

# Community Wildfire Protection Plan

Colville Lake



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## 1. Introduction

In 2012, a Community Wildfire Protection Plan (CWPP) was developed for the Behdzi Ahda First Nation to address the hazard and the risk to the community of Colville Lake from wildfire. That CWPP was developed to provide practical and operational wildland /urban interface (WUI) risk mitigation strategies to reduce the threat from wildfire to the community.

The original CWPP was developed by Montane Forest Management Ltd in cooperation with the Government of the Northwest Territories (GNWT) and Colville Lake.

In 2018 the GNWT, Department of Environment and Natural Resources (ENR) updated the Colville Lake CWPP by using the most recent information, science and expertise available. This included using standardized FireSmart assessment protocols and mitigative measures were developed based on the 7 disciplines of FireSmart.

1. Vegetation Management
2. Development
3. Legislation
4. Public Education and Engagement
5. Inter-Agency Cooperation
6. Cross Training
7. Emergency Planning

The update included:

- The FireSmart mitigation efforts completed around the community
- The change in hazard around the community.
- New recommendations or modification to existing recommendations

Colville Lake, in cooperation with ENR, implemented some of the original recommendations but there is still work to do.

The update includes recommendations to assist in setting priorities to reduce the threat from wildfire. It is important to note that while implementing these recommendations will reduce the threat from wildfire to structures, it will never completely remove the threat.

This plan should be reviewed regularly to ensure that it remains a priority to the community and its residents.

## 2. Planning Area and Stakeholders

The planning area includes all lands within Colville Lake and a two-kilometer buffer surrounding the community (Map 1).

Stakeholders involved in the planning process included:

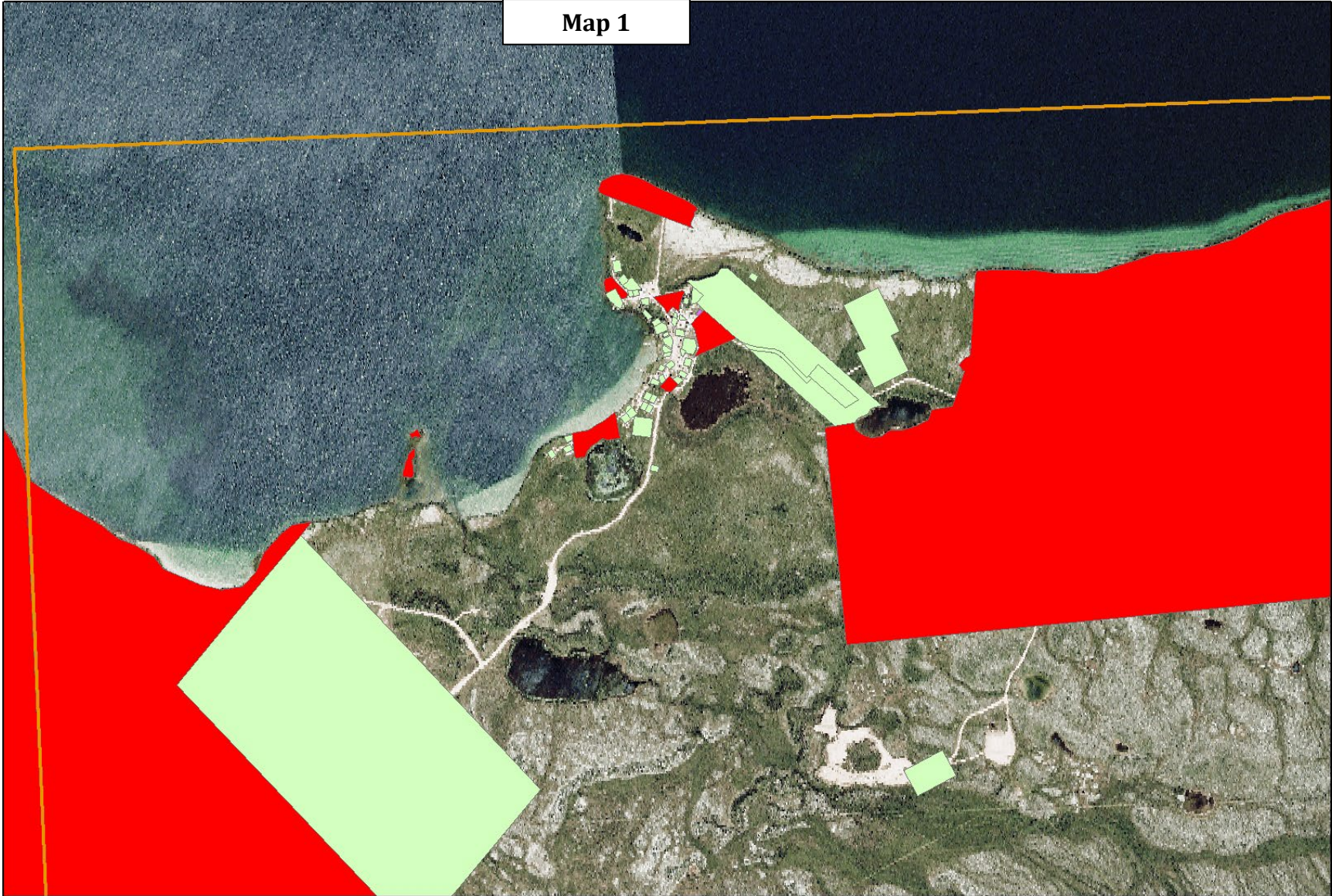
- Behdzi Ahda First Nation
- Government of the Northwest Territories, Environment and Natural Resources

Land status authority is represented by the following (Map 1):

- Commissioner
- Private
- Sahtu



Map 1

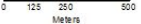


**Colville Lake  
Land Status Authority**


**Land Ownership**

 Commissioner	 Private	 Planning Area
 Sahtu		

North  
1:25,000



0 125 250 500  
Meters



Northwest Territories  
Environment and Natural Resources

### 3. Hazard & Risk Assessment

In the original 2012 CWPP a hazard and risk assessment was undertaken to determine the potential impact wildfire could have on the community. This was based on an analysis of the historical wildfire ignition sources, fire incidence and the wildland fire potential of the forest surrounding the community.

#### 3.1 Wildfire Ignition Potential

The assessment of recent fire incidence was completed using historical fire data from GNWT Environment and Natural Resources (ENR) for the ten year period from 2009 to 2018.

Fire incidence data indicates that there has been 1 wildfire discovered within a 10 kilometre radius of the community (Table 1 & Map 2).

**Table 1: Fire Incidence by Cause (2009 - 2018)**

<b>General Cause</b>	<b>Number of Fires</b>	<b>Percent of Total</b>
Human-Caused	0	0
Lightning-Caused	1	100
<b>Totals</b>	<b>0</b>	<b>100</b>

**The risk of wildfire in the planning area is Low based on fire incidence data.**





# Colville Lake Ten Year Fire History

- Planning Area 10km Buffer
- Planning Area
- Large Fire History
- Human Caused
- ⚡ Lightning
- Unknown

N  
1:250,000

0 2,500 5,000 10,000  
Meters

Northwest Territories Environment and Natural Resources



## 3.2 Wildfire Behaviour Potential

### 3.2.1 Forest Fuel Types

Fire Behaviour Prediction (FBP) fuel types (Taylor, 1997) were used to analyze the fuel types and fire behaviour potential within and adjacent to Colville Lake.

Analysis of the forest fuels surrounding Colville Lake were completed in 2012 and indicated the main fuels to be spruce-lichen woodland (C-1), with patches of deciduous (D-1), mixed wood (M-1/M-2) and grasslands (O-1). The forest fuels have not changed significantly since that time.

**Forest fuel types and fire weather data indicates that the potential for landscape level wildfire spread towards Colville Lake is Low.**



### 3.3 FireSmart Hazard Assessments

FireSmart hazard assessments (P.I.P., 2003) were conducted on developments and adjacent wildland fuel types within the planning area. The FireSmart hazard assessment process evaluates wildland and structural fuel types, structural features, and topography within and adjacent to the development area to consistently quantify the wildland/urban interface hazards within the planning area and to help set priorities for mitigative options.

FireSmart assessments of developed areas and adjacent fuels were completed in 2012 and indicated that all development within Colville Lake is at a minimal threat from wildfire (Table 2). Since these assessments were completed the risk to the community has not changed.

Hazard factor's for each of the development areas are discussed below.

**Table 2: FireSmart Hazard Assessments**

Development Area	Structure/Site Hazard (0 - 30m)
Colville Lake	Low
Airport	Low

#### Colville Lake

FireSmart hazard for Colville Lake is rated as **LOW**. Immediately adjacent fuels primarily consist of open-density spruce (C-1), cured grass (O-1), and non-fuel. Some structures have inadequate defensible space from cured-grass resulting in increased threat. Exterior structure materials are primarily asphalt shingle and asphalt roll roofing and hardiplank siding on newer structures and wood or log siding on older structures. Access roads are all-weather loop and dead-end design.



#### Airport

FireSmart hazard for the Airport is rated as **LOW**. Fuels immediately adjacent primarily consist of open-density spruce (C-1) and non-fuel with significant defensible space between the proposed structures and wildland fuels.

**The FireSmart threat for Colville Lake is Low based on fuel types adjacent to structures, exterior structural materials and fire incidence data, with the highest threat being from cured-grass fuels adjacent to homes.**

## 4. Vegetation Management Options

The goal of vegetation management is to create a clear space between the community and the forest to reduce the intensity and rate of spread of wildfire approaching or leaving the community. 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.

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

- Fuel removal (remove trees)
- Fuel reduction (thin and prune trees)
- Species conversion (plant less flammable trees)

Complete descriptions of the methods included in each of the above options are included in the link:

<https://www.firesmartcanada.ca/mdocs-posts/firesmart-priority-zones-2017/>

*FireSmart* standards refer to the interface priority zones with vegetation management for interface structures recommended in Zones 1 and 1a, 2 at a minimum and in Zone 3 based on hazard and risk.



**Figure 1 – FireSmart Priority Zones, FireSmart Canada 2017**

#### 4.1 Existing Vegetation Management

Fuels reduction has previously been completed on the spruce fuels adjacent to the main road in Colville Lake.





## 4.2 Proposed Vegetation Management

### 4.2.1 Zones 1a (0-1.5 metres)

Zone 1a vegetation management is **inadequate** for many of structures due to encroachment of native grass fuels.

FireSmart Zone 1a vegetation management options include:

- Creating a noncombustible zone around structures by clearing vegetation and combustible material down to mineral soil within 1.5 metres of structures.
- Use noncombustible materials in this critical zone of 1.5 metres directly adjacent to your home such as gravel, bricks or concrete.
- Woody shrubs, trees or tree branches should be avoided in this area and any that are present should be properly mitigated.

### 4.2.2 Zone 1 (1.5-10 metres)

Zone 1 vegetation management is **adequate** for the majority of structures however some have a lack of defensible space due to native grass fuels.

FireSmart Zone 1 vegetation management options include:

- Removal of flammable forest vegetation (shrubs) within 10 metres of structures.
- Removal of all coniferous ladder fuels (limbs) to a minimum height of 2 metres from ground level on residual overstory trees.
- Removal of all dead and down forest vegetation from the forest floor.
- **Increased maintenance to ensure that all combustible needles, leaves, and native grass are removed 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, jerry cans, propane tanks, etc.) within 10 metres of the structure.**

**Recommendation 1:** Encourage residents to establish adequate Zone 1a and Zone 1 defensible space around their structures.

For more information on FireSmart Zone 1a and 1 standards refer to:  
<https://www.firesmartcanada.ca/> .

### 4.2.3 Zone 2-3 (10-30 metres and 30-100 metres)

Three areas of wildland fuels immediately adjacent to structures have been identified for community fuels reduction as well as the area adjacent to the new community dump site (Table 3, Map 3).

**Table 3: Priority Fuel Modification Areas**

<b>Priority</b>	<b>Area (Ha)</b>	<b>Proposed Fuel Modification Standards</b>	<b>Land Status Authority</b>
Fuel Management Zone 1	0.2	Fuels Reduction by spacing spruce to 3 m crown spacing Remove all dead standing and dead & down Prune limbs to 2 metres Dispose of debris by piling and burning onsite or use as biomass or other product	Behdzi Ahda First Nation
Fuel Management Zone 2	0.5	Fuels Reduction by spacing spruce to 3 m crown spacing Remove all dead standing and dead & down Prune limbs to 2 metres Dispose of debris by piling and burning onsite or use as biomass or other product	Behdzi Ahda First Nation
Fuel Management Zone 3	0.1	Fuels Removal of all vegetation for a minimum of 10 metres surrounding the Petroleum, Oils, & Lubricants storage site Gravel the area and maintain grass and brush regularly	Behdzi Ahda First Nation
Proposed fire break – east and south perimeter	9.9	Fuels Reduction by spacing spruce to 3 m crown spacing Remove all dead standing and dead & down Prune limbs to 2 metres Dispose of debris by burning onsite/removal Maintain grass and brush regularly	Behdzi Ahda First Nation
<b>Total</b>	<b>10.7</b>		

**Recommendation 2:** Zone 2-3 fuels reduction and maintenance is the responsibility of the Land Status Authority holder(s) and should be implemented based on the areas identified in this plan.

#### 4.2.4 Fire Breaks

Additional areas around the perimeter of the community have been identified for possible fuel modification to effectively create a protective fire break. Total area requiring modification for this portion of work is 9.9 hectares (Map 3).

**Recommendation 3:** ENR will work with the community in planning for the fuel modification required. Method of modification would be fuel reduction or stand/species conversion.

### 4.3 Vegetation Management Maintenance

Fuel modification area maintenance schedules depend on many factors including fuel type, soil and moisture conditions, and specific weather events. It is suggested that land managers provide periodic inspections of their fuel modification project areas and complete maintenance as required. It is projected that fuel modification area maintenance will be required at least each five-year period.

FireSmart Zone 1a and Zone 1 fuel modification maintenance is a process requiring continued maintenance. Residents should be educated and encouraged to maintain their properties regularly to reduce the threat of wildfire to their structures.

**Recommendation 4:** Residents should be educated and encouraged to maintain their properties regularly to reduce the threat of wildfire to their structures.



Map 3

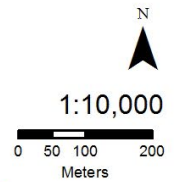


# Colville Lake North Fuel Modifications

Completed and Proposed

## Fuel Modifications

-  Completed
-  In Progress
-  Proposed





## 5. Development Options

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

New developments may overlap or conflict with existing fuel modification resulting in a reduction in fuel break effectiveness and an increase in wildfire threat to the new or existing development in the area.

The Behdzi Ahda First Nation has plans for new commercial development on the old airstrip. This project should be assessed throughout its various stages of development.

**Recommendation 5:** If a new development removes or reduces the effectiveness of any existing or proposed FireSmart mitigation measures or introduces new wildfire hazards, the area must be assessed and appropriate measures implemented to maintain the community protection standards.

### 5.1 Structural Options

Structural characteristics that contribute to a structure's ability to withstand wildfire ignition include type of roofing and siding material, 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 asphalt shingle and asphalt roll-roof.



Siding materials vary between hardiplank and metal on newer structures and log or wood on older structures.

Open decks and undersides are common on structures within the community. In addition, most structures that use skirting employ a mesh that is too open spaced in design to block embers as it is applied primarily as a wildlife deterrent.

## 5.2 Infrastructure Options

Infrastructure options include provision of adequate access standards to ensure quick and safe ingress and egress for residents and emergency responders during a wildfire, adequate and accessible water supply for structure protection and suppression, and utility installation standards that do not increase risk to emergency responders during a wildfire emergency.

### 5.2.1 Access

Access road standards throughout the planning area are adequate for an interface community. Access roads are all-weather loop and dead-end design. There is no summer road access to the community.

### 5.2.2 Water Supply

Colville Lake does not have municipal hydrant water-supply. All development areas rely on water-tender supply for structure protection activities. Each home is equipped with an in-house water tank.

### 5.2.3 Franchised Utilities

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

#### **Electrical Power**

Power distribution and residential service is provided through above-ground powerlines from the NTPC diesel generator plant.

#### **Heating Fuel**

Heating fuel is provided by truck delivery and stored in bulk at a tank farm.



## 6. Public Education Options

Public education plays a key role in promoting and implementing FireSmart principles and projects. Residents, landowners, municipal administration, and elected officials all need to be aware of the risk of wildfires 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.

Residents and stakeholders can refer to the GNWT ENR, Forest Management Division website at: <https://www.enr.gov.nt.ca/en/services/be-firesmart> for further information on the GNWT FireSmart program, current wildfire updates, and other wildfire management related information.

### Key Messages

FireSmart hazard assessments identified the need for the following key messages to target audiences in the planning area.

#### Homeowners

Homeowners can increase resiliency of homes and make them less vulnerable to wildfire by development and maintenance of the FireSmart Non-Combustible Zone 1a (0-1.5 metres) and Zone 1 (1.5-10 metres) defensible space surrounding the home, by:

- Clearing vegetation and combustible material down to mineral soil within 1.5 metres of structures;
- Using noncombustible materials in this critical zone of 1.5 metres directly adjacent to your home such as gravel, bricks or concrete;
- Woody shrubs, trees or tree branches should be avoided in this area and any that are present should be properly mitigated;
- Storing firewood and other combustible materials more than 10 metres away from the home;
- Keeping roof and eaves clear of leaves and other combustible debris;
- Creating FireSmart defensible space around propane and fuel-tank;
- Creating a non-combustible zone for underneath and around any trailers/vehicles and mitigate sheds and other structures to the same standards as those of your home;
- If possible and/or applicable maintain Zone 2 (10-30 metres) and Zone 3 (30-100 metres) recommendations, and work with neighbors in any overlapping Priority Zones.

## Communities

Communities can reduce wildfire risk and adopting FireSmart principles by:

- Holding a FireSmart Wildfire Community Preparedness Day or workshop;
- Using local government websites, social media and newsletters to promote FireSmart principles;
- Asking ENR staff what educational and/or promotional resources they have available, such as: wildfire information pamphlets, posters, educational resources, videos etc;
- Applying for the FireSmart Community Recognition Program. For more information visit: [www.firesmartcanada.ca/firesmart-communities/firesmart-canada-community-recognition-program/](http://www.firesmartcanada.ca/firesmart-communities/firesmart-canada-community-recognition-program/).

**Recommendation 6:** Public education on acceptable FireSmart Zone 1a and Zone 1 standards is recommended for all residents.

## 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.

Interagency stakeholders within the planning area include:

- Behdzi Ahda First Nation
- GNWT

**Recommendation 7:** Coordinate with the established emergency management committee to determine what will be required during a wildfire emergency. All relevant stakeholders should understand the FireSmart program and help to promote mitigation.

Colville Lake has a fire truck but does not have an established fire department therefore cross-training should be introduced to those who would respond to fires in the wildland/Urban Interface or near the community. Should a fire department be established, cross-training for fire department members and ENR wildfire suppression personnel should include basic wildfire, wildland/urban interface fire, and incident command system training courses. The following cross-training courses are available.

### Wildland Fire

- Wildland Firefighter (NFPA 1051 Level I, S-131, or equivalent)

### Wildland/Urban Interface Fire

- Structure and Site Preparation Workshop (S-115)

### Incident Command System

- ICS Orientation (I-100)
- Basic ICS (I-200)
- Intermediate ICS (I-300)

**Recommendation 8:** The Colville Lake Public Works Department, the Emergency Management Team and the GNWT should partner on cross-training initiatives to ensure emergency responders are cross-trained to the following:

- Wildland Firefighter
- Structure and Site Preparation Workshop (S-115)
- Incident Command System (I-100 to I-300) as applicable



## 8. Emergency Planning Options

Emergency preparedness is an important part of any disaster planning. The need for organization, clear chain of command, and an understanding of job responsibilities during an interface fire are of paramount importance.

Colville Lake met with Municipal and Community Affairs in December 2018 to develop an Emergency Measures Plan (EMP). The result of the meeting was the development of an EMP template which is to be completed by Colville Lake. This is still in process. ENR was also in attendance at this meeting and has made an offer of assistance to the community in developing any wildland fire plans and to provide technical assistance as required.

**Recommendation 9:** Develop a Community Wildfire Pre-Plan for the community to provide greater operational detail to emergency responders during a wildland/urban interface incident.

## 9 Recommendations Summary

### Vegetation Management

Issue	Recommendation	Responsible Agency
<b>Zone 1a and Zone 1</b>	<b>Recommendation 1:</b> Encourage residents to establish adequate Zone 1a and Zone 1 defensible space around their structures.	<ul style="list-style-type: none"> <li>▪ Behdzi Ahda First Nation</li> </ul>
<b>Zone 2-3</b>	<b>Recommendation 2:</b> Zone 2-3 fuels reduction and maintenance is the responsibility of the Land Status Authority holder(s) and should be implemented based on the priorities identified in this plan.	<ul style="list-style-type: none"> <li>▪ Behdzi Ahda First Nation</li> </ul>
<b>Fire Breaks</b>	<b>Recommendation 3:</b> ENR will work with the community in planning for the fuel modification required. Method of modification would be fuel reduction or stand/species conversion.	<ul style="list-style-type: none"> <li>▪ GNWT</li> <li>▪ Behdzi Ahda First Nation</li> </ul>
<b>Maintenance</b>	<b>Recommendation 4:</b> Residents should be educated and encouraged to maintain their properties regularly to reduce the threat of wildfire to their structures.	<ul style="list-style-type: none"> <li>▪ Behdzi Ahda First Nation</li> </ul>

### Development

Issue	Recommendation	Responsible Agency
<b>FireSmart Development Planning</b>	<b>Recommendation 5:</b> If a new development removes or reduces the effectiveness of any existing or proposed FireSmart mitigation measures or introduces new wildfire hazards, the area must be assessed and measures implemented to maintain the community protection standards.	<ul style="list-style-type: none"> <li>▪ Behdzi Ahda First Nation</li> </ul>

### Public Education

Issue	Recommendation	Responsible Agency
<b>Public Education Priorities</b>	<b>Recommendation 6:</b> Public education on acceptable FireSmart Zone 1a and Zone 1 standards is recommended for all Colville Lake residents. Priority items include: Development and maintenance of FireSmart defensible space surrounding the home Propane and fuel-tank FireSmart defensible space Holding community FireSmart events to educate the public on FireSmart principles	<ul style="list-style-type: none"> <li>▪ Behdzi Ahda First Nation</li> </ul>

### Interagency Cooperation & Cross-Training

Issue	Recommendation	Responsible Agency
<b>Interagency Cooperation</b>	<b>Recommendation 7:</b> Coordinate with the established emergency management committee to determine what will be required during a wildfire emergency. All relevant stakeholders should understand the FireSmart program and help to promote mitigation.	<ul style="list-style-type: none"> <li>▪ GNWT</li> <li>▪ Behdzi Ahda First Nation</li> </ul>
<b>Cross-Training</b>	<b>Recommendation 8:</b> Should the fire department be established, the fire department and GNWT MACA & ENR should partner on cross-training initiatives to ensure emergency responders are cross-trained to the following: Wildland Firefighter Structure and Site Preparation Workshop (S-115) Incident Command System (I-100 to I-300) as applicable	<ul style="list-style-type: none"> <li>▪ GNWT</li> <li>▪ Behdzi Ahda First Nation</li> </ul>

### Emergency Planning

Issue	Recommendation	Responsible Agency
<b>Community Wildfire Pre- Planning</b>	<b>Recommendation 9:</b> Develop a Community Wildfire Pre-Plan for the community to provide greater operational detail to emergency responders during a wildland/urban interface incident.	<ul style="list-style-type: none"> <li>▪ GNWT</li> <li>▪ Behdzi Ahda First Nation</li> </ul>