1 Priority Zone 1-2

Priority Zone 1-2 is the **highest priority area** for vegetation management and is inadequate for many of the structures in the planning area. The structure owner or facility operator is primarily responsible for vegetation management in Priority Zone 1-2.

FireSmart Zone 1 vegetation management standards include:

- Removal of flammable forest vegetation within 10 metres of structures
- Removal of all ladder fuels (limbs) to a minimum height of 2 metres from ground level on residual coniferous overstory trees
- Removal of all dead and down forest vegetation from the forest floor
- Removal of all combustible needles, leaves, and native grass from on and around structures
- Establishment and maintenance of a non-combustible surface cover around the structure including the use of FireSmart landscaping species
- Removal of all combustible material piles (firewood, lumber, etc) within 10 metres of the structure

For more information on FireSmart Zone 1 standards refer to *FireSmart – Protecting Your Community from Wildfire* (PIP 2003).

Recommendation 3: Educate and encourage structure owners and facility operators to improve Zone 1-2 clearance around structures.

4.3.2 Priority Zone 2-3

Priority Zone 2-3 vegetation management is the responsibility of the Provincial government land management agencies on vacant crown lands and is managed by KID on behalf of the government land managers through grant funding. Lease-holders and facility operators will be encouraged to complete fuel modification on their lease-hold lands.

Vegetation management is proposed in several areas surrounding development areas (Table 4 and Maps 3A-3L). Fuels reduction projects have been prioritized into Priority A or B, based on FireSmart hazard and values at risk.

Fuels reduction areas identified in this plan are conceptual at this time. **Detailed fuel modification planning is required prior to implementation to identify prescription details and unit boundaries.**

Recommendation 4: Zone 2-3 fuels reduction is the responsibility of the Provincial government land management agencies on vacant Crown lands and is managed by KID. Lease-holders and facility operators will be encouraged to complete fuel modification on their lease-hold lands. All stakeholders should fund and implement fuels reduction based on the priorities identified in this plan.

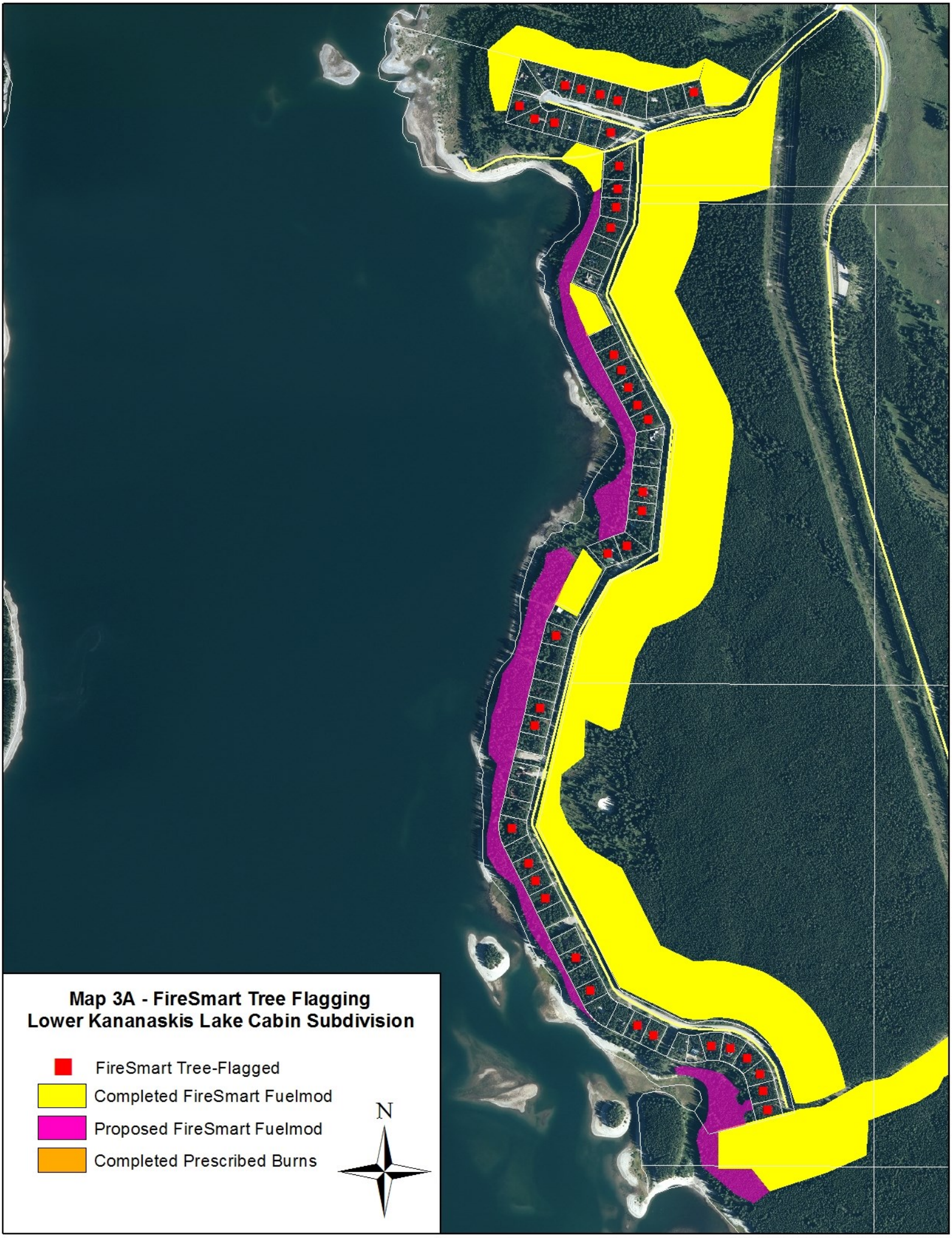
Table 4: Proposed Priority Vegetation Management Areas

Priority	Project Name	*Area (Ha)	Land Manager
A	Lower Kananaskis Lake Cabin Subdivision	5.4	ESRD - Lands
A	PLPP Admininstration Centre	5.7	ESRD – Parks
A	Evan-Thomas Water & Wastewater Treatment Plant	2.8	ESRD – Parks
A	Kananaskis Golf Course Subdivision	3.3	ESRD – Parks
A	Mt Kidd Mobile Home Park	7.5	ESRD – Parks
A	PLPP Visitor Information Centre	3.2	ESRD – Parks
A	Tim Horton Children's Ranch	7.5	ESRD – Lands
A	BVPP Housing	19.3	ESRD - Parks
A	Canmore Nordic Centre East	3.5	ESRD - Parks
A	Sheep River Administration Centre	7.0	ESRD – Parks
A	Pocaterra Powerplant/Housing	2.2	ESRD – Parks
	Priority A Total Area	**67.4**	
B	Nakiska Ski Resort	9.8	ESRD – Parks
B	Kananaskis Country Golf Course	10.3	ESRD – Parks
B	Sundance Lodges	6.0	ESRD - Parks
B	Mt. Engadine Lodge	4.2	ESRD - Parks
B	Boundary Ranch	9.3	ESRD - Lands
B	Mt. Kidd RV Park & Camper Centre	1.3	ESRD - Parks
B	Fortress Junction Gas Station	3.2	ESRD - Parks
B	Boulton Creek	4.8	ESRD - Parks
B	Highwood House	3.1	ESRD – Parks & Lands
B	McLean Creek Campers Centre	0.8	ESRD - Parks
B	Elbow Valley Visitor Information Centre	0.3	ESRD - Parks
B	Pocaterra Hut	0.9	ESRD - Parks
B	Kananaskis Wilderness Hostel	0.8	ESRD - Parks
B	PLPP Maintenance Compound	5.2	ESRD - Parks
B	Highwood Firebase	1.0	ESRD – Lands
B	Parks Patrol Cabins (Turbine, Three Isle, Aster, Tombstone, & Ribbon Creek)	1.8	ESRD – Parks
A	Junior Forest Warden Camp	7.0	ESRD – Lands
	Priority B Total Area	**69.8**	

* Areas are approximate and will change based on field assessments and detailed prescription development

4.3.3 Landscape-Level Containment Areas

While it is not the intent of this Plan to identify landscape-level containment area strategies, several units are recommended in the Kananaskis Country Vegetation Management Strategy (Walkinshaw, 2008) and ESRD is developing a vegetation management strategy for the Evan-Thomas Provincial Recreation Area. Landscape-level wildfire containment areas are the cooperative responsibility of Alberta ESRD Wildfire Management Branch and Parks Division.


Map 3A - FireSmart Tree Flagging
Lower Kananaskis Lake Cabin Subdivision
FireSmart Tree-Flagged
Completed FireSmart Fuelmod
Proposed FireSmart Fuelmod
Completed Prescribed Burns
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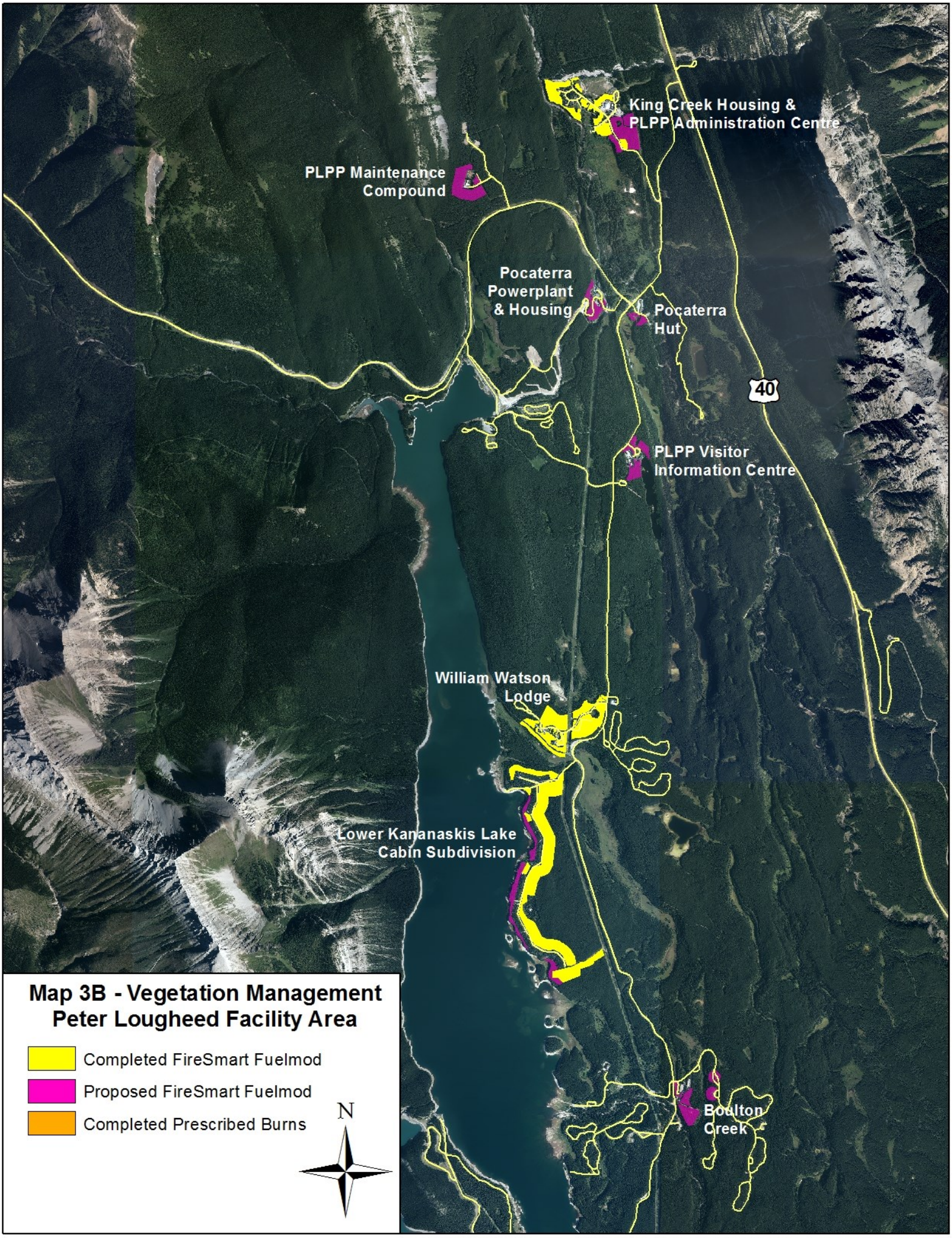
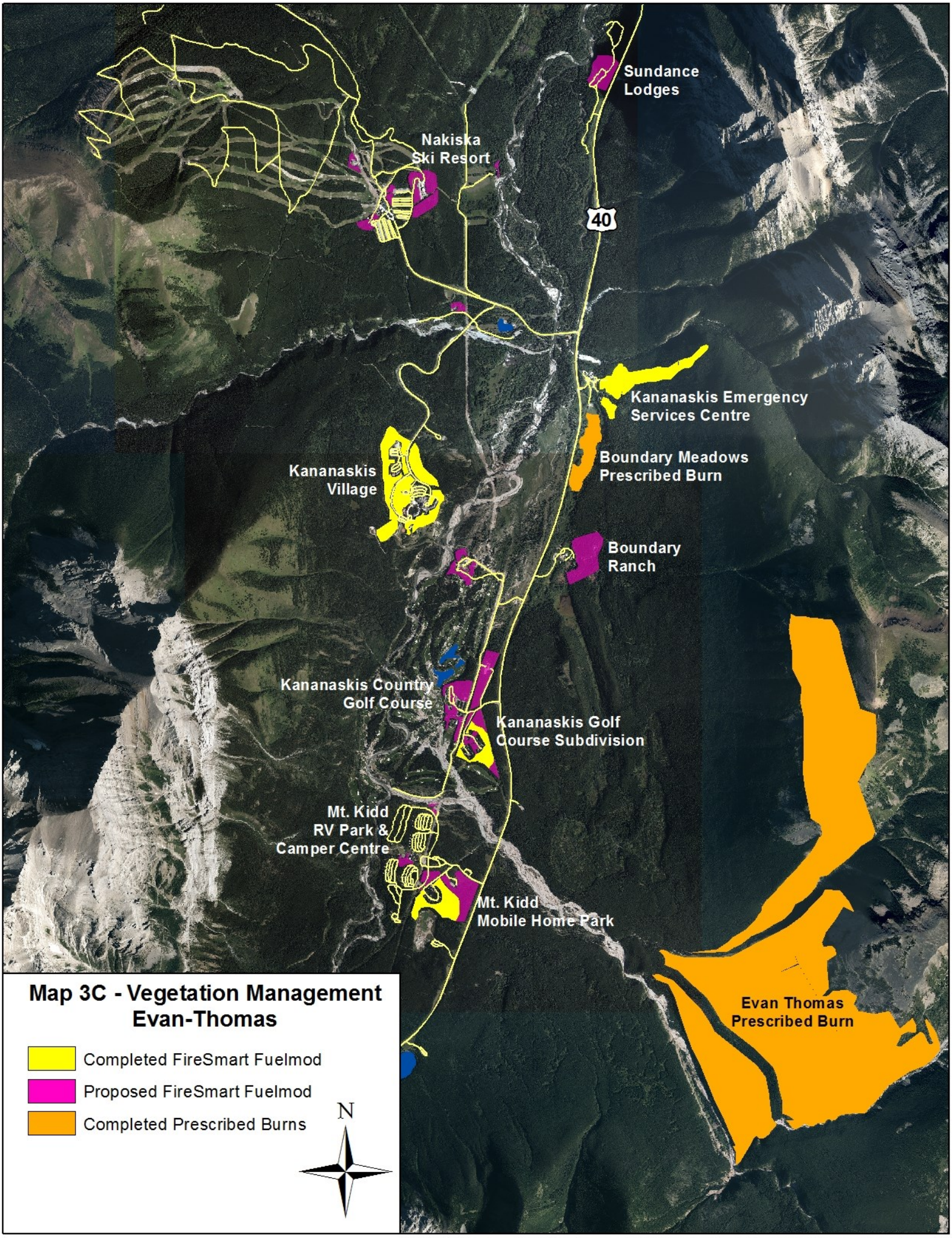
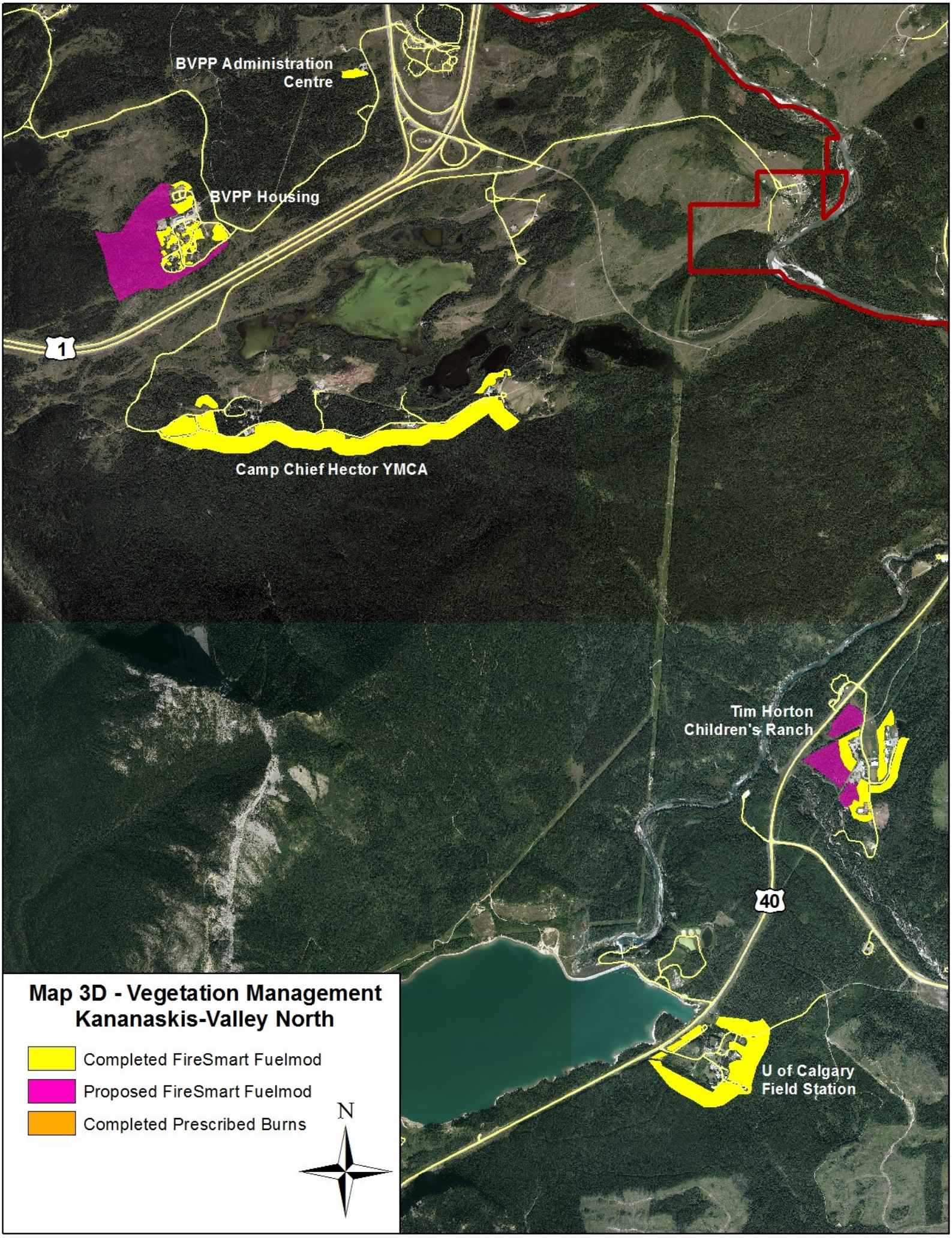
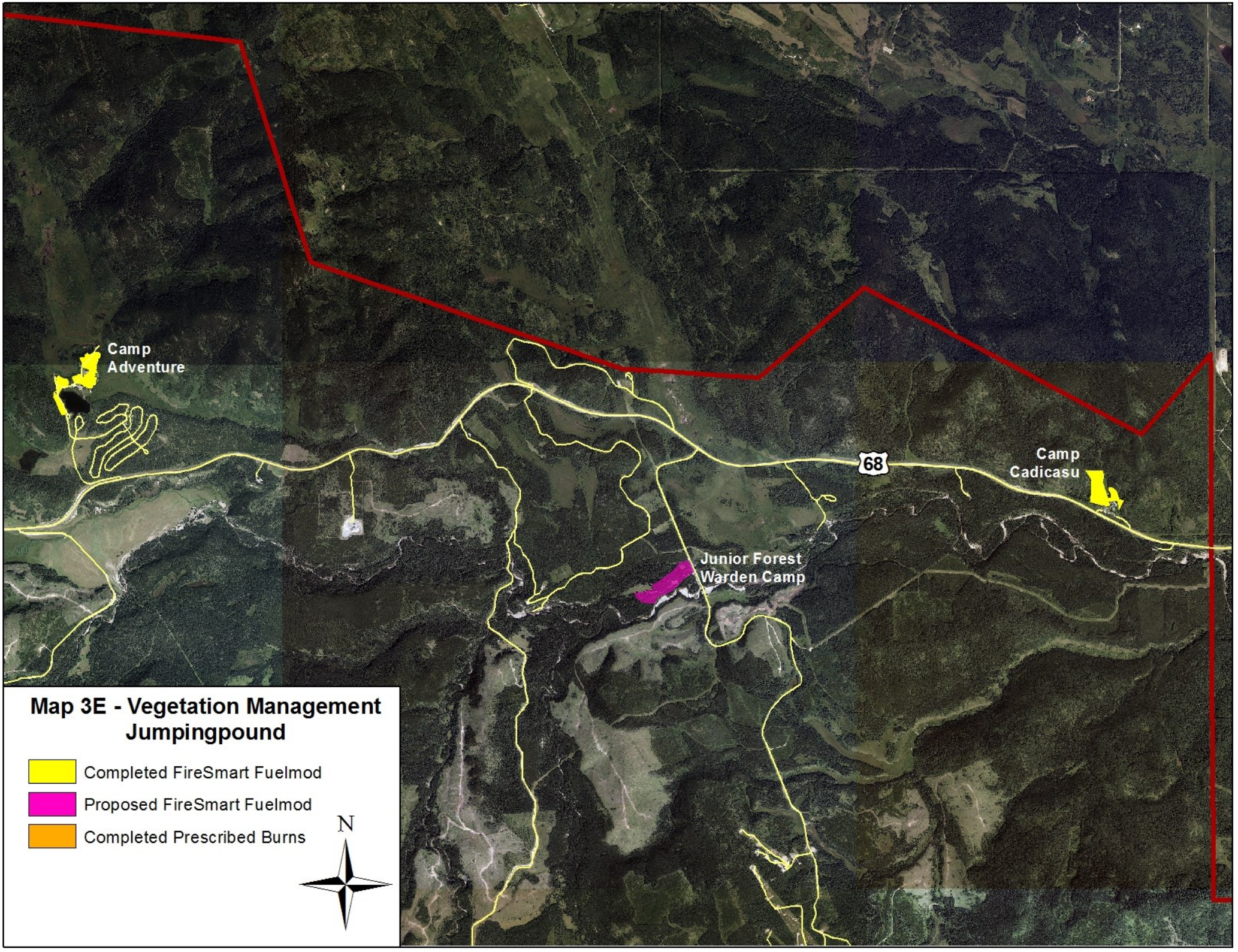
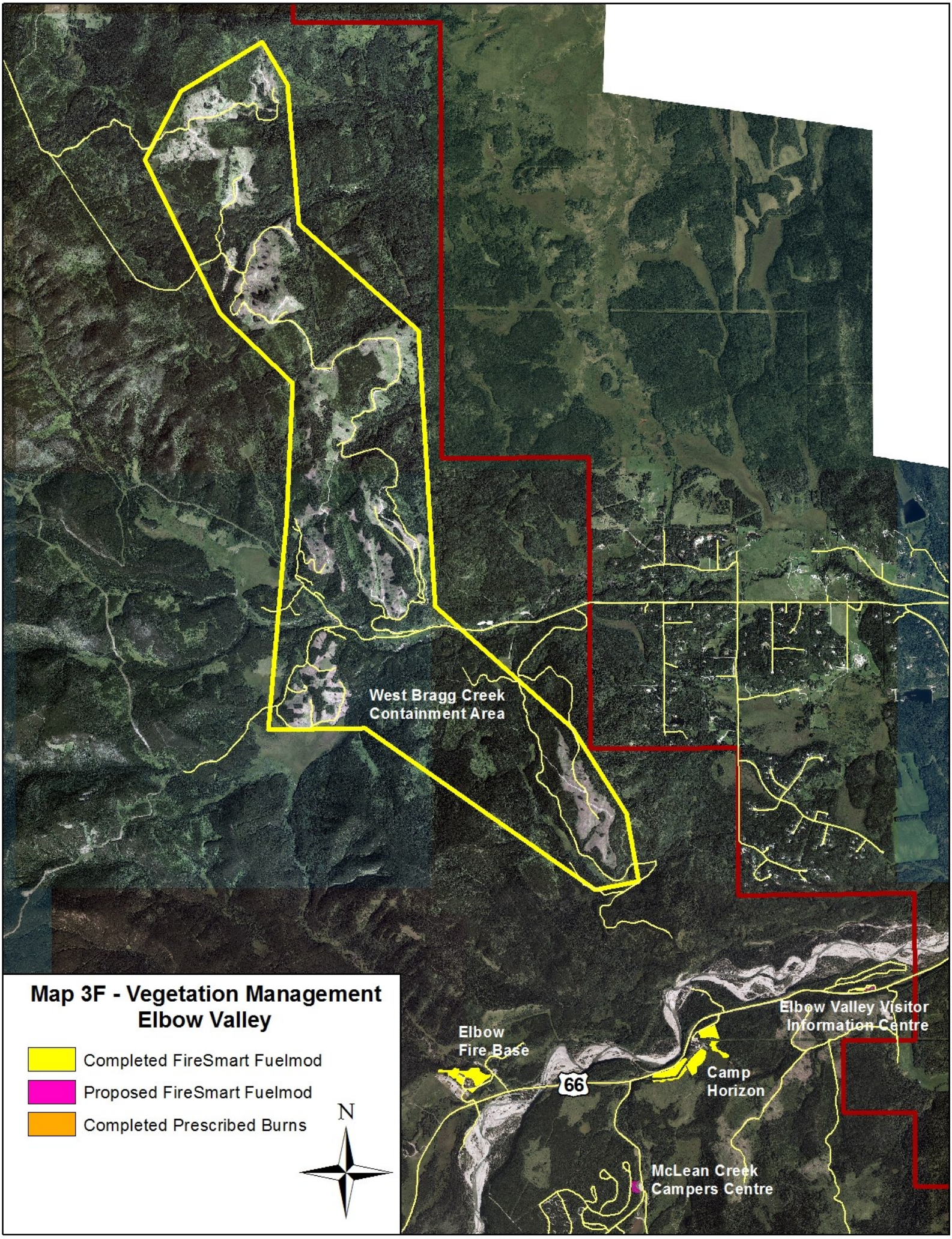
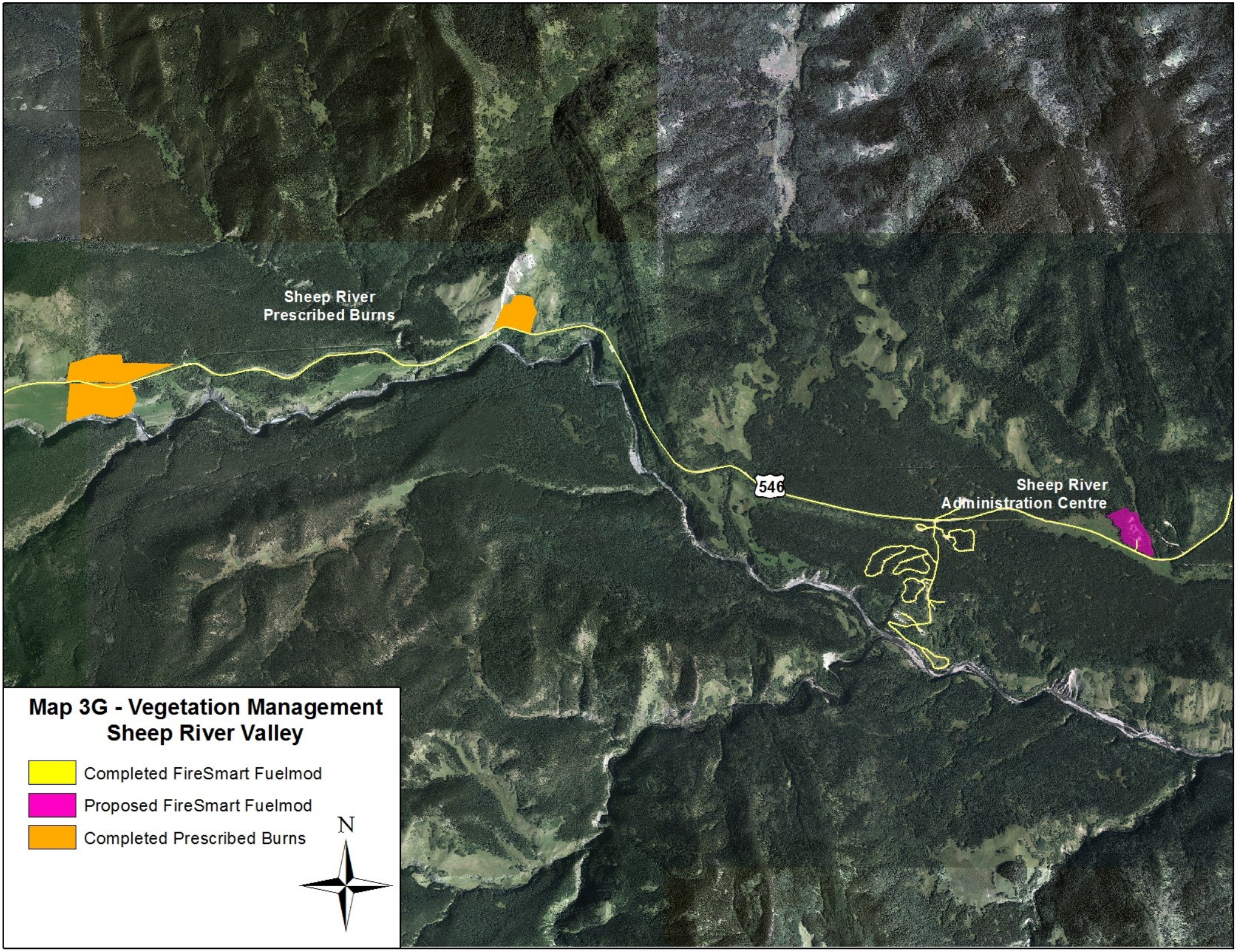

King Creek Housing &
PLPP Administration Centre
PLPP Maintenance
Compound
Pocaterra
Powerplant
& Housing
Pocaterra
Hut
40
PLPP Visitor
Information Centre
William Watson
Lodge
Lower Kananaskis Lake
Cabin Subdivision
Boulton
Creek
Map 3B - Vegetation Management
Peter Lougheed Facility Area
Completed FireSmart Fuelmod
Proposed FireSmart Fuelmod
Completed Prescribed Burns
N

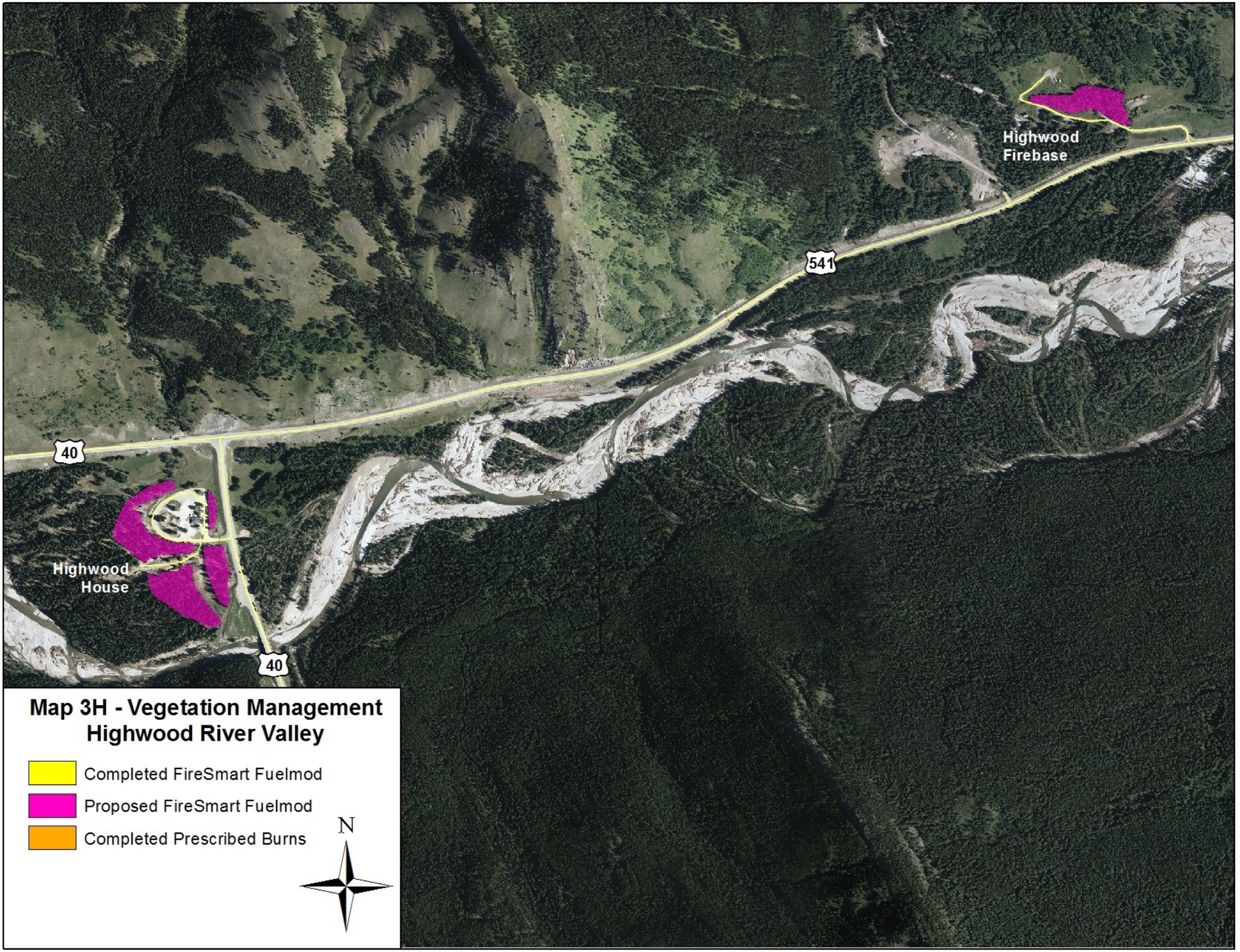

Sundance Lodges
Nakiska Ski Resort
40
Kananaskis Emergency Services Centre
Boundary Meadows Prescribed Burn
Kananaskis Village
Boundary Ranch
Kananaskis Country Golf Course
Kananaskis Golf Course Subdivision
Mt. Kidd RV Park & Camper Centre
Mt. Kidd Mobile Home Park
Evan Thomas Prescribed Burn
Map 3C - Vegetation Management
Evan-Thomas
Completed FireSmart Fuelmod
Proposed FireSmart Fuelmod
Completed Prescribed Burns
N

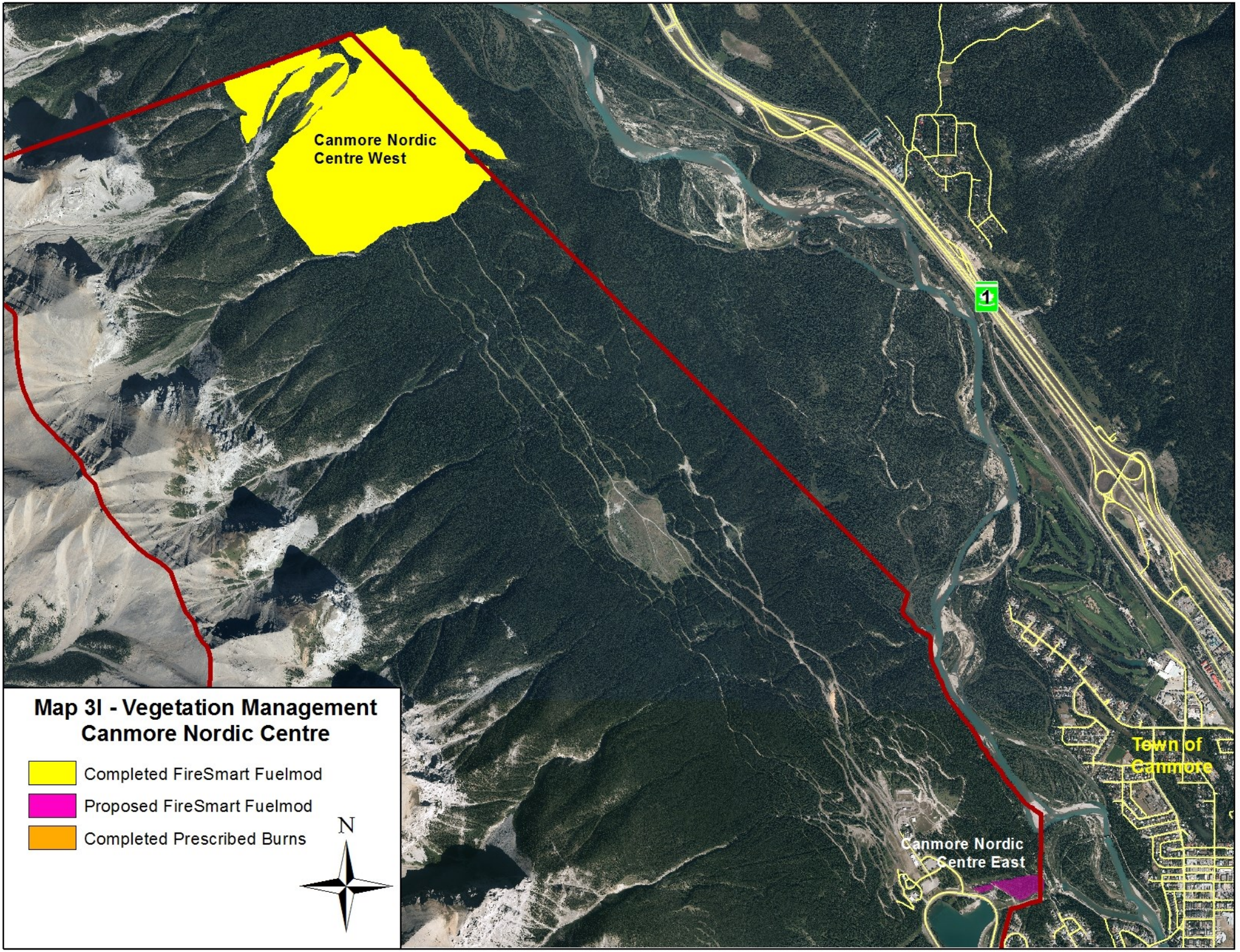

BVPP Administration Centre
BVPP Housing
1
Camp Chief Hector YMCA
Tim Horton Children's Ranch
40
U of Calgary Field Station
Map 3D - Vegetation Management
Kananaskis-Valley North
Completed FireSmart Fuelmod
Proposed FireSmart Fuelmod
Completed Prescribed Burns
N


Camp
Adventure
68
Camp
Cadicasu
Junior Forest
Warden Camp
Map 3E - Vegetation Management
Jumpingpound
Completed FireSmart Fuelmod
Proposed FireSmart Fuelmod
Completed Prescribed Burns
N


West Bragg Creek
Containment Area
Elbow
Fire Base
66
Camp
Horizon
Elbow Valley Visitor
Information Centre
McLean Creek
Campers Centre
Map 3F - Vegetation Management
Elbow Valley
Completed FireSmart Fuelmod
Proposed FireSmart Fuelmod
Completed Prescribed Burns
N


Sheep River
Prescribed Burns
546
Sheep River
Administration Centre
Map 3G - Vegetation Management
Sheep River Valley
Completed FireSmart Fuelmod
Proposed FireSmart Fuelmod
Completed Prescribed Burns
N


Highwood
Firebase
541
40
Highwood
House
40
Map 3H - Vegetation Management
Highwood River Valley
Completed FireSmart Fuelmod
Proposed FireSmart Fuelmod
Completed Prescribed Burns
N


Canmore Nordic
Centre West
1
Town of
Canmore
Canmore Nordic
Centre East
Map 3I - Vegetation Management
Canmore Nordic Centre
Completed FireSmart Fuelmod
Proposed FireSmart Fuelmod
Completed Prescribed Burns
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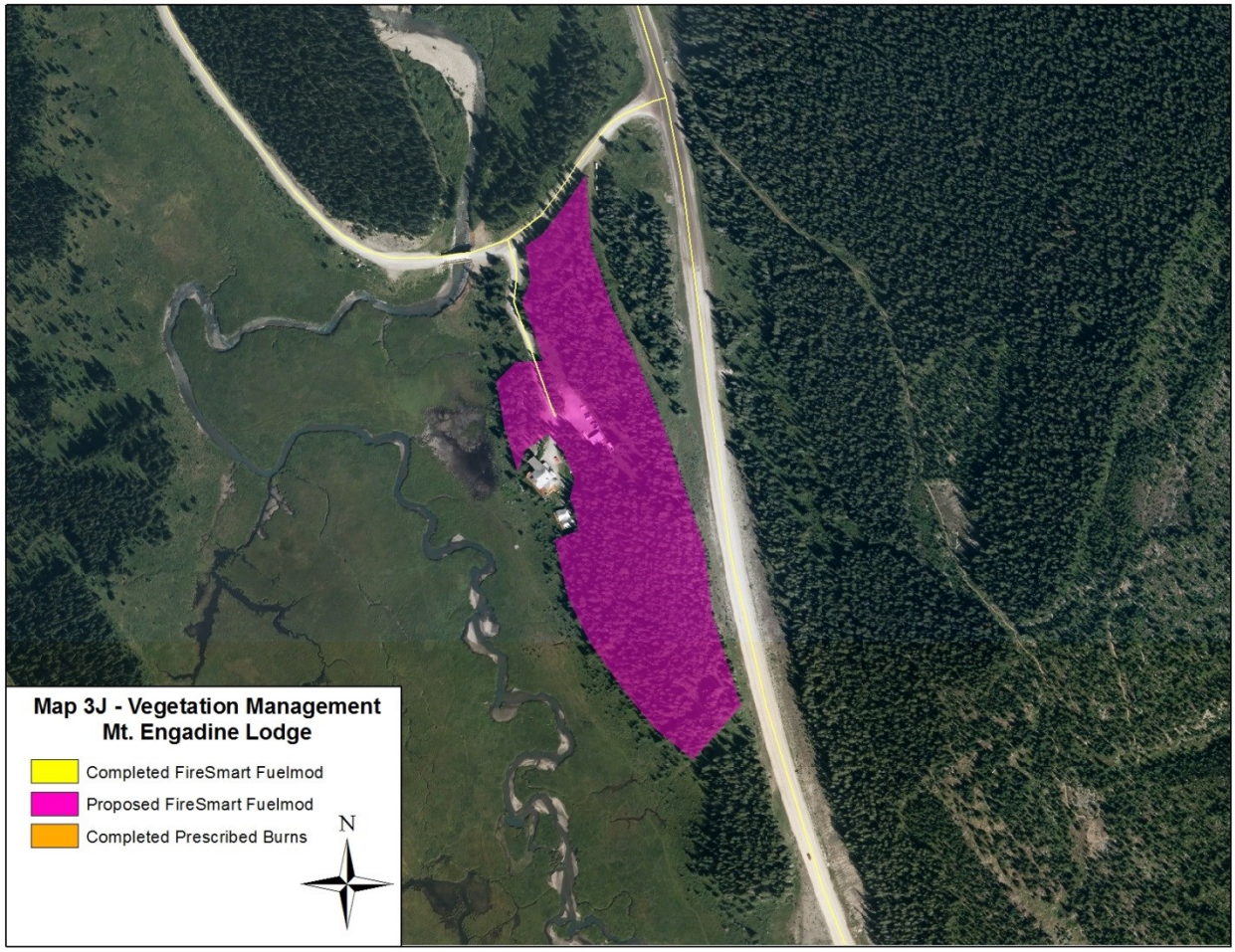
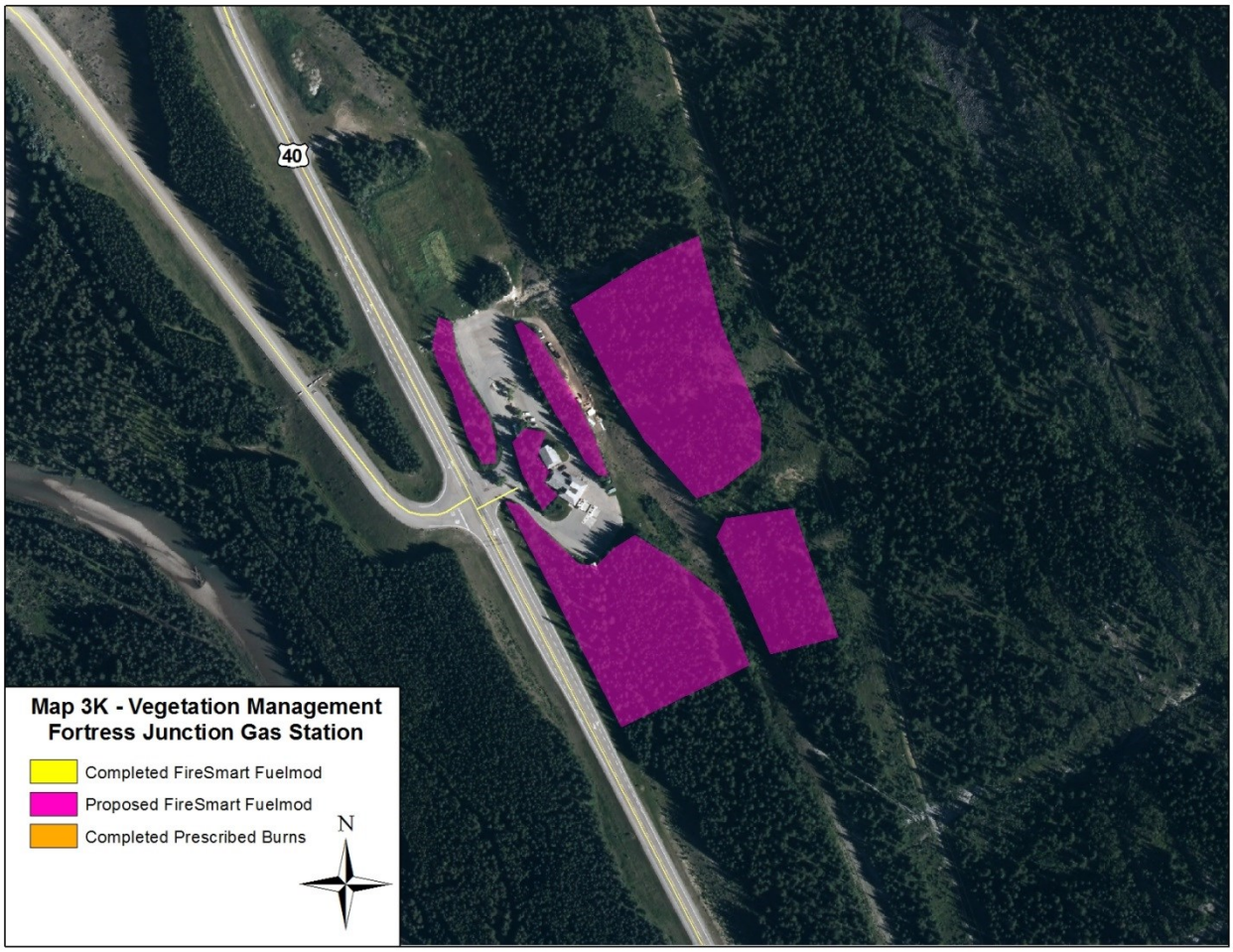

Map 3J - Vegetation Management
Mt. Engadine Lodge
Completed FireSmart Fuelmod
Proposed FireSmart Fuelmod
Completed Prescribed Burns
N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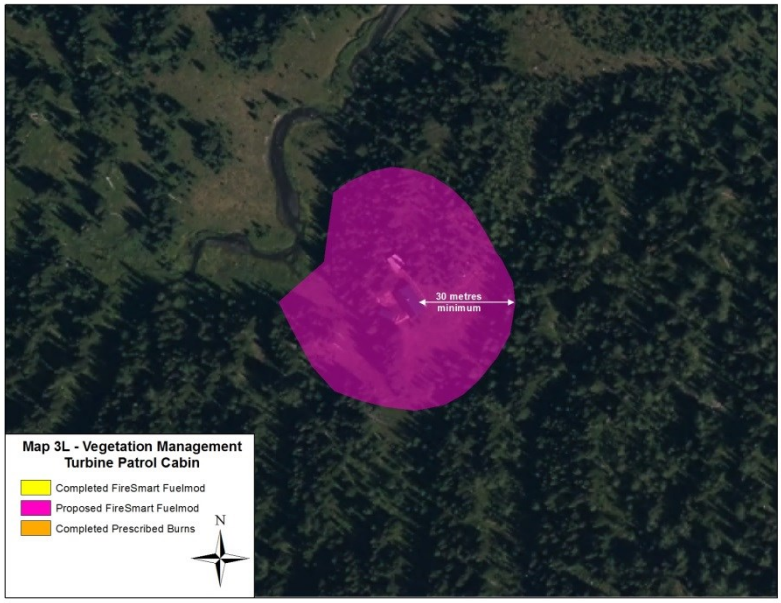
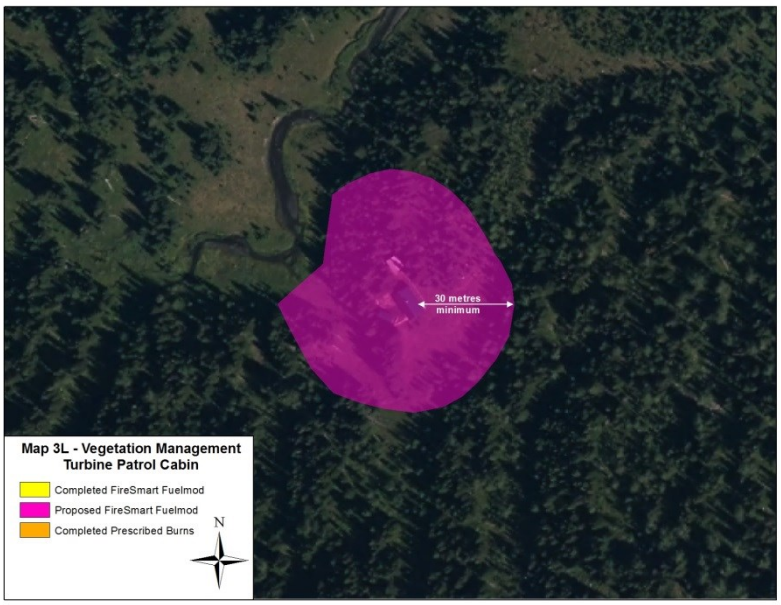
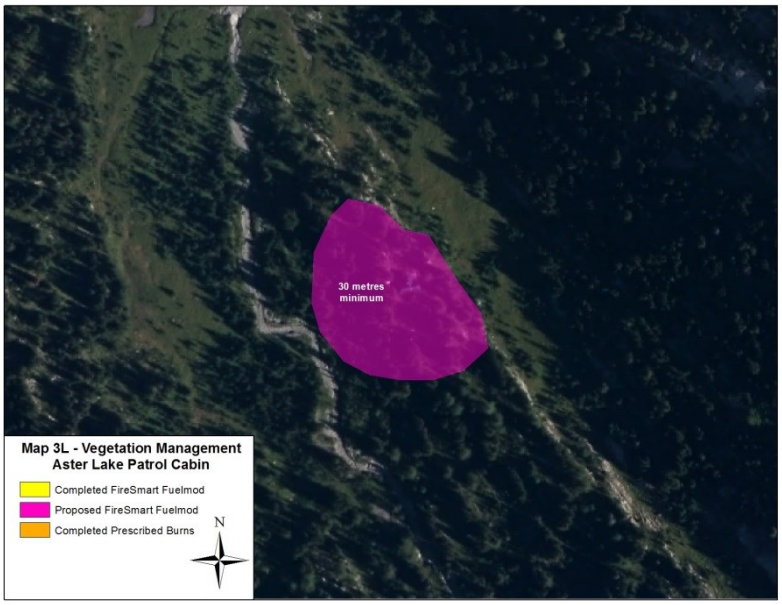
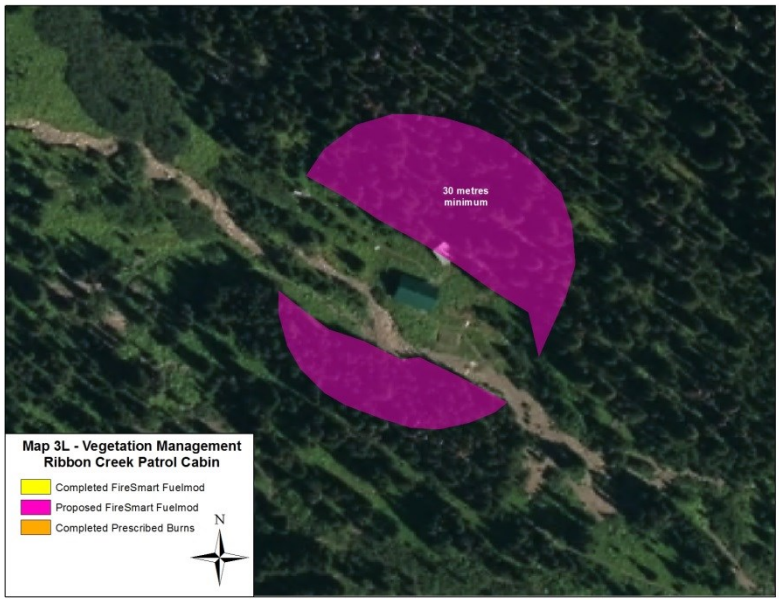
Map 3K - Vegetation Management
Fortress Junction Gas Station
Completed FireSmart Fuelmod
Proposed FireSmart Fuelmod
Completed Prescribed Burns
N

Map 3L – Parks Patrol Cabins









5. Development and Legislation Options

Consideration of wildfire at the planning stage of new development is encouraged to ensure that appropriate FireSmart mitigation measures are developed and implemented prior to development.

5.1 Structural Options

Structural characteristics that contribute to a structure's ability to withstand wildfire ignition include type of exterior roofing, siding, and decking materials and proper construction and maintenance of eaves, vents, and openings that can accumulate flammable debris and allow wildfire to gain entry to the structure.

The most common roofing materials in the planning area are fire-rated consisting of asphalt-shingle, metal, and rubber. There are still some scattered structures with combustible wood-shake or old asphalt-shingle roofing materials however as these require replacement, the KID Land Use Order requires the installation of ULC fire-rated roofing materials.

Siding materials are varied but are primarily combustible wood. The use of fire-resistant siding materials is being "encouraged" but not "required" in the KID Land Use Order.

Wooden decks and porches with open undersides are common, increasing the potential for flammable debris accumulation and firebrand ignition.

5.2 Infrastructure Options

Infrastructure options include provision of adequate access standards to ensure quick and safe ingress and egress for the public and emergency responders during a wildfire, adequate and accessible water supply for structure protection and suppression, utility installation standards that do not increase risk to emergency responders during a wildfire, and road and address signage that allows responders to easily identify properties under wildfire conditions.

5.2.1 Access

Access road standards throughout the planning area have not changed significantly since the last plan was developed.

The highest access-related risk is in the Peter Lougheed Provincial Park Facility Area where Kananaskis Lakes Trail is a 12 kilometre long two-lane dead-end road through dense coniferous fuels with several thousand people in the area on a normal summer weekend. This risk access being blocked during a wildfire has been dealt with through the identification of safe refuge areas in the PLPP Wildfire Preparedness Guide.

5.2.2 Water Supply

Municipal pressurized fire hydrant water-supply is provided for facilities in the Evan-Thomas Provnicial Recreation Area, Canmore Nordic Centre, William Watson Lodge, and Boulton Creek. The Evan-Thomas water system has undergone a significant upgrade in 2014 with increased capacity and additional hydrants installed.

Private hydrant systems are provided by the facility operators for U of Calgary Field Station, Nakiska Ski Resort, and the TransAlta Interlakes powerplant.

All other structures rely solely on water tender or portable pump supply from natural sources for fire suppression water supply.

5.2.3 Franchised Utilities

Franchised utilities affected by an interface fire include electrical power and gas. Proper installation and maintenance of these services can minimize the risk to residents and emergency services personnel.

a) Electrical Power

Power transmission and distribution lines are above-ground while some service lines have been installed underground.

Power providers have been marking and removing hazard trees however this program could be more actively managed in the planning area.

Recommendation 5: Encourage the power providers to actively develop and implement a powerline tree-freeing program.

b) Heating Fuel

Heating fuel is primarily provided by above-ground propane tanks or bullets with underground natural gas service in Bow Valley Provincial Park, Canmore Nordic Centre, and Camp Horizon.

Many propane tanks have inadequate clearance from wildland fuels and present a significant risk to the lives of firefighters and the public during a wildfire.

Recommendation 6: Ensure adequate FireSmart clearance is established and maintained around all propane tanks.

5.2.4 Road and Address Signage

FireSmart standards (Partners in Protection 2003) recommend the following standards for interface community road and address signage:

- Signs should be clearly visible and legible from the road and use a consistent system that provides for sequenced or patterned numbering and non-duplicated naming
- Signs should be built of non-combustible materials and mounted 2 metres above the surface of the road
- Letters, numbers, and symbols used on all signs should be at least 10 centimetres high with a 12 millimetre stroke, contrast with the background color of the sign, and be reflective

Road and facility signage throughout KID meets FireSmart standards and address signage at the Lower Kananaskis Lake Cottage Subdivision consists of metal signs meeting FireSmart standards mounted on metal posts at the entrance to each lot. Address signage for the King Creek, Mt. Kidd, Golf Course, and Bow Valley Provincial Park housing loops does not meet FireSmart standards including:

- Homes without addresses posted
- Homes with two posted addresses (old and new) at King Creek housing
- Non-reflective address markers
- Non-standardized locations for addresses

Recommendation 7: Implement a standardized address signage system for the King Creek, Mt. Kidd, Golf Course, and Bow Valley Provincial Park housing loops meeting FireSmart standards and similar to the Lower Kananaskis Lake Cottage Subdivision.

5.3 Legislation Options

Kananaskis Improvement District uses the KID Land Use Order (2010) to control land use and development.

The Kananaskis Improvement District Wildland Urban Interface Plan (2008) recommended inclusion of FireSmart guidelines into the Land Use Order including:

- Preparation and submission of a Wildfire Risk Assessment prior to development approval for any new developments
- Evaluation of siting based on wildfire risk
- Requirement for siding materials on new structures to meet a minimum fire-rating
- Inclusion of FireSmart vegetation management and landscaping requirements for new developments
- Inclusion of FireSmart infrastructure standards
- Requirement for development permit holders to comply with the FireSmart conditions in the development permit

The KID Land Use Order (2010) recognizes FireSmart development practices in several Sections including:

104.5.5(b) – Fire-rated siding is **encouraged**

109 – Construction and siting **shall** incorporate FireSmart requirements

114 – All construction practices, methods, and materials are subject to approval by the Coordinating Authority and **shall** be in conformance with the FireSmart requirements

117 – Cedar siding **shall** meet a minimum ULC Class A fire-rating

121-123 – Roofing materials **shall** be metal or rubber/composite. Cedar roofing shakes **shall** only be used for repairs on existing cedar shake roofs when less than 10% of total area

130 – Development permit applications **shall** include a Wildfire Risk Assessment

131 – Wildfire Risk Assessments **should** include the following minimum information:

- Existing hazard and risk
- Proposed infrastructure standards
- Proposed vegetation management standards
- Recommendations to minimize wildland/urban interface hazard
- Evaluation of structure siting and setbacks from slope
- Roofing and siding materials **shall** be limited to metal or recycled rubber/composite with ULC Class A fire-rating

132 – Infrastructure development (roads, bridges, fire suppression water supply, and utility installation) **shall** have fire resistance characteristics

133 – Vegetation management and landscaping standards **should** promote the use of fire-resistive species in Priority Zone 1 and ensuring and maintaining fuel reduction in Priority Zones 2 and 3

Some FireSmart development requirements in the Land Use Order use the terms "encourage" or "should" versus "shall" or "must" and some of these conflict with others.

New FireSmart materials, standards, and practices have made some of the Sections in the Land Use Order outdated

Recommendation 8: Complete a review and update the Kananaskis Improvement District Land Use Order to improve the FireSmart development requirements.

6. Public Education Options

Residents, landowners, municipal administration, and elected officials all need to be aware of the issues related to *FireSmart* development and the solutions to minimizing the risk and need to become a partner in implementation of the solutions in their communities. If stakeholders understand the issues relating to wildland/urban interface hazard they will be more likely to take action on their own property or to support actions taken by other authorities.

Key Messages

The following key messages have been identified as priorities for all KID residents, businesses, and facility operators to be aware of.

- Development and maintenance of FireSmart Zone 1-2 clearance surrounding the structure/facility, including:
  - Tree clearing and/or thinning requirements
  - FireSmart maintenance of Priority Zone 1-2 including annual removal of needles and debris from on and around the structure
  - Firewood and combustibles storage
  - Skirting of open undersides on decks and porches
  - FireSmart landscaping species
- Propane tank clearance requirements from wildland fuels
- FireSmart exterior roofing, siding, and decking material options
- Emergency planning and structure and site preparation during a wildfire

Recommendation 9: Implement a KID FireSmart public education program for KID residents, businesses, and facility operators consisting of, but not limited to:

- FireSmart Hazard Assessment program
- Produce and distribute a KID FireSmart newsletter at least twice per year (spring and fall)
- Regular updates of the KID FireSmart website to provide program updates and information
- Hold a wildland/urban interface emergency exercise with public viewing and FireSmart awareness materials
- Continue to support FireSmart Stewardship Days

The Lower Kananaskis Lake Cottage Association is working towards gaining FireSmart Canada Community Recognition. The community has formed a FireSmart Board, completed the hazard assessment and prepared the FireSmart Community Assessment Report, and is currently preparing their FireSmart Community Plan. They will be eligible to apply for FireSmart Community Recognition in the spring of 2015 once they have completed their FireSmart Event.

Recommendation 10: Encourage and support the KID communities to gain FireSmart Recognition with the FireSmart Canada Community Recognition Program.

7. Inter-Agency Cooperation and Cross-Training Options

Interagency cooperation and cross-training between all stakeholders is necessary to ensure cooperative and effective implementation of wildland/urban interface mitigation options and to coordinate an effective response to a wildland/urban interface fire.

7.1 Inter-Agency Cooperation

The Kananaskis Improvement District FireSmart Committee is responsible to develop, implement, and maintain a long-term FireSmart program to reduce the threat of wildfire to human life, communities, and businesses with Kananaskis Improvement District with the context of existing management plans and policies. The KID FireSmart Committee consists of representatives from:

- KID Council
- Kananaskis Emergency Services
- Alberta Environment and Sustainable Resource Development
    - Forestry and Emergency Response Division
    - Parks Division
    - Fish and Wildlife Division
- KID Business
- KID Residents
- KID Youth Camps

The FireSmart Committee meets several times per year to accomplish the following objectives:

- Direct and lead the development and implementation of the Kananaskis Improvement District Wildland/Urban Interface Plan
- Support FireSmart public education/awareness initiatives within Kananaskis Improvement District
- Promote community involvement in the FireSmart program
- Develop and support strong partnerships between all stakeholder groups in the municipality
- Secure ongoing funding for FireSmart initiatives through municipal, provincial, and FireSmart Community Grant opportunities
- Identify and present priorities to KID Council for FireSmart Community Grant funding expenditures for approval

7.2 Cross-Training

The following cross-training has being conducted since 2008 with representatives from multiple mutual-aid partners including Kananaskis Emergency Services, Alberta ESRD Wildfire Management and Parks, and Alberta Emergency Management Agency.

Wildland Fire

- Wildland Firefighter (NFPA 1051 Level I)

Wildland/Urban Interface Fire

- Structure & Site Preparation/Sprinkler Workshop (S-115)
- Fire Operations in the Wildland/Urban Interface (S-215)

Incident Command System

- ICS Orientation (I-100)
- Basic ICS (I-200)

Wildland/Urban Interface Exercises

- Peter Lougheed Provincial Park Facility Area

Recommendation 11: Kananaskis Improvement District and Environment and Sustainable Resource Development should continue to identify budget needs and partner on cross-training initiatives to ensure necessary personnel are cross-trained to minimum standards related to:

- Wildland fire
- Wildland/urban interface fire
- Incident Command System

Recommendation 12: Prepare and complete wildland/urban interface exercises every three years at minimum to improve inter-agency cooperation and operational effectiveness during a wildland/urban interface fire.

8. Emergency Planning Options

Emergency planning provides emergency managers and responders with critical information to effectively and efficiently respond to a wildland/urban interface incident.

8.1 Kananaskis Improvement District Municipal Emergency Plan

The KID Municipal Emergency Plan is currently being revised to the new Provincial Emergency Coordination Centre organization model and will be tested in the Evan-Thomas mock-wildfire field exercise planned for June/2015.

Recommendation 13: Update and test the new KID Municipal Emergency Management Plan during the 2015 field exercise and revise as required

8.2 Wildfire Preparedness Guides

Wildfire Preparedness Guides (Pre-Plans) provide tactical response details related to protection of life and property during a wildland/urban interface fire.

Four pre-plans have been developed for KID:

- Peter Lougheed Provincial Park Facility Zone – December/2008
- Evan-Thomas Provincial Recreation Area – July/2010
- Bow Valley – March/2011
- Elbow-Sibbald – March/2011

The Peter Lougheed (PLPP) and Evan-Thomas (ETPRA) pre-plans will be updated for the 2015 fire season.

Recommendation 14: Update the PLPP and ETPRA Wildfire Preparedness Guides for the 2015 fire season and budget for updates to the Bow Valley and Elbow-Sibbald guides for the 2016 or 2017 fire season.

Recommendation 15: Design and install road signage to advise residents and public of the location of safe refuge areas and evacuation routes.

9 Implementation Plan

The goal of the implementation plan is to identify the responsible stakeholders for each of the recommendations and set timelines for commencement and completion based on priorities and funding availability.

Vegetation Management

Issue	Recommendation	Responsible Agency
Existing Fuel Modification	**Recommendation 1:** Begin the second entries on all understory fuels reduction projects once all priority fuel modification projects have been completed.	KID
Fuel Modification Maintenance	**Recommendation 2:** Ensure that all completed fuel modification projects are inspected on a regular basis and maintained as necessary.	GOA – ESRD Lease-holders/Facility Operators
Priority Zone 1-2	**Recommendation 3:** Educate and encourage structure owners and facility operators to improve Zone 1-2 clearance around structures.	KID FireSmart Committee
Priority Zone 2-3	**Recommendation 4:** Zone 2-3 fuels reduction is the responsibility of the Provincial government land management agencies on vacant Crown lands and is managed by KID. Lease-holders and facility operators will be encouraged to complete fuel modification on their lease-hold lands. All stakeholders should fund and implement fuels reduction based on the priorities identified in this plan.	KID GOA – ESRD Lease-holders/Facility operators

Development and Legislation

Issue	Recommendation	Responsible Agency
Powerline Tree-Freeing	**Recommendation 5:** Encourage the power providers to actively develop and implement a powerline tree-freeing program.	KID
Propane Tank Clearance	**Recommendation 6:** Ensure adequate FireSmart clearance is established and maintained around all propane tanks.	KID
FireSmart Address Standards	**Recommendation 7:** Implement a standardized address signage system for the King Creek, Mt. Kidd, Golf Course, and Bow Valley Provincial Park housing loops meeting FireSmart standards and similar to the Lower Kananaskis Lake Cottage Subdivision.	KID
FireSmart Development Planning	**Recommendation 8:** Complete a review and update the Kananaskis Improvement District Land Use Order to improve the FireSmart development requirements.	KID

Public Education

Issue	Recommendation	Responsible Agency
Public Education Priorities	**Recommendation 9:** Implement a KID FireSmart public education program for KID residents, businesses, and facility operators consisting of, but not limited to: ▪ FireSmart Hazard Assessment program ▪ Produce and distribute a KID FireSmart newsletter at least twice per year (spring and fall) ▪ Regular updates of the KID FireSmart website to provide program updates and information ▪ Hold a wildland/urban interface emergency exercise with public viewing and FireSmart awareness materials ▪ Continue to support FireSmart Stewardship Days	KID FireSmart Committee
FireSmart Canada Community Recognition	**Recommendation 10:** Encourage and support the KID communities to gain FireSmart Recognition with the FireSmart Canada Community Recognition Program.	

Interagency Cooperation & Cross-Training

Issue	Recommendation	Responsible Agency
Cross-Training	**Recommendation 11:** Kananaskis Improvement District and Environment and Sustainable Resource Development should continue to identify budget needs and partner on cross-training initiatives to ensure necessary personnel are cross-trained to minimum standards related to: ▪ Wildland fire ▪ Wildland/urban interface fire ▪ Incident Command System	KID and ESRD
	Recommendation 12: Prepare and complete wildland/urban interface exercises every three years at minimum to improve inter-agency cooperation and operational effectiveness during a wildland/urban interface fire.	KID and ESRD

Emergency Planning

Issue	Recommendation	Responsible Agency
Municipal Emergency Plan	**Recommendation 13:** Update and test the new KID Municipal Emergency Management Plan during the 2015 field exercise and revise as required	KID
Pre-Plan Updates	**Recommendation 14:** Update the PLPP and ETPRA Wildfire Preparedness Guides for the 2015 fire season and budget for updates to the Bow Valley and Elbow-Sibbald guides for the 2016 or 2017 fire season.	KID
Emergency Signage	**Recommendation 15:** Design and install road signage to advise residents and public of the location of safe refuge areas and evacuation routes.	KID

10 References

Alberta Environment and Sustainable Resource Development. 2014. Evan-Thomas 10-year vegetation management strategy 2015-2024. Parks Division, Forestry and Emergency Response Division, Ministry of Alberta Environment and Sustainable Resource Development. Canmore, Alberta.

Government of Alberta 2011. FireSmart guidebook for community protection. AB. Sustainable Resource Development, Edmonton, AB.

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Partners in Protection 2003. FireSmart: protecting your community from wildfire. Partners in Protection, Edmonton AB.

Podur J, Wotton B.M 2011. Defining spread-event days for fire-growth modeling. International Journal of Wildland Fire 2011, 20, 497-507.

Walkinshaw S 2008. Kananaskis Country vegetation management strategy. AB. Sustainable Resource Development and Tourism, Parks, and Recreation. Canmore, AB.