



REGIONAL DISTRICT  
NORTH OKANAGAN

Area B & C Protection Area

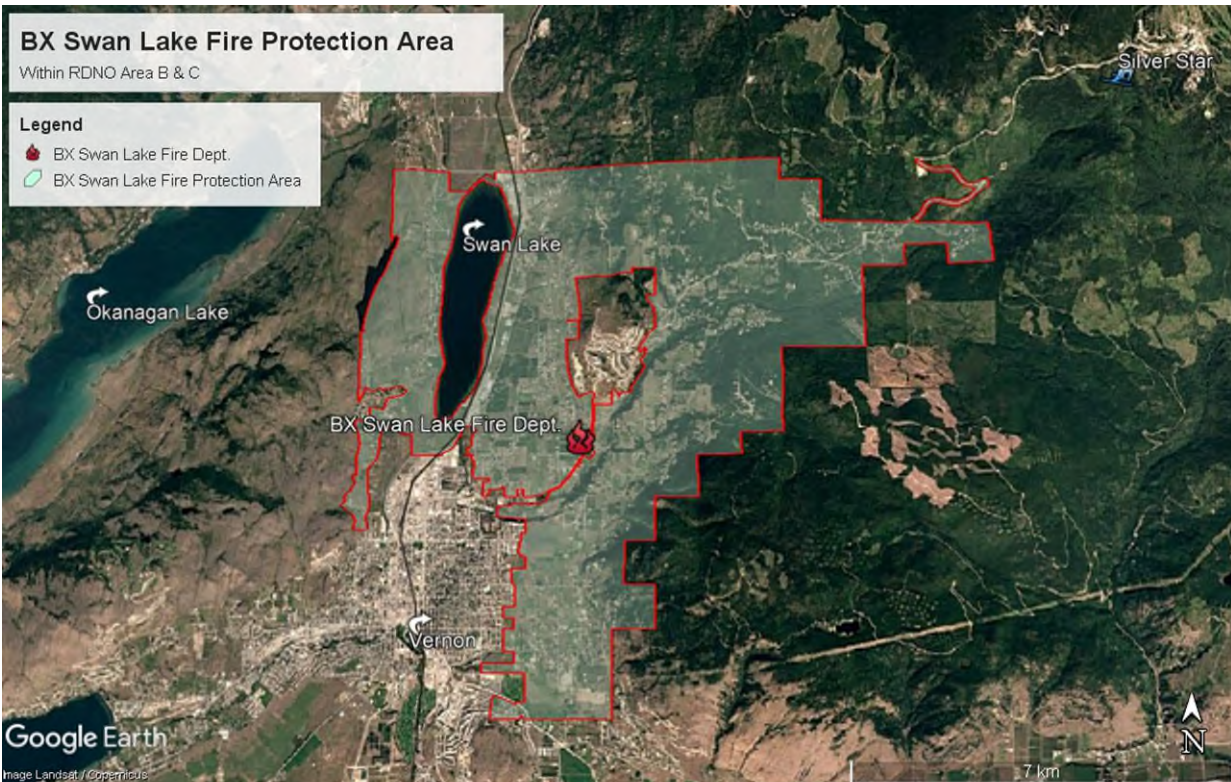


BX-Swan Lake Fire Rescue

50°17'20"N - 119°13'31"W

# Community Wildfire

## Structure Protection Plan



**BX-Swan Lake Fire  
Dept.  
5764 Silver Star Rd.,  
Vernon BC  
ph 250-545-7432**



# BX-Swan Lake Fire Protection Area

## COMMUNITY STRUCTURE PROTECTION PLAN

### PURPOSE

To create a Pre-plan management template for use by British Columbia Wildfire Service (BCWS) Structure Protection Specialist (SPS) that enhances response assessment to Wildland Urban Environment (WUE) events affecting communities by:

- (1) Soliciting local information through a timely and simple process in a widely accessible medium.
- (2) Explicitly including the priorities of local communities.
- (3) Providing a means to Pre-plan and share situational awareness in response planning with convergent first responders who arrive at WUE events with limited understanding of local geographic, economic, environmental, and social/cultural issues.
- (4) Leveraging available technologies to achieve objectives 1-3 above.

The intention of developing this plan is twofold. **Part I** is general information intended for review and implementation during non-emergency periods by local communities and partners. **Part II** is a more detailed section intended to provide an incoming Incident Management Team or Structure Protection Specialist with accurate predetermined structural and cultural priorities requiring protection as well as to identify tactical and operational information as necessary.

### DISCLAIMER

The recommendations made in this plan are based on fire probabilities for the conditions observed at the time of the survey in 2022. **It must be understood that all fire scenarios cannot be addressed and that this plan is not an absolute.** This plan should be used as a guide and implemented in part or in whole as circumstances dictate. The key to continued credibility of this plan is the time and accuracy employed to maintain the information provided here. This document should be reviewed by community officials or their designate and updated on an annual basis prior to wildfire season.

## INTRODUCTION

The goal of this plan is to provide response agencies with a strategic framework to use for the protection of improved properties or other values at risk in the event of a significant wildfire. This plan recognizes the capability of the local fire department and the contributions that can be made by local, regional and provincial fire service resources.

The information contained in this plan was developed for use with wildfire operations however, an incident management team may find this a valuable tool in any disaster situation. Experience has proven that many homeowners will be reluctant to leave their home and belongings when an evacuation is ordered. Fire officials do not have the authority to force anyone to leave nor do they have the time to educate evacuees after an order is issued. Preplanning and education of the community prior to an incident is imperative for a successful operation. Local authorities and community leaders are encouraged to inform their residents on evacuation processes and procedures.

## RESPONSE PRIORITY

This Response Structure Protection Defense Pre-Plan is subject to ongoing review and may be improved based on feedback following exercising and/or use at actual Wildland Urban Environment events in the upcoming wildfire season. Input from community officials is imperative for local knowledge and to help prioritize integral infrastructure, properties and areas for protection. The loss of commercial and industrial properties is associated with unemployment and economic impacts that can seriously affect the viability of communities, particularly those with smaller populations. Community members are forced to relocate to urban areas for school and employment.

British Columbia Wildfire Service (BCWS) is committed to understanding the values and priorities of Communities.

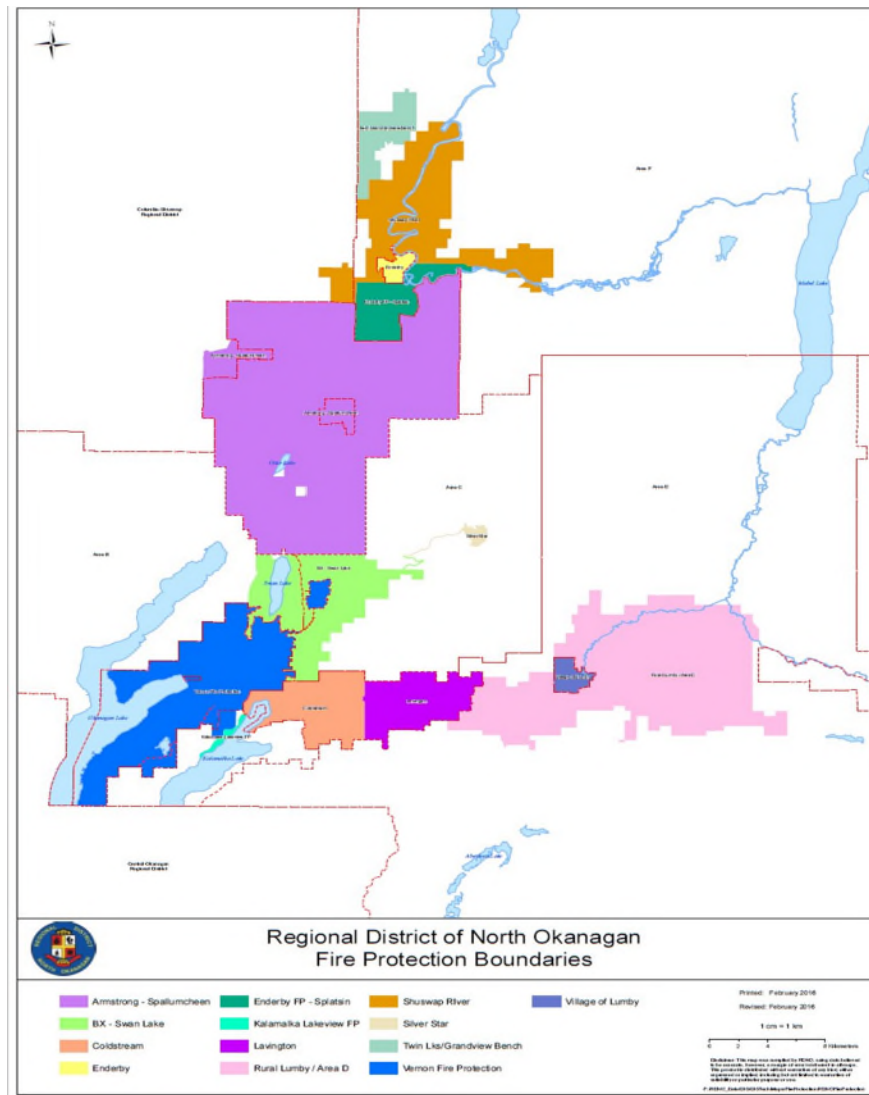
Through a consultation process facilitated by BCWS staff, the authority having jurisdiction (Municipality, Regional District, or First Nations Bands), have identified community priorities in their developed and natural environments. These priorities are included in the Structure Protection Defense Plan.

BCWS will determine strategies and allocate resources based on availability and the identified community priorities whenever possible. There will be a consultation process between BCWS and the Provincial Regional Operations Centre and/or the Provincial Emergency Coordination Centre.



## PART 1 COMMUNITY OVERVIEW

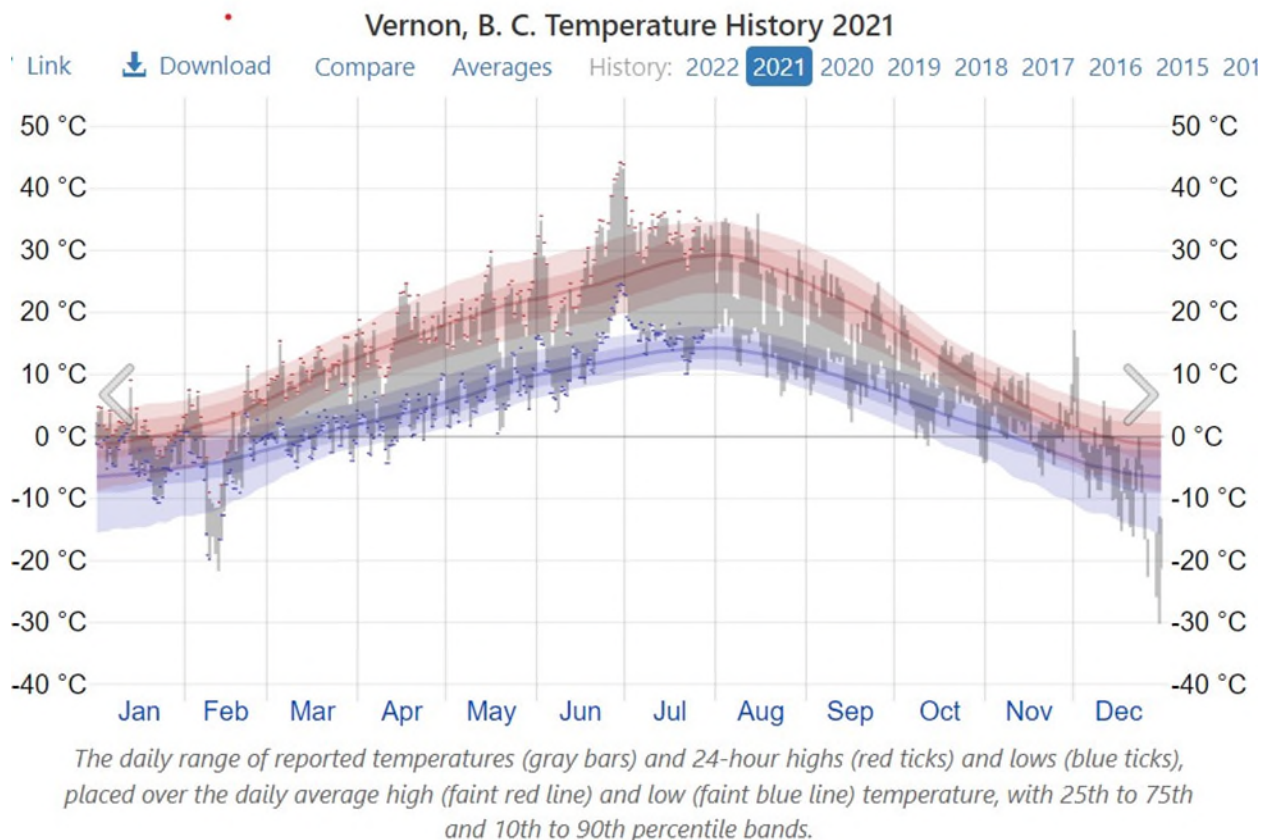
The **Regional District of North Okanagan (RDNO)** was incorporated in 1965 and provides a variety of services to more than 91,610 (2021 census) North Okanagan residents covering an area 7,512.58 sq km. RDNO population has grown by 8.6 percent since 2016 making it the seventh fastest growing regional district in BC. Within these geographical boundaries are five electoral areas and six municipalities.



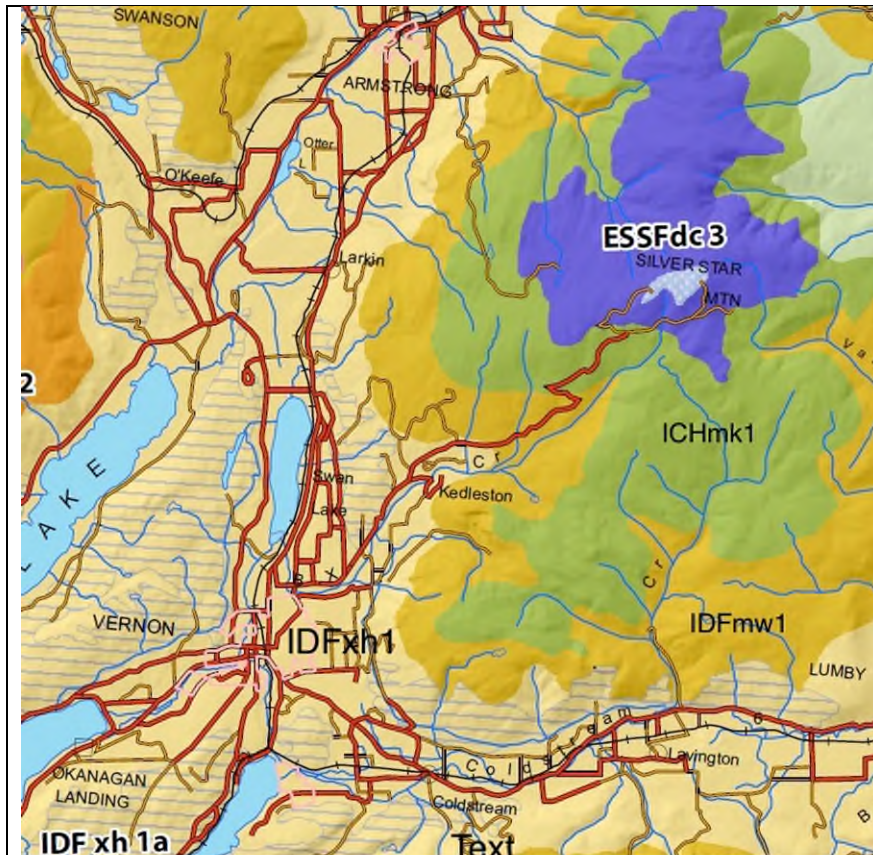
BX-Swan Lake Fire Protection Area is located within the RDNO and provides fire protection services within Electoral Areas 'B' & 'C' with a Paid-On-Call fire department. BX-Swan Lake Fire Protection Area has a population of 9,000 and an area 55.47 sq km that skirts the eastern and northern boundary of the City of Vernon. The North BX is a large rural neighbourhood recognized for its quiet country atmosphere with proximity to the city and Silver Star Mountain. The South BX border is Highway 6 and it contains much of the Agricultural Land Reserve in the Greater Vernon Area. Residential expansion into the forested area with only 1 primary access road to the west makes the need for a community wildfire structure protection pre plan critical to affect an effective wildfire rapid response.

**Vernon historical temperature** average is provided in the table below. From April to October is the greatest risk from wildfires which coincides with the warmest temperatures. Seasonal weather at Vernon is dominated by easterly moving air masses that produce cool wet winters with typically little snow accumulation, and warm dry summers.

## Weather - Vernon 2021 daily temps overlaid on historical average



**Biogeoclimatic Zone** is a geographical area with a relatively uniform macroclimate, characterized by a mosaic of vegetation, soils and, to a lesser extent, animal life reflecting that climate. Zones are usually named for the potential climatic climax or self-perpetuating vegetation. The biogeoclimatic zone vegetation effect the wildfire behaviour.



BX-Swan Lake fire response area is located within the biogeoclimatic zones classified as Douglas-fir very dry hot (IDFmh1) from the Vernon city limits to Jackpine Rd., and Interior Douglas-fir moist warm (IDFmh1) between Jackpine Rd and the second switch back on Silver Star Road.

The IDF zones, often described as “cattle country” and open forests, are considered summer-dry with growing season soil water deficits common. The growing season is warm, dry and relatively long (3-5 months) with night-time frost occurrences. A wildfire can spread rapidly as a ground fire.

The IDFmh1 because of a combination of fire, topography and soil conditions promote extensive grasslands where ponderosa pine can occur in open.

The IDFmh1 with increasing moisture from precipitation and cooler temperatures result in closed forest with more shrubs and mixed forb-grass-moss ground cover. The IDFmh1 and the Interior Cedar Hemlock moist cool (ICHmk1) has been fraught over the past 20 years with forest health challenges from mountain pine beetle, and then with Douglas-fir and spruce beetle. The canopy density creates a high probability of a wildfire developing into a rolling crown fire.



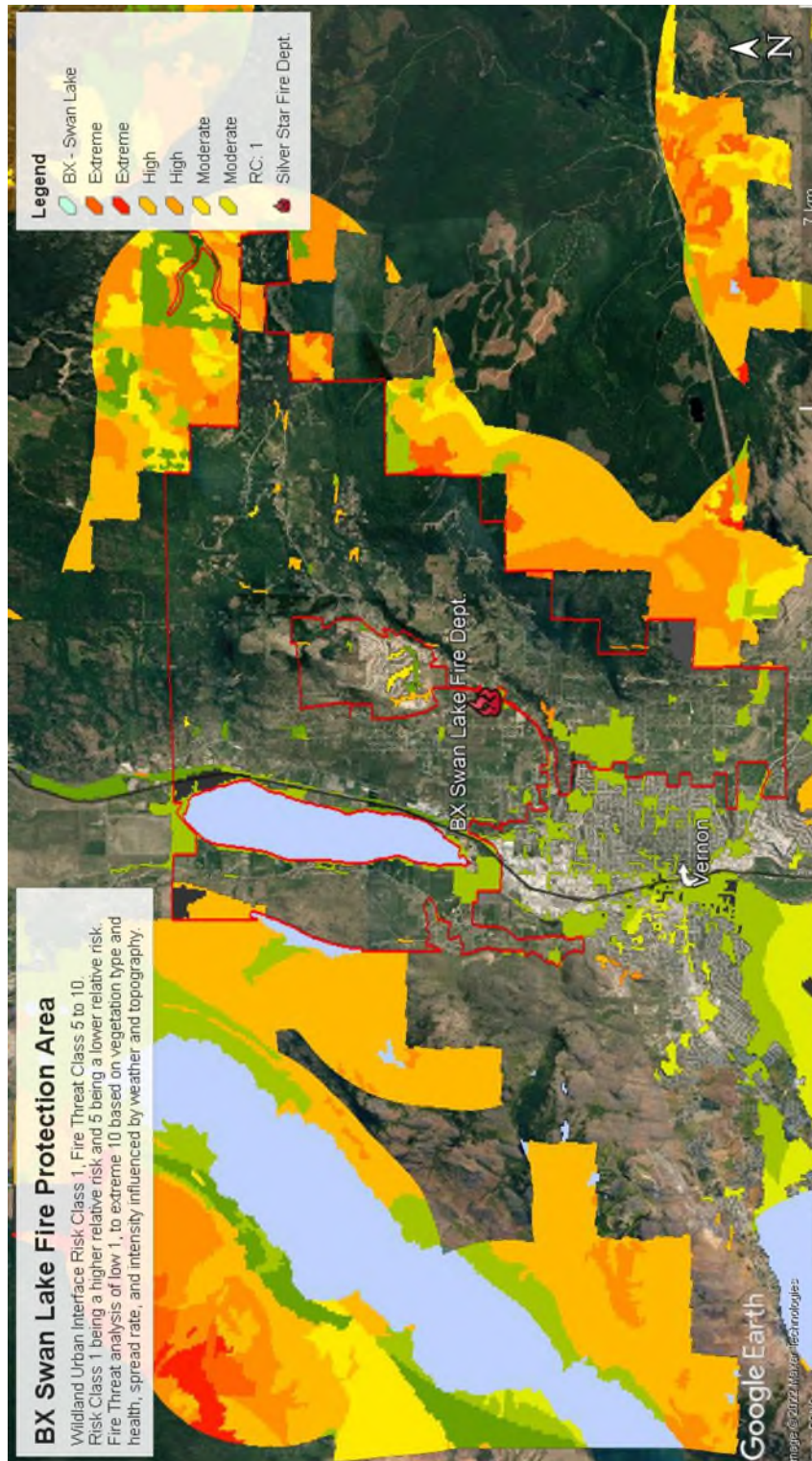
Wildfire trends in B.C. and Canada, show increased impacts to values from wildfires and associated suppression costs, increased threats to communities and infrastructure and increased losses of natural resources including mid-term timber supply. This is being driven by the effects of climate change, the mountain pine beetle fuel type and increasing community, critical infrastructure, and natural resource development on the forested land base.

**Wildland Urban Interface Risk Classification (WUI RC)** is determined utilizing the updated 2021 Provincial Strategic Threat Analysis (PSTA) and the 2020 WUI structure density data and mapping. WUI RC ratings take into consideration the underlying fuel types related to land-based activities (e.g., wildfires, harvesting, fuel treatments, development), updated vegetation resources inventory or changes to fire weather inputs (e.g., increases in threat levels due to shifts in the weather data). Risk Classification is determined utilizing the spatial WUI attributes combined with the PSTA wildfire threat layer (for Crown land) to identify at-risk areas at a strategic scale. The level of risk (“Risk Class”) reflects the analysis of weighted PSTA threat components within the individual WUI RC polygons. Five Risk Class ratings were applied to the WUI polygons, with “1” being a higher relative risk and “5” being the lower relative risk. The application of relative risk does not imply “no risk” since the goal is to identify areas where there is higher risk. BX-Swan Lake fire protection area is surrounded by Risk Class 1.

**Wildfire Risk Assessment** is available in B.C. for provincial Crown land utilizing a two-kilometer-wide buffer zone to the edge of structures located in the WUI to indicate the distance that embers from a wildfire could reasonably expected to be carried by the wind and possibly ignite a structure. The wildland fuel Fire Threat is shaded with colours that are numbered from 1 (low) to 10 (extreme) to identify the level of wildfire risk if the fuel catches on fire. The majority of BX-Swan Lake Fire Protection Area borders on Fire Threat High (7) to Extreme (10) if the forest catches on fire.



## Wildfire Risk Assessment Map





**Community Wildfire Hazard Rating** looks at homes and critical infrastructure as a fuel type and using a provincial assessment with multiple choice answers provides a score from Low to Extreme for consequences if a wildfire gets into the community. The assessment looks at specific information related to “Community Design” and “Community Challenges”. The BX-Swan Lake Fire Protection Area assessment is based on input from the local fire department and RDNO. The assessment resulted in a Community Wildfire Hazard Rating of 86. This indicates a need for improvement to better protect critical infrastructure and mitigate site hazards.

The letters in the rating section correspond to the recommendation section. The recommendations will need to be prioritize and modified to address interagency cooperation and funding to deliver on the actions in a timely and cost effective way that reduces community wildfire risk.



## Community Wildfire Hazard Assessment

COMMUNITY DESIGN		Rating	
ACCESS			
Two or more primary roads in and out. One primary and one secondary access. One road in and out (entrance and exit are the same).	0 3 5	5A	
BRIDGES (Please note construction type and GVW)			
No bridges or bridges with no weight and/or width restrictions. Low weight bridges restricting emergency vehicle access.	0 5	0	
PRIMARY ROAD WIDTH (main access / egress routes)			
At least 7m wide. Less than 7m wide.	0 4	0	
SECONDARY ROAD CHARACTERISTICS			
Majority of structures on primary access road. Majority of structures on secondary access roads with some primary road access. Majority of structures on secondary roads. Majority of structures located on secondary roads with some dead-end roads. Dead end road systems that limit emergency crews to remain in the area under certain fire conditions due to lack of egress.	0 1 2 4 5	5	
EVACUATION PLAN			
Updated plan in place, community is aware. Plan in place not implemented community unaware. No plan.	0 3 5	3 B	
FIRE DEPARTMENT			
Volunteer FD more than 25 members. Volunteer FD more than 20 less than 25. Volunteer FD less than 20.	1 3 5	1	
FIRE SMART			
Community has FireSmart certified representative and strategies are in place. Community has started a FireSmart program, strategies not in place. Community presently has no FireSmart initiatives.	0 3 5	5 C	
MUTUAL AID/AUTOMATIC AID			
Fire department has a mutual aid/auto aid agreement in place. Fire Department has no aid agreements.	0 5	0 D	
TOTAL COMMUNITY DESIGN RATING is based on the community's ability to withstand fire front contact to critical infrastructure		Rating 19	

COMMUNITY CHALLENGES		Rating
<b>UTILITIES</b>		
All utilities are underground. Some utilities are underground. No utilities are underground.	0 3 5	3
<b>ACCESS TO CRITICAL INFRASTRUCTURE</b> (example: Pump house and reservoir)		
Access more than 4m wide with hammerhead turnaround and access for fire apparatus. Driveway less than 4m wide no turnaround has access for fire apparatus. No access for fire apparatus.	0 3 5	0 E
No obstructions or overhead branches below 5m. Obstructions or overhead branches below 5m.	0 5	0
No bridges or bridges with no weight and/or width restrictions. Low weight bridges restricting emergency vehicle access.	0 5	0
Driveway slope less than 10%. Driveway slope greater than 10% present.	0 5	0
No gate / non-locking gate. Locked gate / restricted access.	0 5	0
Most Addresses clearly visible from road. Most Addresses not visible from road.	0 5	0
<b>DOMINANT TREES</b> (take an average of what's around the community)		
Deciduous (Hardwoods). Mixed (Hardwoods and Conifers) 50/50. Conifers (Pine and/or Red cedar).	1 5 10	10
<b>HOME IGNITION ZONES</b> (take an average of what's around the community)		
10% of structures are in the <b>interface</b> with very light conifer fuel loads. 10% of structures are in the <b>interface</b> with moderate conifer fuel loads. ----- 70% of structures are in the <b>intermix</b> with moderate conifer fuel loads. 10% of structures are in the <b>intermix</b> with heavy conifer fuel loads and heavy brush.	0 3  3 5	3  5
<b>LADDER FUELS</b> (take an average of what's around the community)		
No conifers or conifer branches pruned up at least 2.5m. Conifer branches close to ground.	0 5	5
<b>TYPE OF GROUND COVER</b> (Majority or Type surrounding the community)		
Grass up to 15cm tall, pine needles, hardwood leaves. Tall grass, 15-30 cm. Grass more than 30cm tall. Shrubs with leaves. Shrubs with needles. Moderate to heavy slash.	3 5 8 8 10 15	15



SLOPE OF COMMUNITY		
Much of the community is flat (0-5%)	0	2
Most of the community is on a moderate slope (6-20%).	2	
Community is located on a steep slope not accessible to fire apparatus. (more than 20%).	4	
FUEL STORAGE (includes propane tanks, firewood, elevated tidy tanks)		
None.	0	3
Located more than 10m from structure and has a proper fuel break established.	1	
Located 1.5-10m from structure and has a partial fuel break established.	3	
Located less than 1.5 m from structure no fuel break established.	5	
CRITICAL INFRASTRUCTURE RESPONSE PLAN (wildfire mitigative tactics)		
Community has a critical infrastructure response plan in place.	0	3 F
Community has no critical infrastructure response plan in place.	3	
FIRE DEPARTMENT TRAINING		
FD members trained to Playbook Exterior + S-100-S185 or WSPP-115 & WFF 1.	0	0
FD members trained to Playbook Exterior with some wildfire knowledge.	1	
FD members trained to Playbook Exterior.	3	
FD members not trained to Playbook no wildfire knowledge.	5	
FIRE DEPARTMENT ENGINE/TENDER		
Fire Department has minimum 1 engine and 1 tender with wildland equipment.	0	0
Fire Department has minimum 1 engine and 1 tender.	3	
Fire Department has no tender and no wildland equipment.	5	
FIRE CONTROL WATER SUPPLY		
Pressurized hydrants with minimum 1800 lpm spaced less than 300m apart.	0	15 G
Pressurized hydrants with less than 1800 lpm or more than 300m apart.	2	
Hydrants fed by a generating system (requires power).	3	
Dry hydrant/standpipe available.	5	
River/Creeks/Cisterns that are accessible for drafting.	7	
No water sources.	15	
HELICOPTER DIP SITES (min 1.5 m water depth year-round 45' obstruction clear)		
Under 2-minute turnaround (< 1 kilometer).	0	3 H
Within 4-minute turnaround (1-3 Kilometers).	2	
Within 6-minute turnaround (3-6 Kilometers).	3	
Beyond 6-minute turnaround (greater than 6 k) or unavailable.	5	
COMMUNITY MAPS		
There are updated maps available.	0	0 I
There are no maps available.	5	
TOTAL COMMUNITY CHALLENGES		Rating 67

## CALCULATING YOUR WILDFIRE HAZARD RATING

COMMUNITY DESIGN RATING	COMMUNITY CHALLENGES RATING	TOTAL
19	67	86

**Low Fire Risk:****Overall Wildfire Hazard Rating = 0-25 points**

The chances of your community's critical infrastructure surviving a wildfire are GOOD. Little is needed to improve your situation. Keep up the good work!

**Moderate Fire Risk:****Overall Wildfire Hazard Rating = 26-59 points**

The chances of your community's critical infrastructure surviving wildfire are FAIR. Some minor improvements will make the identified structures more fire resistant. Check the categories on the form where you scored poorly.

**High Fire Risk:****Overall Wildfire Hazard Rating = 60-119 points**

The chances of your community's critical infrastructure surviving a wildfire are NOT GOOD.

Improvements in structure and site hazards are necessary.

**Extreme Fire Risk:****Overall Wildfire Hazard Rating = 120 or more points**

Your community's critical infrastructure MAY NOT SURVIVE if a wildfire passes through the area. Take a serious look at your community and make improvements. If you don't, you could be facing disaster. You'll find that even small changes could make the difference between losing or saving your home.

## NOTES & RECOMMENDATIONS FROM COMMUNITY WILDFIRE HAZARD ASSESSMENT SCORES:

**A – Roads** – Many intermix residential neighbourhoods built into the Interior Douglas-fir with only one access road. Neighbourhoods include those off of Silver Star Mtn Rd above Foothills, McLennan Rd, Dixon Dam Rd., and Hartnell Rd.

**B – Evacuation Plan** – Evacuation routes in the BX are separated on the north and south by BX Creek. Silver Star Mtn Rd. is the primary evacuation route on the north. Dixon Dam Rd and Hartnell Rd are the primary routes on the south.

**Recommendation** - Confirm frequency of hazard trees assessment and mitigation along the identified evacuation routes. Hazard trees can fail during the emergency event and block the evacuation route. To put the risk in perspective the 2018 Camp Fire in California had 85 deaths with many of the wildfire related deaths in Paradise attributed to a tree that fell across and blocked the evacuation route.

- C – FireSmart Initiatives** - Most homes destroyed in forest fires are from fire brands (embers) carried in the wind that ignite spot fires in dry fuel (standing dead grass, firewood, patio cushions, welcome mat). A fuel free zone within the first 1.5m around structures can prevent ground fires from igniting the structure.

**Recommendation** – review building bylaws for hill side communities (example Kamloops), as an example of FireSmart principles. No cedar shake roofs. Use non-combustible hardscapes, such as concrete pavers, flagstone paths, decorative gravel (rock mulch), and natural stones surrounding the structure for a minimum of 1.5m. Enclose spaces under decks to prevent accumulation of leaf litter where they could ignite from wildfire embers.

**Recommendation** – Evaluate the existing FireSmart neighbourhood private property initiatives for homes with the Community Wildfire Resiliency Plan or Crown Land Wildfire Risk Reduction Fuel Management Tactical Plan to assess local threat conditions and wildfire risk reduction priorities. In cases where local assessments provide evidence of higher wildfire risk than is indicated by the WUI Risk Class, that information should be used to guide risk reduction activities. Silver Star and Predator Ridge provide an example of FireSmart fuel mitigation.

**Recommendation** – Some property owners on well water have pre-install cisterns to hold water for roof top sprinklers and a few have pre-installed roof top sprinklers that the Fire Dept. or its delegate can connect to fire department hoses and pumps when the structures are threatened from a wildfire. The pre-installation of sprinklers will aid the fire dept. in setting up the community structure protection plan more quickly when time is of the essence. Sprinklers can cause water damage when they directly hit structure and therefore the Fire Dept. should provide guidance to property owners and sign off on permission for agencies to use the sprinklers when a wildfire threatens the community. It must be noted that sprinklers are most effective when FireSmart initiatives have been completed to prevent radiant heat and direct flame contact on the structure. In many cases FireSmart initiatives can make a structure “Stand Alone” resulting in sprinklers not being necessary to protect the structure from a wildfire.

**Recommendation** – a map that identifies FireSmart properties will help prioritize the installation and operation of sprinklers for Structure Protection.

**Recommendation** – a map that identifies properties with Fire Dept. approved pre-installed sprinklers for effective timely activation. Promotes water conservation by having the sprinklers operated by the fire department. A better option than the homeowner turning sprinklers on a depleting critical water supply prior to its timely use. Also reduces the risk of structure damage from water being left on unsupervised.

**Communication to property owners** - During fire season, when not at home, store flammable patio furniture indoors or 10m away from the house. The “Welcome” mat at the front door is usually flammable and therefore not welcome during fire season.

When a forest fire is near, close all windows and doors to prevent blowing fire brands from entering the building. Move all flammable material on decks and patios or next to the house, at least 10m away including BBQ propane cylinders and gas cans. For firewood sheds, seal off the opening with a tarp to minimize the risk of fire brands igniting the wood pile.

Sprinklers are effective when placed up high to wet the entire perimeter of the building from the top down for 30 min prior to fire arrival and running while the fire passes by. Running sprinklers days in advance of the fire is a waste of water which is a critical resource required for fighting fire. Sprinklers can cause water damage to a structure if not properly set up and monitored.

At the community level, start with critical infrastructure and follow the recommendations above. Work with community block watch representatives to facilitate meetings with private property owners to promote FireSmart. Property owners work from the homes outward. When the community is FireSmart then expand to work on forest fuel modifications such as harvesting around the perimeter of the community on the crown land to open up the tree canopy and remove the ladder fuels. If the fuels aren't managed next to the homes an ember from the wildfire could blow in from more than 2km away and ignite a spot fire that could burn down the structure.

- D -** Mutual Aid agreement in place with Silver Star FD, Coldstream FD, Lumby FD, Armstrong FD, Enderby FD, and City of Vernon FD. See Part II Silver Star Fire Protection Area - Mutual Aid, for list of apparatus.



- E** – Critical Infrastructure includes BX-Swan Lake FD, water pump stations, BC Hydro wood pole Transmission lines, BC Hydro Vernon Terminal Substation, 2 communication tower Becker and Boss Creek, Hillview Elem., BX Elem., Vernon Christian K – 12.

**Recommendation** – Critical Infrastructure should be FireSmarted by its owners to provide an example for community members to follow. Verify the building openings such as attic vents are covered by fine steel mesh screen, install clean crush rock 1.5m wide around the perimeter of the structure. Space out trees for an even mix of conifer and deciduous to have a minimum of 3m from the branches of one tree in proximity to the next tree. Remove all tree branches from the ground up to 4m to prevent a ground fire from igniting the lower tree limbs.

- F** – Critical Response Plan – Preplans on all commercial properties. No single family. Tablets in fire trucks for preplans and FD train on the use of the tablets.

**Recommendation** - Confirm ability to Email PDF files to mutual aid response crews.

**Recommendation** – FireSmart crew site review the identified critical infrastructure to provide property owners with FireSmart recommendations to make the structures “Standalone”. Currently many of the critical infrastructure are at an elevated risk of wildfire damage due to the lack of landscape maintenance. (See pictures per Critical Infrastructure starting pg 14.)

- G** – Fire Control Water Supply – Limited areas protected with Hydrants

**Recommendation** - areas with clean potable water from community reservoirs the Provincial Urban Structure Protection Trailer should be considered for a first line of defense from a wildfire. The trailer has 1250 gutter mount sprinklers that can attach to house garden hose faucets. Provides fast deployment of low flow sprinklers. Fire Dept. promote a program to encourage private property owners to purchase WASP Sprinkler kits that can be stored for deployment by the Fire Dept. when a wildfire threatens the community for neighbourhoods on municipal drinking water.

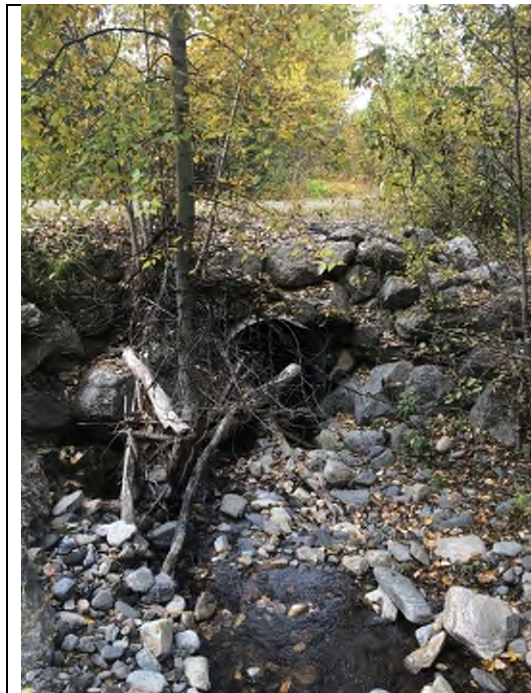
For much of the BX-Swan Lake Fire Protection Area it is reliant upon tenders to shuttle water for structure fires.

**Recommendation** – Prioritize and install seasonal cisterns for Structure Suppression (house fire) and Protection (sprinklers). A review of structures furthest from water source supports 10,000 to 20,000 gal cisterns located at Hartnell, Forsberg, and McLennan Rd. See proposed locations on next page.

1. Wildfire Risk Class 1 with a Fire Threat 9 and 10 in the Hartnell Rd. area.



2. Wildfire Risk Class 1 with a Fire Threat 8 in the Forsberg Rd. area.



Propose 10,000 – 20,000 gal cistern near BX Creek at 8780 Forsberg Rd. Seek property owner permission at 8780 Forsberg for cistern placement. Location could provide gravity fill of cistern from BX Creek. The closest hydrant is 8km down hill at Bates Rd.

3. Wildfire Risk Class 1 with a Fire Threat 7 in the McLennan Rd. area.

	<p>Propose 10,000 - 20,000 gal cistern at 7850 McLennan Rd. Seek property owner permission for cistern placement. Would need to fill from a Tender. The closest hydrant with a moderate flow rate is at the bottom of the road at 7205 L&amp;A Rd.</p>
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Cisterns located in key areas could be the difference between a quick fire knock down or the loss of a community.

**Recommendation** - RDNO invest in BB4 and B2X pump heads along with 20,000 ft of 2.5inch structure hose to be used in the North Okanagan when communities are threatened by wildfire. For BX-Swan Lake Fire Protection Area the equipment could provide an effective portable hydrant line for Structure Protection from pre-installed 10,000 to 20,000 gal cisterns for Hartnell Rd, Forsberg Rd, and McLennan Rd. Could also provide a source of water for Structure Protection from BX Creek, and Swan Lake. Provincial Wildfire assets could be in short supply if the province experiences a “heat dome” fire season like 2021

**H** – Helicopter fill sites – Procter Lake and Swan Lake. Where wildfire threaten homes that are near BX Creek, BCWS has access to 10,000gal portable dip tanks that can be filled with a BB4 pump. Helicopters hoover with a Bambi Bucket on a long line and fill from the heli dip tanks for quick turnaround time.

**Recommendation** - Heli dip tanks could be in short supply during busy wildfire season. RDNO consider purchasing and storing and turnaround time during initial fire containment.





## I – Maps

**Recommendation** – printed maps 60cm x 100cm for each Section showing Escape Routes, Safety Zone, Critical Infrastructure, Tender Filling sites, Hydrants, and property address. Include Overview to provide Structure Defense teams for operational planning.

The implementation of the recommendations is beyond the scope of this document.

BX-Swan Lake fire protection area is surrounded by forest that is Risk Class 1 (highest relative risk) with Wildfire Threat High (7) to Extreme (10) bordering on a community assessed as High Fire Risk (86). A repeat of the summer of 2021 combined with a lightning strike in timber in the vicinity of areas near Keddleston, Forsberg, McLennan or Ladner has the potential of becoming a fast-moving wildfire. If hot embers blow into residential neighbourhoods they could ignite spot fires that will result in significant structure loss if properties have not undertaken FireSmart recommendations. The information should be used to promote FireSmart strategies on and around homes where they back onto both private and crown forests, and to prioritize the investment in forest fuel treatment plan.



## PART II

### RESPONDER SAFETY CHECK LIST

*All responders will receive a pre-deployment safety briefing that includes:*

- Current wildfire location, rank, and direction of travel and any changes expected during the operational period;
- Current weather and any changes expected during the operational period;
- Current and planned air operations;
- Current and planned fuel mitigation activities (backburns, land clearing)
- Check-in procedures and intervals;
- Other hazards in operational areas;
- Safety zone locations;
- Medical unit location(s);
- Reporting structure, assignment, and radio call-sign;
- Assigned radio frequency(ies);
- Contingency communications (cell phone, satellite phone numbers); and
- Expectations for personal protective equipment.



“Drought conditions, the build-up of hazardous fuels, and more homes in fire-prone landscapes are changing how we experience Wildfires in British Columbia.”



## BX-SWAN LAKE FIRE PROTECTION AREA

**Latitude:** 50°17'20"N    **Longitude:** 119°13'31"W

**Toporama Map:** 82L SW

**Fire Department Jurisdiction:** RDNO Electoral Area B & C, BX-Swan Lake Fire Dept. Serves a population of 9,000 and a fire protection area of 55.47 sq km.

BX-Swan Lake Fire Dept. has 30+ Paid-On-Call individuals. Fire Dept. operates nine apparatus.

- Type 1 Engine (BX E1) with 1250/1000/25F,
- Type 2 Engine/Tender (BX E1-2) with 1050/1500/25F,
- Type 2 Tender (BX T1-2) 1500 gal,
- Type 6 Rescue/Brush Truck (BX R1-2) with an interface mini-pump and 125 gal,
- Type 3 Engine (BX E1-3) with 18hp/500/20F,
- Rescue 1, (BX R1) 5 ton full equip rescue with auto extrication equipment,
- Utility F250 (BX U1) to haul the 18ft Structure Protection Unit,
- Command pickup (BX C1).
- Coming fall 2022 a Type 1 Tender (BX T1) 1050/2000/25F,

Mutual Aid – 1Ex2 = 2 Type 1 Engines, 2Tx1 = 1 Type 2 Tender

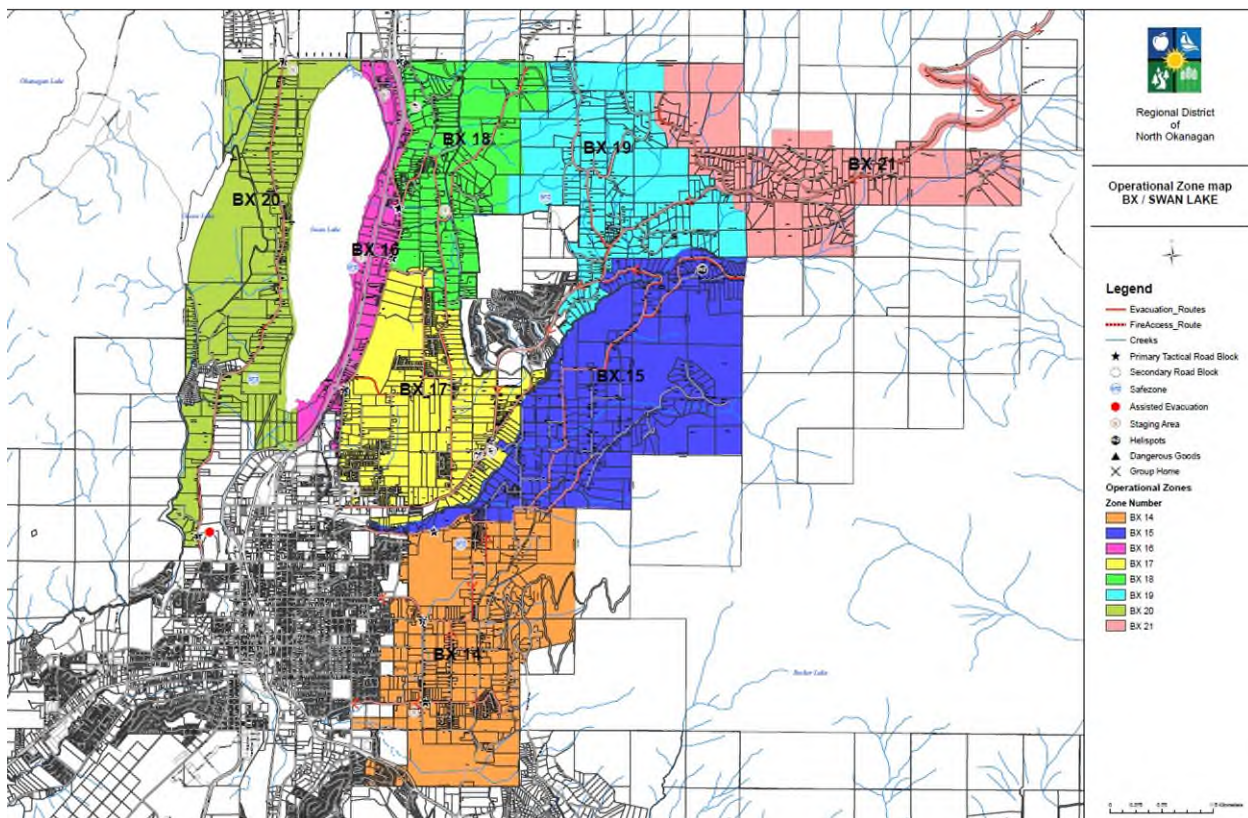
- Silver Star FD mutual aid apparatus
  - o 2Tx1, Ski Hill 2Ex1
- Coldstream/Lavington FD mutual aid apparatus
  - o 2Ex1, and 2Tx1
- Lumby FD mutual aid apparatus
  - o 2Ex1, and 2Tx1
- Armstrong FD mutual aid apparatus
  - o 1Ex1 and 1Tx1
- Enderby FD mutual aid apparatus
  - o 1Tx1
- City Vernon FD mutual aid apparatus
  - o 1Ex1, and 2Tx1

### Estimated number of Private Dwellings:

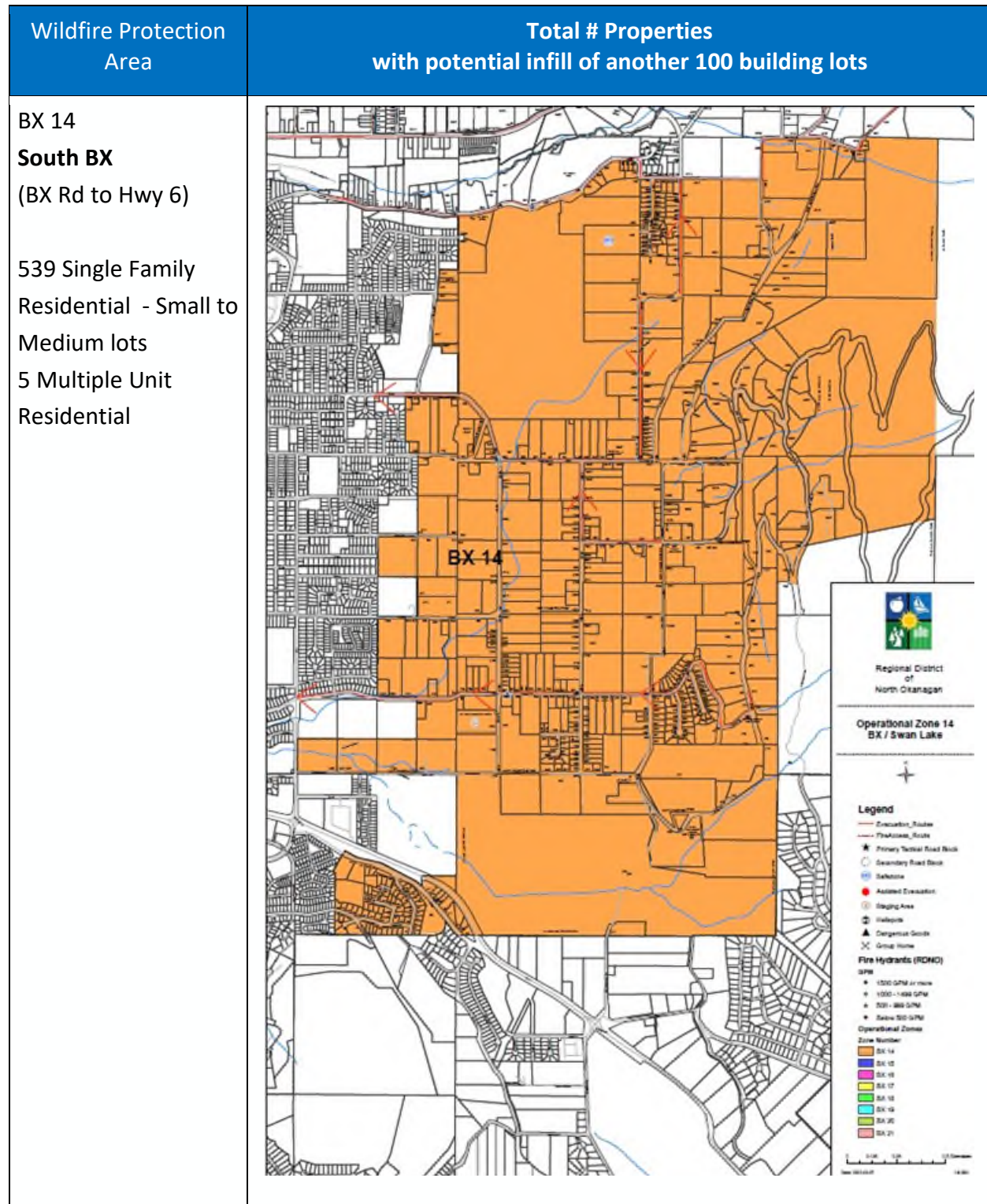
2,200 Single Family Residential, 14 Multiple Unit Residential, 3 Mobile home parks, 3 Campgrounds, 9 B&B's, 2 Motels, 3 Schools, 5 churches (large assembly)

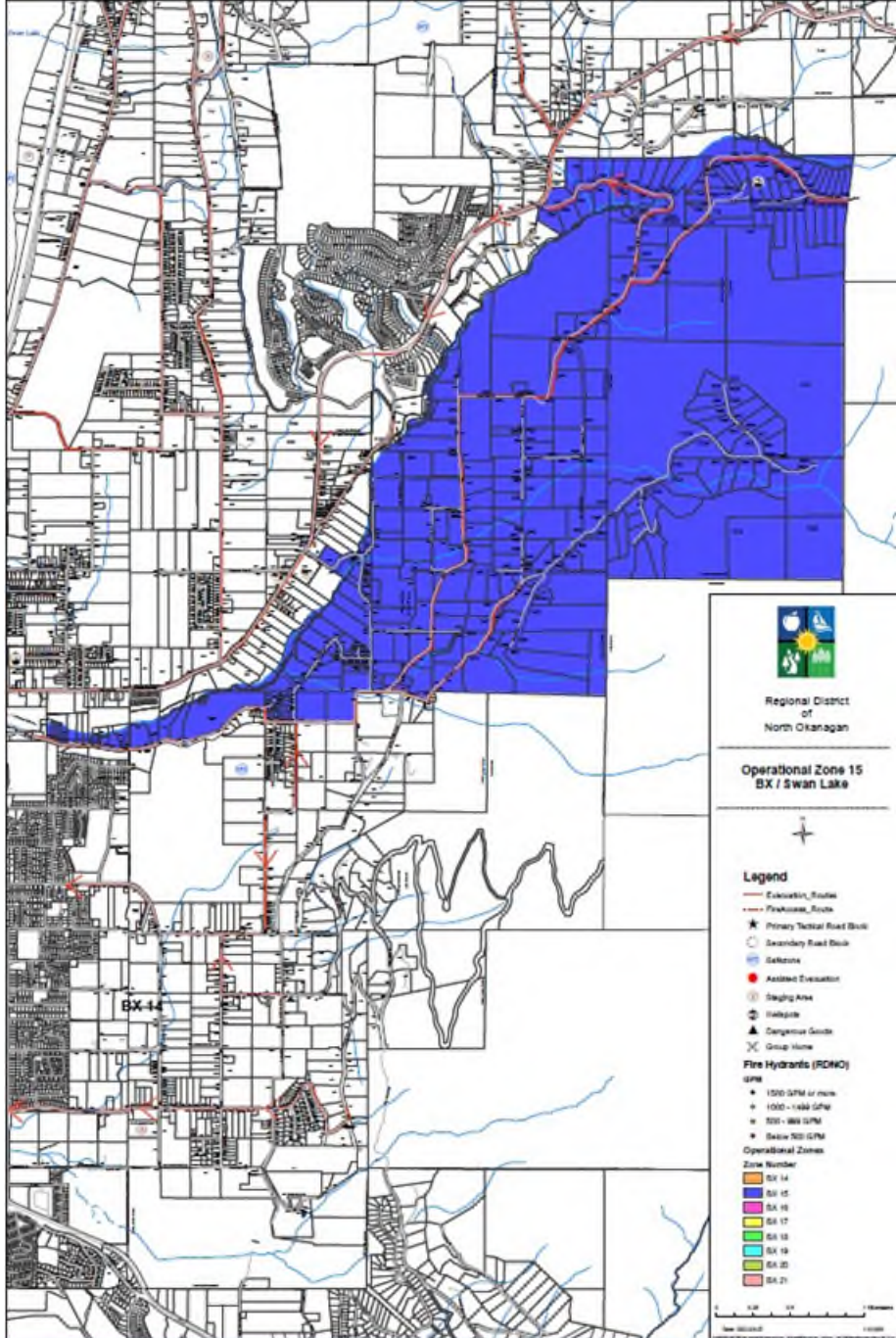
Structure protection is prioritized by proximity to the fire threat starting with Critical Infrastructure followed by Primary Structures (typically the home) with other buildings on the property identified as Secondary Structures (detached workshop) and other (small garden shed, or open pole barn). Secondary and Other buildings are assessed after the Primary structures have been triaged and protected, unless the Secondary and Other building proximity to the primary structure could directly impact the Primary Structure.

For purposes of allocating resources to protect structures from a wildfire, BX-Swan Lake Fire Protection Area has been divided into 8 Divisions:

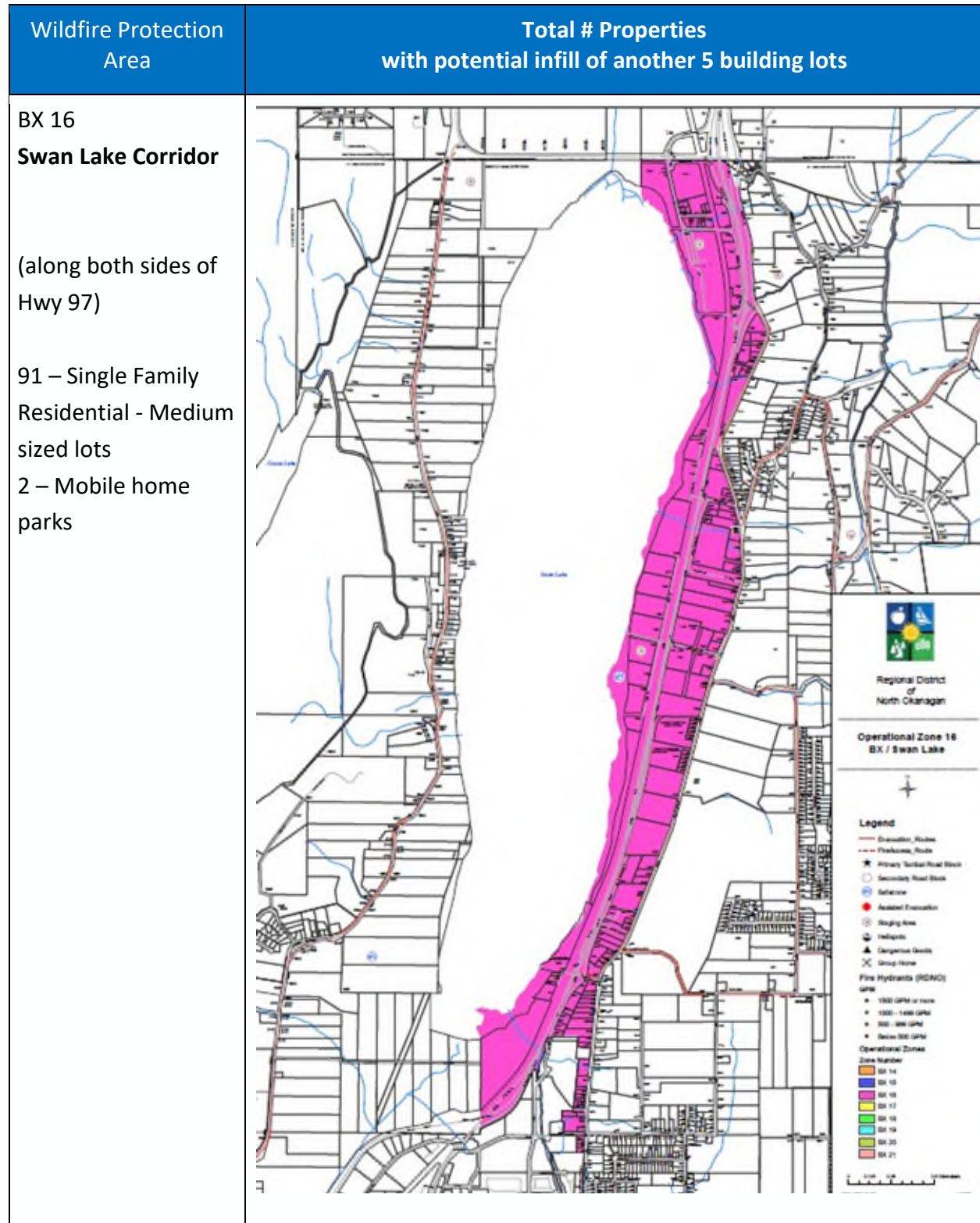


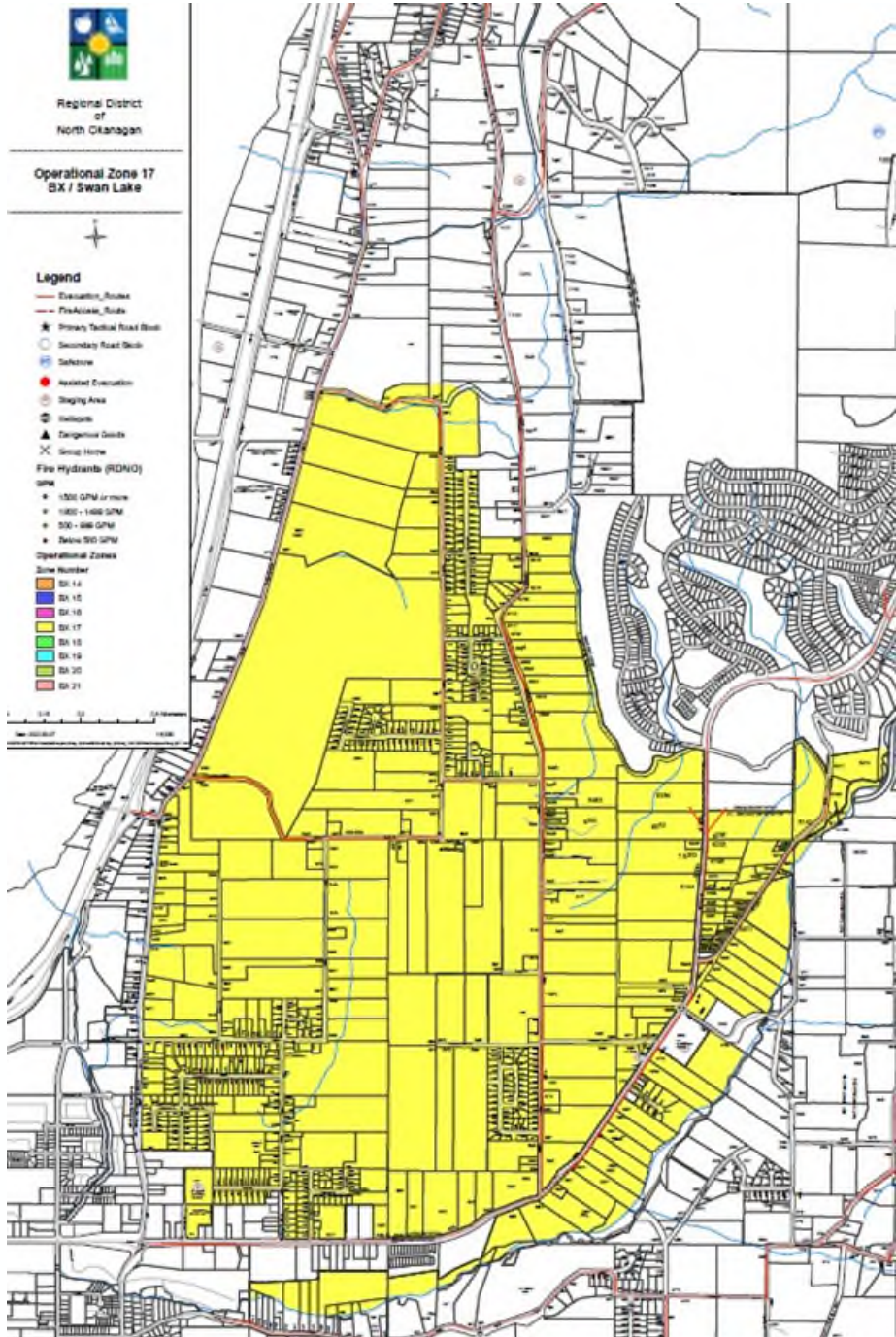




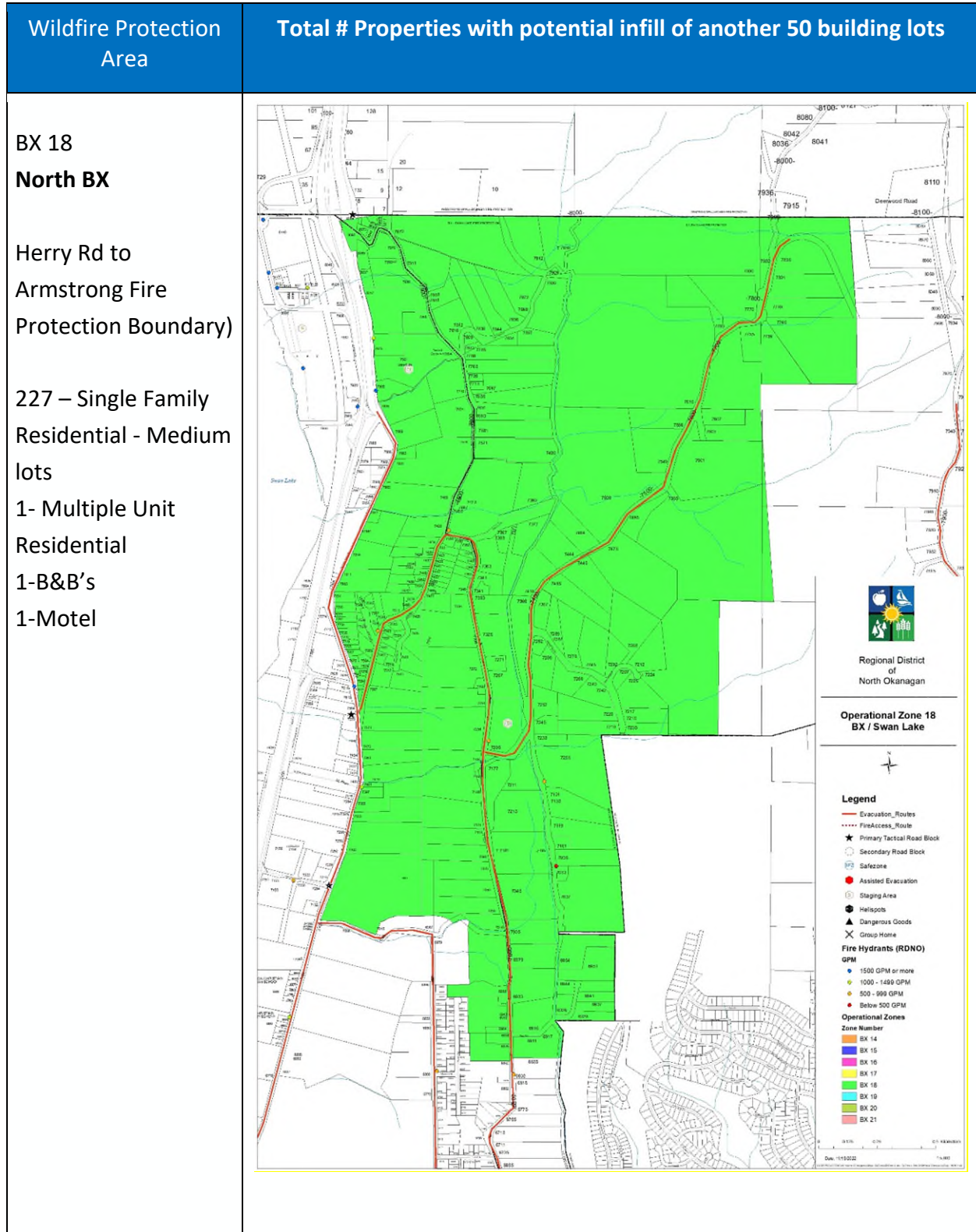
Wildfire Protection Area	Total # Properties with potential infill of another 100 building lots
<p><b>BX 15</b> <b>East BX</b></p> <p>297 Single Family Residential- Medium lots 6 Multiple Unit Residential – 2 Campgrounds 4 B&amp;B's</p>	

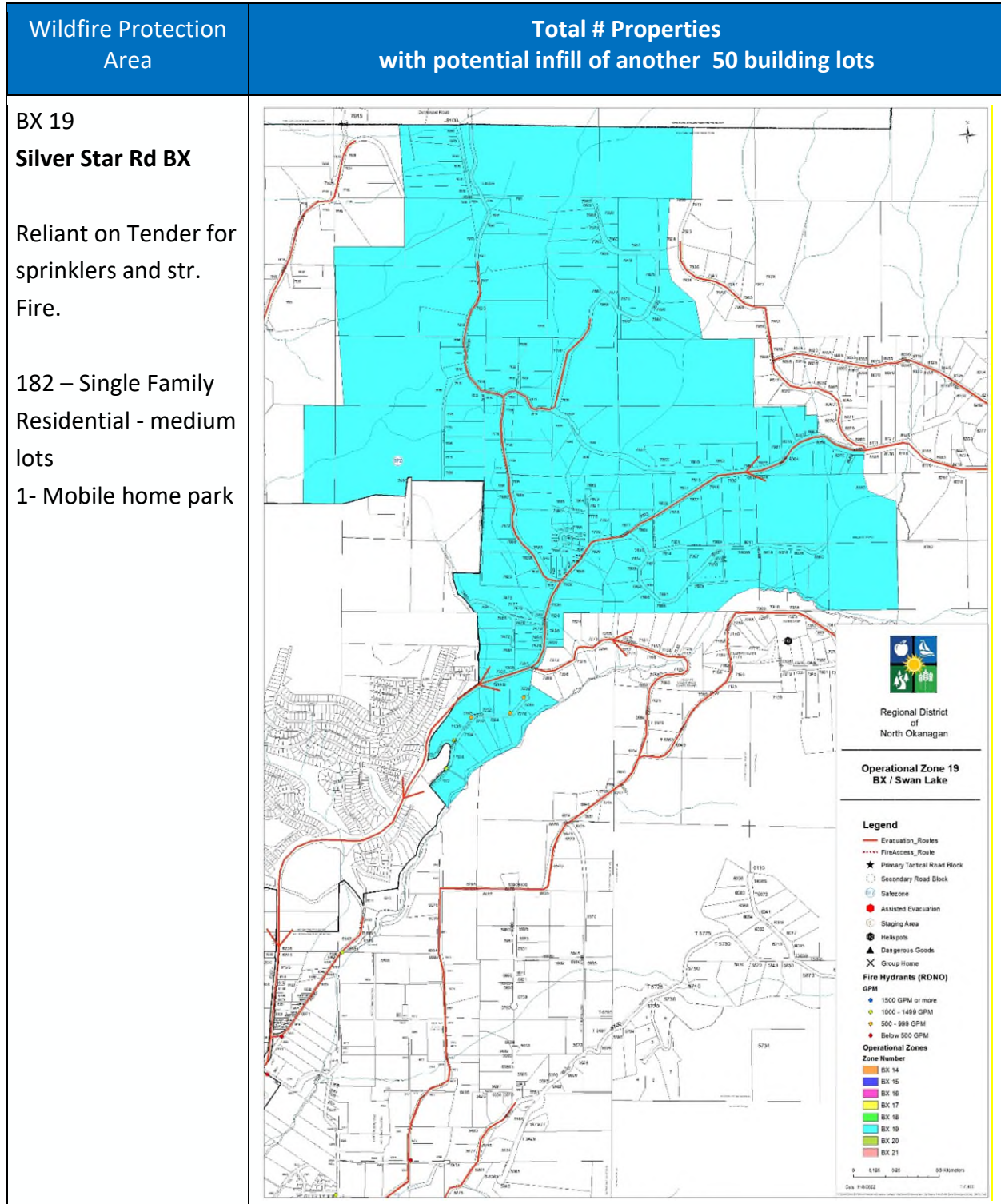




Wildfire Protection Area	Total # Properties with potential infill of another 0 building lots
<p>BX 17 <b>Central BX</b></p> <p>606 – Single Family Residential - Small to Medium lots 2- Multiple Unit Residential</p>	 <p>Regional District of North Okanagan</p> <p>Operational Zone 17 BX / Swan Lake</p> <p><b>Legend</b></p> <ul style="list-style-type: none"> <li>Evacuation Routes</li> <li>Fire Access Roads</li> <li>Primary Tactical Road Block</li> <li>Secondary Road Block</li> <li>Defensible</li> <li>Assisted Evacuation</li> <li>Staging Area</li> <li>Isolation</li> <li>Dangerous Goods</li> <li>Gravel Home</li> <li>Fire Hydrants (RDNO) <ul style="list-style-type: none"> <li>1500 GPM or more</li> <li>1000 - 1499 GPM</li> <li>500 - 999 GPM</li> <li>Below 500 GPM</li> </ul> </li> <li>Operational Zones <ul style="list-style-type: none"> <li>BX 14</li> <li>BX 15</li> <li>BX 16</li> <li>BX 17</li> <li>BX 18</li> <li>BX 19</li> <li>BX 20</li> <li>BX 21</li> </ul> </li> </ul>







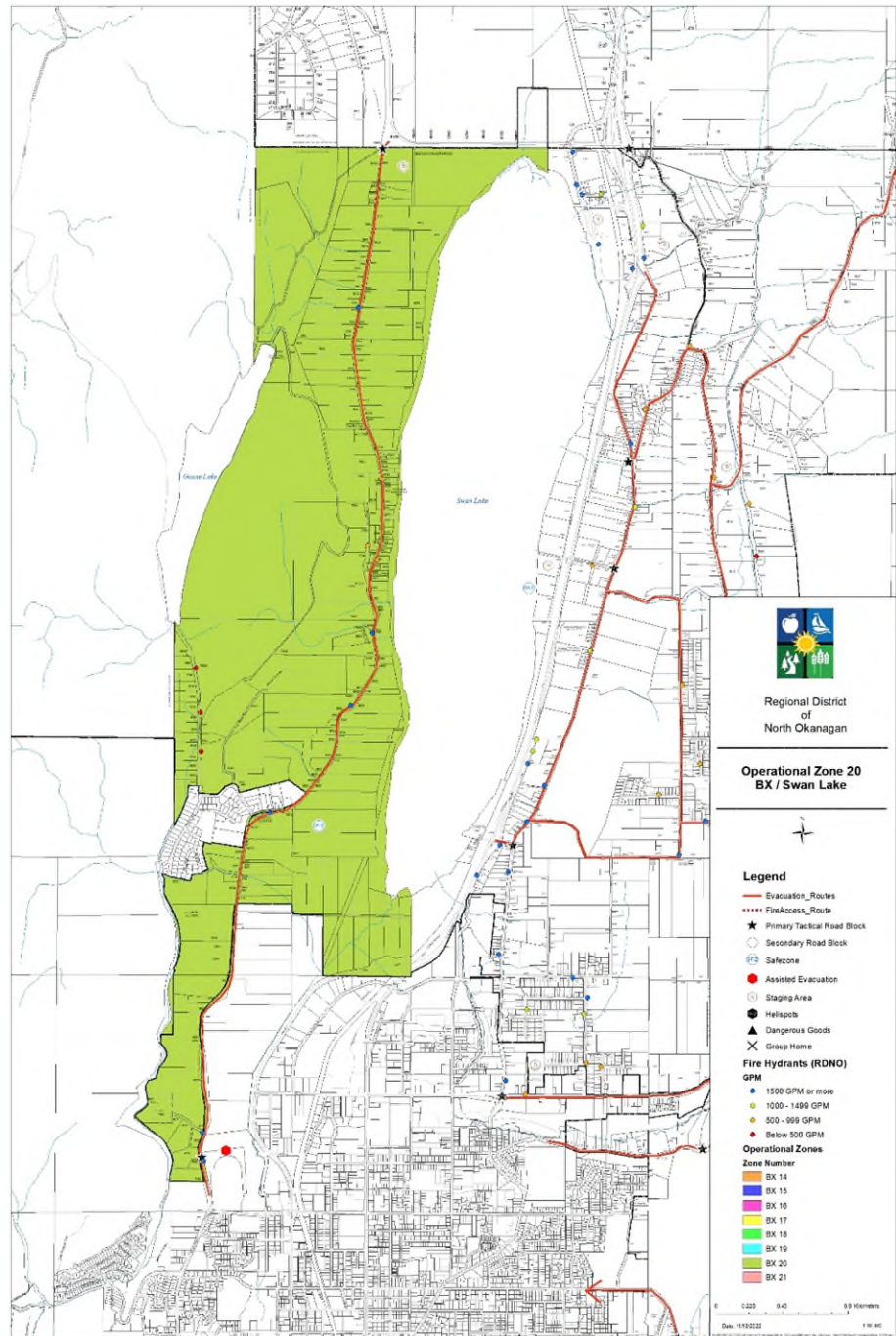


Wildfire Protection  
Area

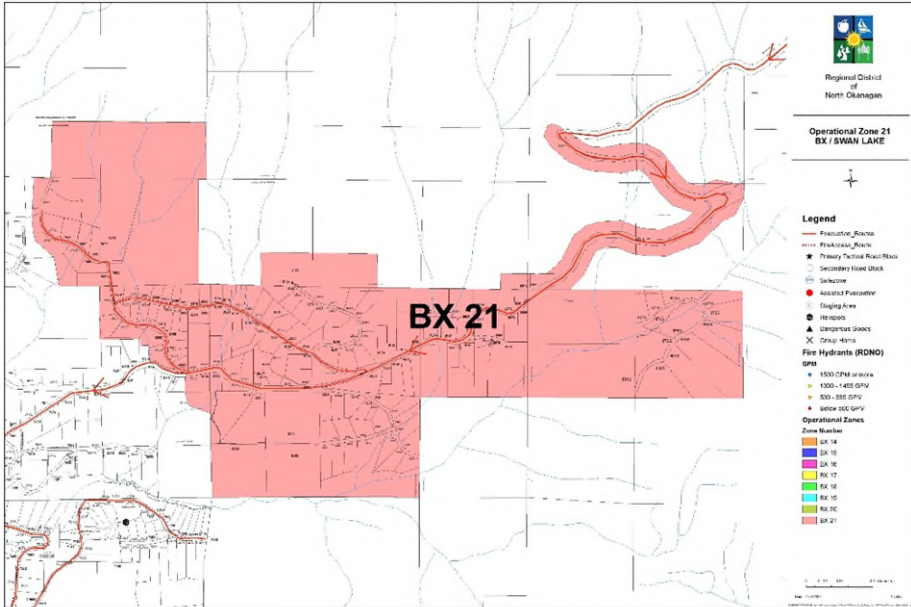
BX 20  
Old Kamloops Rd.

135 – Single Family  
Residential - Medium  
lots  
1- Campground

Total # Properties  
with potential infill of another 5 building lots







Wildfire Protection Area	Total # Properties with potential infill of another 200 building lots
<p><b>BX 21</b> <b>Upper Silver Star Rd</b> <b>BX</b> (Jackpine Forsberg area) Tenders required for water supply to operate sprinklers and or suppress a structure fire.</p> <p>123 – Single Family Residential – Medium to Large lots 4- B&amp;B's</p>	



## SAFETY ZONE

Consider ability for safety zone large enough to hold responders' equipment to shelter during fire passage for speedy return to mop up after fire front passes. Quick response to extinguish spot fires that could ignite structures after the fire front has passed.

Safety Zone options depending on # of crews and vehicles.

**Safety Zone Areas** identified in BX Wildfire Protection Area 14, 16, 17, and 20.

Wildfire Protection Area	Safety Zone
BX14 <b>South BX</b> (BX Rd to Hwy 6)  Hillview Elementary - 1822 Francis Street         BX Ranch Dog Park - 845 BX Rd	 

Possible Temporary Refuge area at 4550 East Vernon Rd.	Assess at time of fire threat to verify the site is suitable for crews and equipment working in the area.
BX 15 <b>East BX</b>	None
BX 16 <b>Swan Lake Corridor</b>  Swan Lake boat launch 7160 & Canoe launch T7080 Heron Rd	
BX 17 <b>Central BX</b>  BX Elementary School 5849 Silver Star Rd.	



BX Community Park  
by Fire Hall


Could be used as  
Safety Zone,  
Equipment Staging,  
Wildfire ICP.

Could provide heli  
landing site for  
medivac




Small Safety/Staging  
area at 7205 L & A  
Rd.



<p>BX 18 <b>North BX</b></p>	<p>none</p>
<p>BX 19 <b>Silver Star Rd BX</b></p> <p>End of Clearview Rd. off of Keddleston</p>	<p>Confirm at time of fire threat if site has adequate water supply and large enough for crews and equipment to use as Safety Zone. Might only be suitable as a temporary refuge area.</p>
<p>BX 20 <b>Old Kamloops Rd.</b></p> <p>8363 Old Kamloops Rd Small Safety/Staging area</p>	
<p>BX 21 <b>Upper Silver Star Rd BX</b></p>	<p>No identified Safety Zones within BX 21, Outside of the BX-Swan Lake Fire Protection Area may consider Silver Star Mtn. Parking Lot B if access on Silver Star Rd is blocked, preventing retreat to BX-Swan Lake Fire Hall</p>



<p>Silver Star Mtn 1 Village Centre <b>Upper Silver Star Rd BX</b> Top of Silver Star Mtn Rd. at Silver Star Ski Hill the Parking Lot B has a large gravel area.</p>	
--	--

## CRITICAL INFRASTRUCTURE

**Critical infrastructure** are structures that if damaged or destroyed would have a significant impact on the quick recovery of a community following a forest fire. For this reason, critical infrastructure is identified as the highest priority for structure protection.

Wildfire Protection Area	Critical Infrastructure
<p>BX 14 <b>South BX</b> (BX Rd to Hwy 6)  Hillview Elementary - 1822 Francis Street</p>	

NOWA Warehouse -  
480 McLeish Rd



East Vernon pump  
house/near Black  
Rock - South BX No.1  
pump house



BC Hydro Vernon  
Terminal Substation -  
420 Mountview Rd.

BC Hydro Wood Pole  
Transmission Line -  
Pottery Rd. at Hydro  
Sub to north end of  
Swan Lake through  
BX 14,15, & 18.



Communication  
towers off Galiano  
Rd area

Pump house at Boss  
Creek



749 Galiano Rd.

Pump house at  
Galiano





**BX 15**

**East BX**

5690 Dixon Dam Rd.  
at corner of Malim  
Rd. water pump



5121 Dixon Dam Rd.  
Water Pump



BC Hydro Wood Pole  
Transmission Line -  
Pottery Rd. at Hydro  
Sub to north end of  
Swan Lake through  
BX 14,15, & 18.





BX 16

**Swan Lake Corridor**

Vernon Christian  
School

6890 Pleasant Valley  
Rd.

Communication  
building next to  
taxidermy



BX 17

**Central BX**

BX-Swan Lake Fire  
Dept. – 5764 Silver  
Star Rd.



BX Elementary  
School - 5849 Silver  
Star Rd.  
Could be used as  
Safety Zone,  
Equipment Staging,  
Wildfire ICP.



Across from 5551  
Silver Star Rd.  
Communications  
control building





5302 Apple Ln.

North BX No. 1 Pump  
house



5608 Rimer Rd.

North BX No. 2 pump  
house



BX 18

**North BX**

Water Slide  
chlorination building  
- 7921 Greenhow Rd.




7581 Baker Hogg Rd  
Reservoir on Baker  
Hogg Rd



7806 Pleasant Valley  
Rd.  
Communications  
building





<p>BC Hydro Wood Pole Transmission Line - Pottery Rd. at Hydro Sub to north end of Swan Lake through BX 14,15, &amp; 18.</p>	
<p>BX 19 <b>Silver Star Rd BX</b></p> <p>2470 Chew Rd. Communications Building</p>	 <p>none</p>

BX 20

Old Kamloops Rd.

4800 Haney Rd.

SPCA

6395 Old Kamloops

Rd.

Bella Vista Pump

House

Bremmer Rd. and Old  
Kamloops Rd.

Communications  
Building

Ricketts PRV Station

Northeast corner of  
6235 Old Kamloops  
Rd, across from 6490  
Aggasiz Rd.





Stand pipe at Old  
Kamloops and  
Bremmer Rd.

7450 Old Kamloops  
Rd.

Swan Lake Pump  
house

7830 off Old  
Kamloops Rd.  
Goose Lake  
Chlorinator, Goose  
Lake Dam and  
Reservoir (non-  
potable irrigation  
reservoir)








8385 Old Kamloops  
Rd.

Dec. 2023

Community Structure Protection Plan

Building Fire Safe communities through education, planning and emergency response

<p>Fortis High Pressure Gas Line</p>	
<p>BX 21 Upper Silver Star Rd BX</p>	<p>Jackpine utility- private utility well / pump bldg. 8008 Jackpine Rd</p> 

Much of the identified critical infrastructure requires fuel mitigation adjacent to the structures. **FireSmarting around the critical infrastructure will increase its resilience to wildfire and stand as an example to the public of proper FireSmarting methods.**

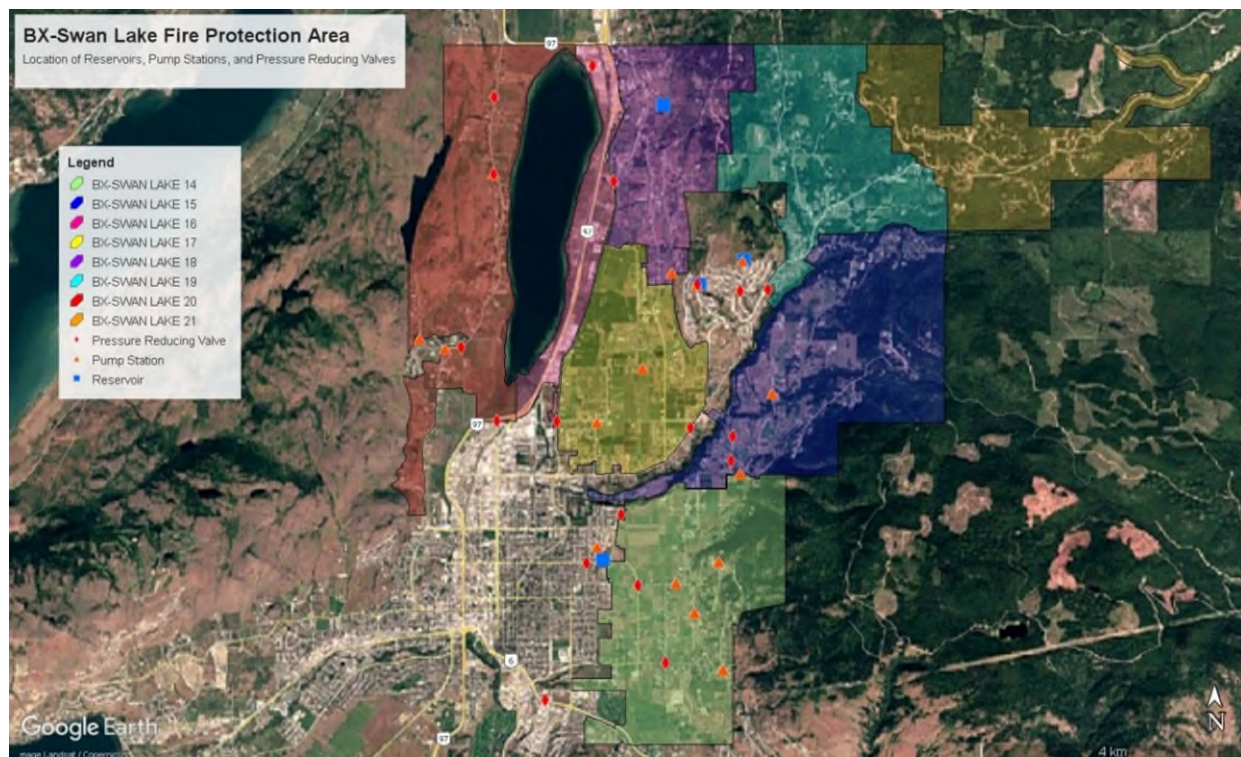


## WATER FILL SITES

Before utilizing hydrants for Structure Protection contact Zee Marcolin 250-550-3660 RDNO.

BX-Swan Lake Fire Protection Area has 92 municipal hydrants, 3 private hydrants and 12 standpipes supplied from 4 reservoirs.

Refill times are based on flat-out pumping rates or maximum rates allowed by a flow limiting PRV. The flows for Foothills and McMechan may be a little higher given there is a lot of pumping capacity available to fill them.





### Sun Peaks Reservoir

Location	Capacity	Recharge Flow	Rate Limiting Factor	Minimum Fill Time
7440 Sun Peaks Dr	2291 m <sup>3</sup> 503,950 Imp gal	31.5 L/s 416 gal/min	Foothills Booster Pumps	20.2 hrs



### McMechan Reservoir

Location	Capacity	Recharge Flow	Rate Limiting Factor	Minimum Fill Time
901 - 39th Ave	13300 m <sup>3</sup> 2,930,000 Imp gal	924 L/s 2,198 gal/min	Mission Hill Water Treatment Plant	4 hrs



### Foothills Reservoir

Location	Capacity	Recharge Flow	Rate Limiting Factor	Minimum Fill Time
Across from 6831 Foothills Dr	727 m3 159,980 Imp gal	316.8 L/s 4,199 gal/min	McMechan Booster Pumps	0.64 hrs



### Baker Hogg Reservoir

Location	Capacity	Recharge Flow	Rate Limiting Factor	Minimum Fill Time
7581 Baker Hogg Rd	1800 m3 395,945 Imp gal	44 L/s 580 gal/min	PRV for pipe protection	11.4 hrs



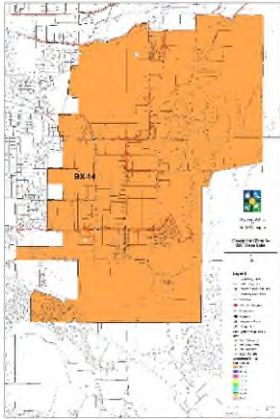
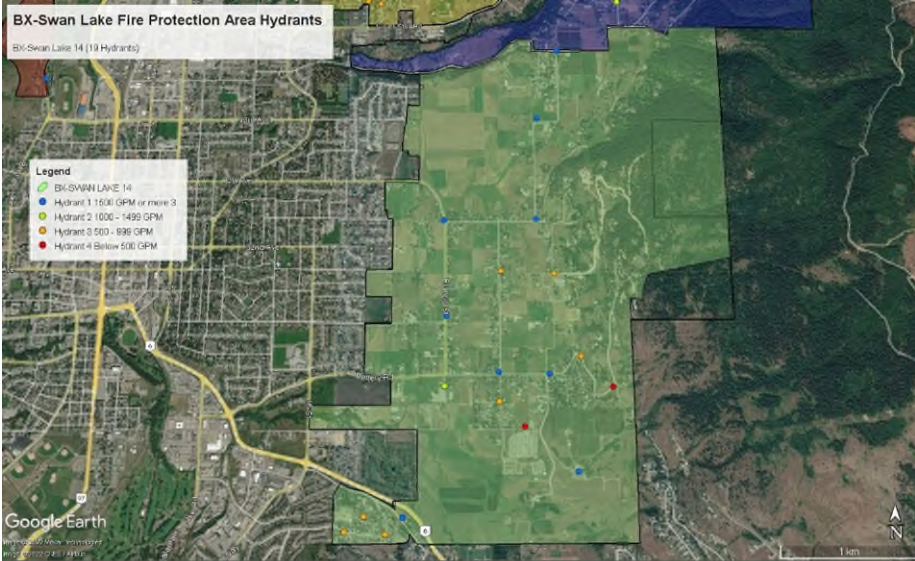
### Goose Lake Reservoir

Location	Capacity	Recharge Flow	Rate Limiting Factor	Minimum Fill Time
Goose Lake	2,386,300 M3	N/A*	N/A*	N/A*

\* Goose Lake fills through the GVW potable system. As such, there are numerous factors and that impact refill rate, and time to refill.



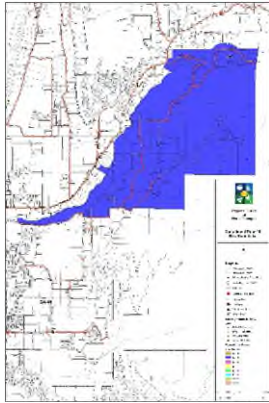


Wildfire Protection Area	Water Fill Sites
<p><b>BX 14</b> <b>South BX</b> (BX Rd to Hwy 6)</p> <p>19 municipal hydrants and 2 standpipes</p> 	

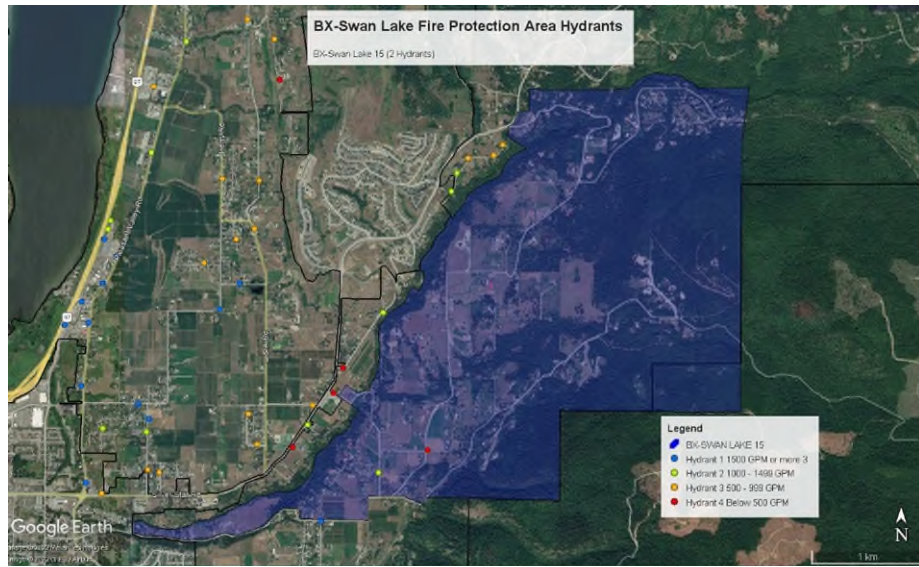
**BX 15**

**East BX**

2 municipal hydrants  
and 3 standpipes



Tender fill site  
7100 Tilicum Rd. at  
BX Falls Trail.



Consider large seasonal cistern near Hartnell Rd and Lynxx

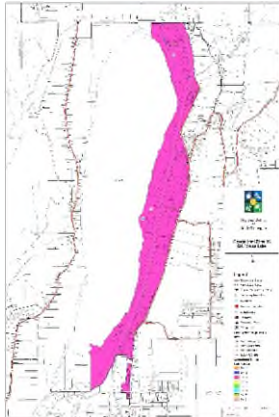




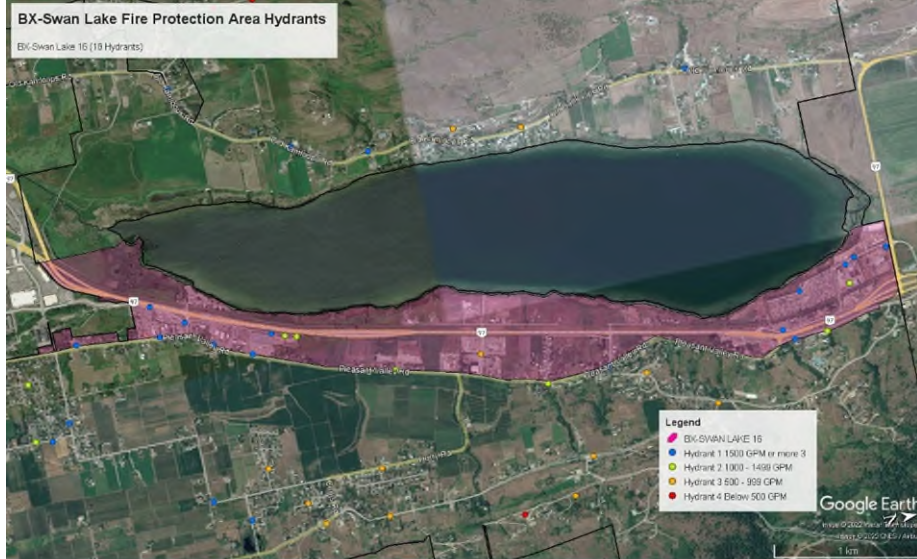
**BX 16**

**Swan Lake Corridor**

18 municipal  
hydrants and 3  
private hydrants



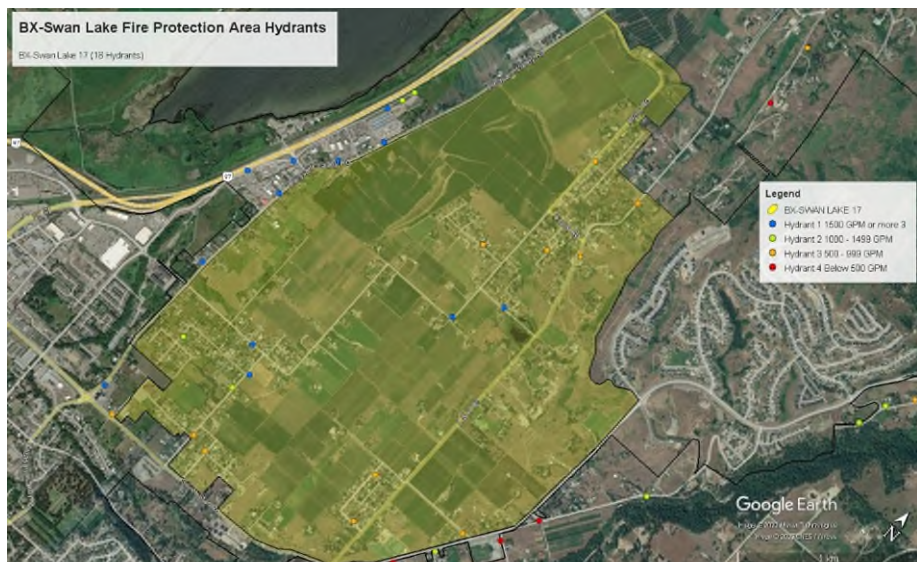
Tender fill site  
7160 Heron Rd.  
Swan Lake boat  
launch



**BX 17**

**Central BX**

18 municipal  
hydrants and 3  
standpipes

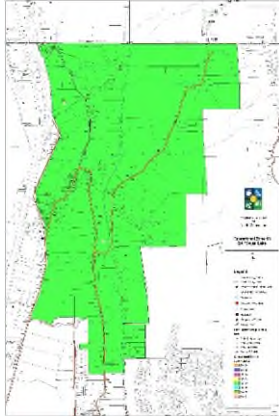




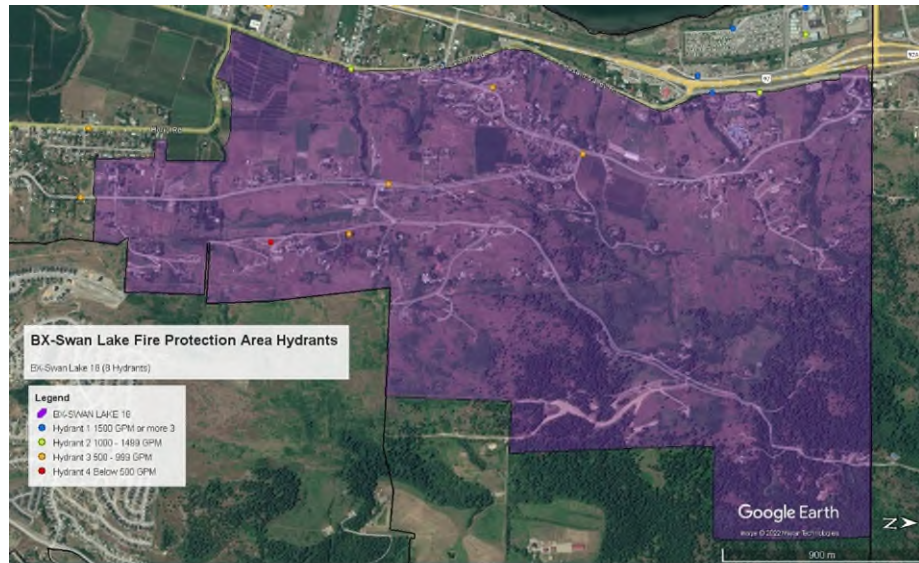
**BX 18**

**North BX**

8 municipal hydrants  
and 1 standpipe



Tender fill site at  
7921 Greenhow -  
Water Slide Park.

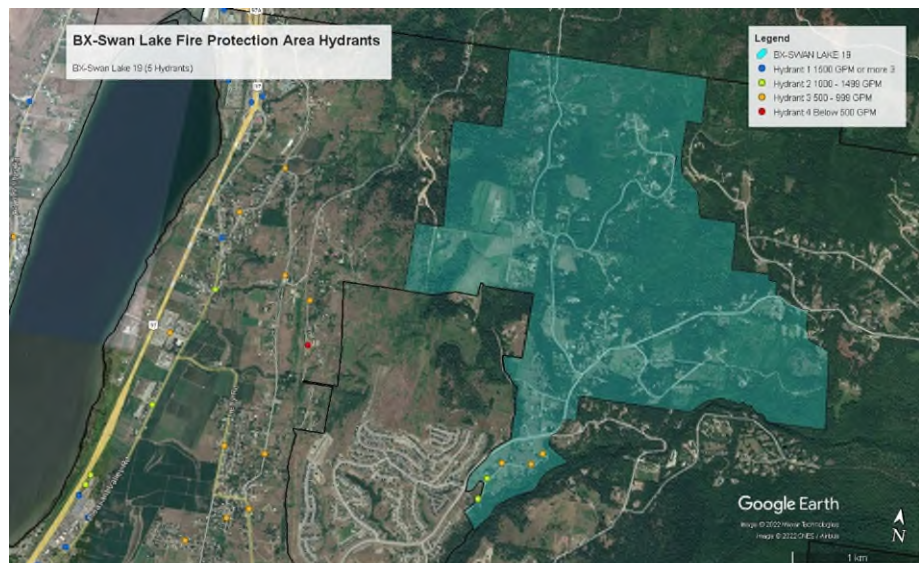
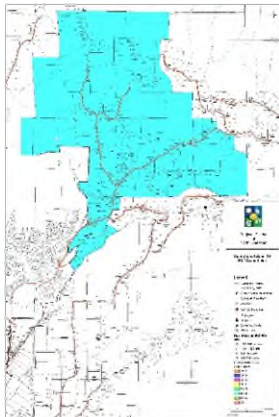


Colour changed for Google Earth overlay as green was not visible  
when opaque.

**BX 19**

**Silver Star Rd BX**

5 municipal hydrants  
within map location



# hydrants - \_\_0\_\_ Tender fill from hydrant at Bates Rd.  
Reliant on tender to shuttle water for sprinklers and str. Fire.  
Need Reservoir info and refresh rate, backup power source for  
pumps?



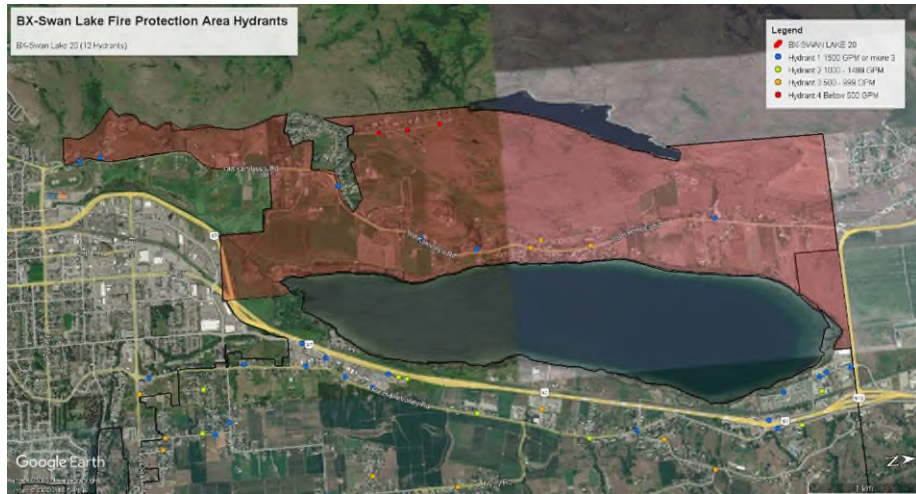
BX 20

Old Kamloops Rd.

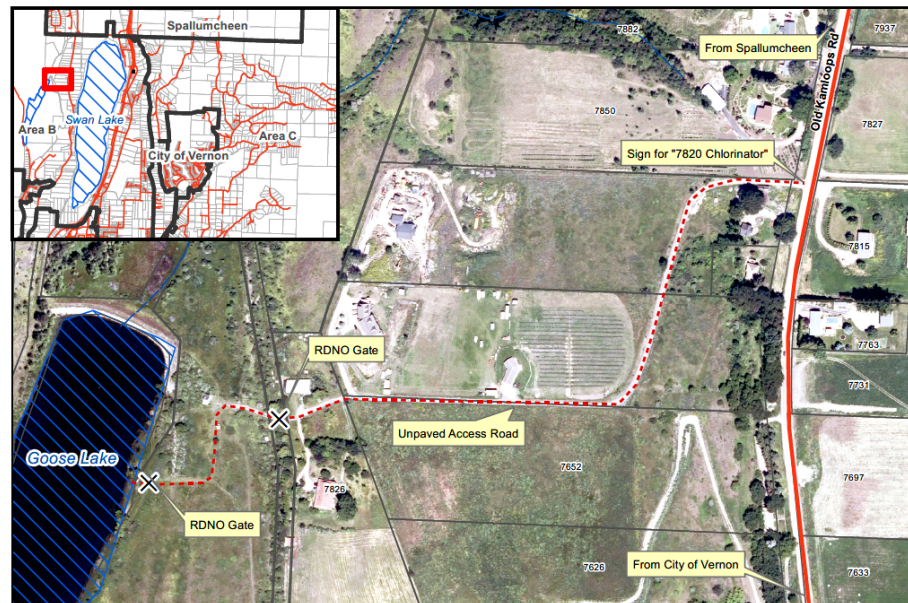
14 municipal  
hydrants and 3  
standpipes



Goose Lake  
Chlorinator - 7830  
Old Kamloops Rd.  
Access on dirt road



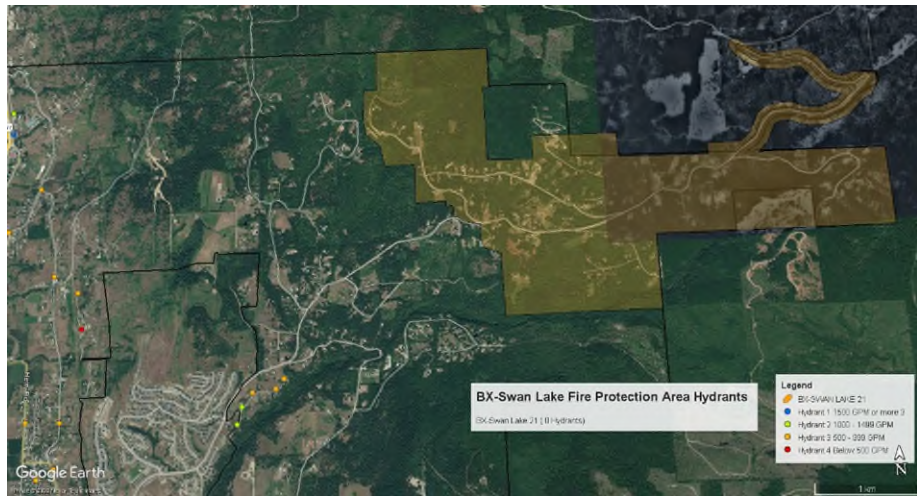
Colour changed for Google Earth overlay as green was not visible when Opaque.



BX 21

Upper Silver Star Rd  
BX

No Hydrants



Consider large seasonal cistern near 8735 Forsberg from BX Creek.

Tender fill sites at private water system Rogers Rd and Lynx Rd.

**Tender fill site**

8525 Silver Star Rd.  
and 8487 Wyetay Rd.  
access to Artesian  
Well – Brad Clark

&

8735 Forsberg Rd (BX  
Creek)







BC Wildfire  
Service



The Regional District of North Okanagan (RDNO) General Manager, Utilities, Zee Marcolin, provides oversight of the water system.

Hydrants are intended for Structure Suppression (structures on fire). Hydrants may be able to support Structure Protection (sprinklers deployed to increase humidity around the perimeter of each structure) provided the water supply can meet the fire department needs to extinguish structure fires. 2,500 gal Relay Tanks with MK3 pumps used to operate Structure Protection sprinklers should be positioned near neighbourhood hydrants for refilling and when the hydrants water supply is needed for Structure Suppression the Relay Tanks would be filled by Tenders. Cisterns at Hartnell, Forsberg, and McLennan will support tenders for quick fire suppression and could be used to support sprinkler protection when wildfire out paces crews ability to operate safely due to limited escape routes. Tenders may be able to fill from BX Creek and Swan Lake where it shortens the turnaround time for water delivery from hydrants.

Structures located outside of BX-Swan Lake Fire Protection Area are not included in this plan and will require assessment if threatened by wildfire.

## DEFINITIONS

**Anchor Point:** A safe location, such as a river or road, that is a barrier to fire spread and from where crews should start building a fire break or line. Anchor points should prohibit fire from establishing itself on the other side of an unsuspecting crew.

**Community:** An area or place considered together with its inhabitants, whether or not the community represents an official jurisdiction.

**Drafting:** The use of suction to move water from a vessel or body of water below the intake of a suction pump

**Drafting Site:** An area with water source that is suitable for the access and positioning of firefighting equipment (portable pump, tankers, brush trucks, and/or engines) to engage in drafting.

**Escape Routes:** Predetermined routes out of the hazard zone that leads back to the safety zone. Crews should always have two escape routes that are marked, walkable, clear of debris, and allow for expedient emergency egress.

**Fill Site:** A pressurized water source where fire apparatus can fill their tanks without drafting. Examples include hydrants, raised reservoirs, or pumps.

**Fire Smart:** A national program designed to reduce interface fire risk to communities. In BC, the program is administered by the Ministry of Forests, Lands and Natural Resource Operations Wildfire Management Branch.

**Fuel Management:** Generally associated with the reduction of surface and ladder fuels through mechanical removal, biological methods, or prescribed burns.

**Lookout:** Person who has the responsibility of watching fire behaviour and relating the situation to their supervisor. Should be located in an advantageous position for wildfire observation.

**Risk Management:** The continuous process of identifying, analyzing, and evaluating risks and resources; and weighing these factors against operational objectives. Risk management at WUI events must prioritize the life safety of first responders.

**Safety Zone:** An area devoid of combustibles and fuels, that provides a separation distance for firefighters and their apparatus that is four times the anticipated flame lengths.

**Situational Awareness:** The perception of environmental elements with respect to time and/or space, the comprehension of their meaning, and the projection of their status as variables (time, weather, resources, tactics, etc.) change.

**Structure Triage:** The process of inspecting and classifying structures according to the defensibility or non-defensibility based on numerous factors including the establishment of a safety zone, fire behavior, location, construction, and adjacent fuels.

**Threatened Defensible:** Structure Triage Category where Safety Zone and TRA are present with adequate water supply with structure defense tactics and conditions supporting firefighters remaining during fire front contact.

**Threatened Non-Defensible:** Structure Triage Category where Safety Zone or TRA or water supply is inadequate and structure has challenges that do not allow firefighters to safely commit to stay.

**Value:** A generalized term used by responding emergency officials to identify structures (private and public) whether commercial, industrial, public infrastructure or residential.

## STRUCTURE DEFENSE TACTICAL ACTIONS

### Check & Go – Threatened Non-Defensible

**Determining factor:** Lack of time and inadequate defensible space.

**Size up:** Structure has significant tactical challenges. (Owners not invested in Fire Smarting the structure).

**Tactics:** Firefighters not able to commit to stay and protect structure. If time allows, ensure people are not present in the threatened structure (especially children, elderly, and invalid). Set trigger point for safe retreat. Patrol following the passage of the fire front will be needed to protect the structure.

### Prep & Go – Threatened Non-Defensible

**Determining factor:** Time and resources to prepare structure for defense but Safety Zone and TRA are not present for firefighters to remain when fire front arrives.

**Size up:** Structure has some tactical challenges.

**Tactics:** Firefighters not able to commit to stay and protect structure. If time allows, rapid mitigation measures may be performed. Set trigger points for safe retreat. *Remember, pre-incident preparation is the responsibility of the homeowner.* Patrol following the passage of the fire front will be needed to protect the structure.

### Prep & Defend - Threatened Defensible

**Determining factor:** Adequate time exists to safely prepare structure for defense with Safety Zone and adequate water supply.

**Size up:** Structure has some tactical challenges.

**Tactics:** Firefighters needed onsite to implement structure protection tactics during fire front contact.



## **Standalone – could be Threatened Defensible or Threatened Non-Defensible**

**Determining factor:** Structure and landscaping follow FireSmart guidelines

**Size up:** Structure has very few tactical challenges. Landscaping has very few tactical challenges.

**Tactics:** Firefighters may not need to be directly assigned to protect structure as it is not likely to ignite during initial fire front contact. However, no structure in the path of a wildfire is completely without need of protection. Patrol following the passage of the fire front will be needed to protect the structure.

## **Fire Front Following – used to come in behind the fire front.**

**Determining factor:** A follow-up tactic employed when Check & Go, Prep & Go, or Bump and Run are initially used.

**Size up:** Come in behind the fire to search for victims, extinguish spot fires around structures, and reduce ember production.

**Tactics:** Used when insufficient time to safely set up ahead of the fire, or the intensity of the fire could cause injury to personnel located in front of the fire.

## **Bump & Run – used ahead of the fire to extinguish spot fires and hot spots to defend as many structures as possible.**

**Determining factor:** Early stages of fire when resource commitment is light and structure defense is the priority. With adequate resources it can be used to control or steer the fire to a desired end point.

**Size up:** Identify and prepare control lines with dozers and fire crews to direct the fire to end point.

**Tactics:** Resources must remain mobile and must constantly identify Escape Routes to Safety Zones as they move with the fire front.

## **Anchor & Hold – an attempt to stop fire spread.**

**Determining factor:** Urban neighbourhoods where the proximity of neighbouring homes presents a risk of house to house ignition.

**Size up:** Requires considerable resources, such as engine crews and hand crews.

**Tactics:** Fixed engines spotted in safe areas where they can safely withstand any fire situation. Mobile engines prepared to re-deploy to other areas if the fire escapes the Anchor & Hold line.

### **Tactical Patrol - initiated:**

**During the fire event in neighbourhoods away from the interface where there is predicted ember cast.**

**After fire front has passed to patrol and extinguish for hot spots and ground fires in proximity to structures.**

**Determining factor:** Quick fire suppression to "Save what you can, and loose what you must".

**Size up:** Patrol downwind of potential ember showers. Address safety issues such as power lines, burnt weakened trees, and other hazards.

**Tactics:** Mobility and continuous monitoring of an assigned area. Extinguish hot spots or secondary structure ignitions.

## **STRUCTURE DEFENSE PLAN**

When a community or fire protection area is overwhelmed in its ability to defend itself from wildfire, a request for additional firefighting resources may be submitted to the Province via the Office of the Fire Commissioner under an EMBC incident task number or through BCWS under a wildfire incident number. The management of the Provincial resources are detailed in the Inter-Agency Agreement between the Office of the Fire Commissioner, Fire Chiefs Association of BC and BCWS.

The Structure Defense Plan (SDP) that follows was created by a Structure Protection Specialist for this community. The SDP is a foundation of planning for what Fire Defense resources may be required during a wildfire event. During an actual event the plan will be reviewed with the BCWS Incident Command Team and local authorities to determine what will be requested through the OFC. A general guideline for the number and types of fire apparatus required for an SDP is as follows:

- (1) Type 3 Engine per home within the intermix
- (1) Type 1 Engine per 2-3 homes within the interface when hydrants are present and working
- (1) Type 1 Tender to support 3 water bladders or 2 Engines
- (1) Type 2 Tender to support 2 Engines in areas without hydrants
- Type 4-6 Engines (Bush Truck) as required to support tactical patrols in the Incident Action Plan



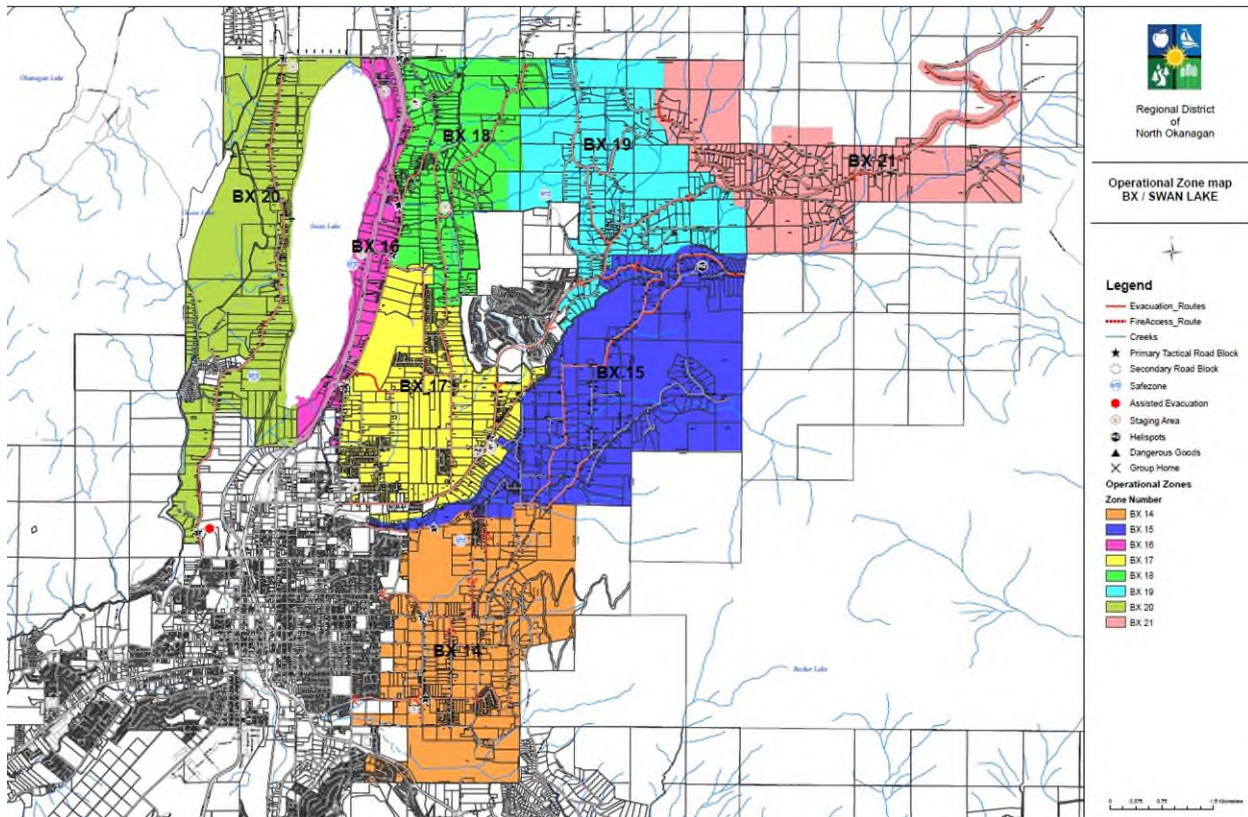
With due respect to the general guidelines above, there are several other factors that must be considered when drafting an SDP for an area under threat of wildfire. These factors will vary as much as the communities that require defending. These factors may include but not limited to the following:

- Expected fire behavior and weather forecast.
- Type, volume, distribution, and proximity of natural fuels surrounding the improved areas and local infrastructure.
- Availability of outside resources.
- Access and egress in and around properties in the interface and intermix areas.
- Volume and distribution of properties and improved values in the area.
- Water Sources.
- Availability of Safe Zones.
- Time required to deploy provincial resources.

The BX-Swan Lake Fire Protection Area is divided into 8 Wildfire Protection Areas. The Structure Defence Plan is specific to each area and would be cumulative resources if more than one area was threatened by wildfire.



## Area Overview



Forestry cat guard with retardant lines will support the fire dept actions to protect the homes and businesses. With so much forest around homes it is important for residents to clean up dead wood and trim up branches to control ground fires.

If possible, prior to homeowners being evacuated, the structure protection crew should notify residents in person and explain the actions that residents can take prior to evacuating that will help save the home. Distribute Fire Smart material for occupants to focus on Zone 1a. Fuel free the min 1.5m zone around buildings.

Please be advised that the structure defense plan below is based on observations and are recommendations only. It is critical for the Structure Protection Specialist to develop his/her own structure protection plan as the fire dynamics might allow for different tactics.

Tactical planning must be developed in conjunction with anticipated changes in the fire environment, or fire behaviour. Tactics may need to change to compensate for a change in fire



behaviour. Continuous assessment of the fire and its potential to maintain escape routes to Safety Zones.

Strategies must reflect a realistic approach taking into consideration the available resources. A strategy will fail if it requires a large number of resources that cannot arrive in a timely fashion. Strategy is subject to change due to changes in weather, fire behavior, resources availability, and objectives. Never get locked into a single plan of action.

## STRUCTURE DEFENSE PLAN

Date	Nov 2022
Incident name / Number	BX-Swan Lake Fire Protection Area
EMBC Task #	
Fire Centre	Kamloops
GrpS Name, Ph#, email	Kevin Dalgarno 250-558-8549
Area / Community	RDNO Area B & C, BX-Swan Lake, Vernon

Communications Plan		
Function	Channel No.	Assigned to
Ground to Ground	OFC 01	Structure Protection

[illegible]



BX15

Primary Value RES. COM. OTHER	Location: Street / Unit #	Intermix/ Interface	Triage Category: Not Threatened Threatened Defensible Threatened Non-Defensible	Tactical Actions (SPU/ENG) Tactical Actions Check & Go Prep & Go Prep & Defend Fire Front Following Bump & Run Anchor & Hold Tactical Patrol	Resources le: 3E = Type 3 Engine 2T = Type 2 Tender	Water Source	Comments
Residential / Commercial Seasonal Recreational	<b>BX 15 East BX</b>  297 Single Family Residential- Medium to Large lots 6 Multiple Unit Residential – 2 Campgrounds 4 B&B's	Intermix	<p>Area is Threatened Non Defensible</p> <p>Area is Threatened Defensible</p>	<p>Hartnell, Tillicum and Dixon Dam Homes bordering the approaching forest fire SPC's – Prep &amp; Go followed by Tactical patrol after fire passes ENG – Bump and Run prior to fire front arrival</p> <p>ENG – Fire Front Following after the fire passes</p> <p>Homes a street away from the approaching fire front ENG – Tactical Patrol during fire front arrival down wind of ember cast ENG - Anchor &amp; Hold if structure catches on fire with potential of igniting neighbour's home. (Prevent structure to structure ignition)</p>	<p>SPC 5 Pack x 2 SPU Type 1 x 1 or Type 2 x 2</p> <p>5E x 3 2T x 2</p> <p>2E x 3 1T x 2</p> <p>Hold in staging until needed 1E x 3 1T x 3</p>	<p>14 municipal hydrants 3 standpipes</p> <p>Tenders filling from the nearest water source will be needed to support sprinklers and Engines.</p> <p>Proposed a seasonal cistern near top of Hartnell for tender fill site and or water source for MK3 and roof top sprinklers.</p>	<p>Wildfire risk to homes is greatest along the intermix, Hartnell, Tillicum and Dixon Dam Rd. Homes set amidst mature forest. Safety Zone and TRA are not present.</p> <p>Where Hydrants are available, use Relay Tanks located next to hydrants with Mk3 pumps to run roof top sprinklers.</p> <p>Consider temporary rental of 10,000 gal water storage tank during fire event to support MK3 pumps and roof top sprinklers for Hartnell neighbourhood.</p> <p>Per Tactical Action - Bump &amp; Run, coordinate structure protection utilizing resources such as cat guard, and aerial retardant. Equipment such as Skid Steer on a trailer pulled by pickup is most agile for rapid deployment to build fire guard around homes when threatened by ground fire.</p> <p>Tactical Patrol after fire front passage for mop up around structures.</p>

BX16

Primary Value RES. COM. OTHER	Location: Street / Unit #	Intermix / Interface	Triage Category: Not Threatened Threatened Defensible Threatened Non-Defensible	Tactical Actions Check & Go Prep & Go Prep & Defend Fire Front Following Bump & Run Anchor & Hold Tactical Patrol	Resources le: 3E = Type 3 Engine 2T = Type 2 Tender	Water Source	Comments
Commercial / Residential Seasonal Recreational	<b>BX 16 Swan Lake Corridor</b>  91 – Single Family Residential - Small to Medium lots 2 – Mobile home parks 1 - Motel	Interface /Intermix	Area is Threatened Defensible  For a forest fire with risk blowing embers       If fire starts from train spark or motor vehicle	ENG – Tactical Patrol during fire front arrival down wind of ember cast  ENG - Anchor & Hold if structure catches on fire with potential of igniting neighbour's home. (Prevent structure to structure ignition)  ENG – Bump & Run ahead of fire to protect values. SPC – deploy wet line 3ft step spike sprinklers 50ft apart.	2E x 1 5E x 1 2T x 1  Hold in staging until needed 1E x 2 1T x 1  or  2E x 2 1T x 1 2T x 1 SPU Type 2 x 1	19 municipal hydrants 3 private hydrants  Tender fill from Hydrants and Swan Lake boat launch  Tenders filling from the nearest water source will be needed to support sprinklers and Engines.	Fire risk greatest from spark off of train and or discarded cigarettes igniting the tall dead standing grass.  If a fire starts between the train tracks and Hwy 97 in the grass consider using sprinkler equipment to establish a wet line as a control line to stop the fire from advancing.  Equipment such as Skid Steer on a trailer pulled by pickup is most agile for rapid deployment to build fire guard around homes when threatened by ground fire.  Per Tactical Action - Bump & Run, coordinate structure protection utilizing resources such as cat guard, and aerial retardant.

BX17

Primary Value RES. COM. OTHER	Location: Street / Unit #	Intermix / Interface	Triage Category: Not Threatened Threatened Defensible Threatened Non-Defensible	Tactical Actions Check & Go Prep & Go Prep & Defend Fire Front Following Bump & Run Anchor & Hold Tactical Patrol	Resources le: 3E = Type 3 Engine 2T = Type 2 Tender	Water Source	Comments
Residential	<b>BX 17 Central BX</b>  606 – Single Family Residential - Small to Medium lots 2- Multiple Unit Residential	Intermix / Interface	Area is Threatened Defensible	ENG – Tactical Patrol down wind of ember cast  ENG - Anchor & Hold if structure catches on fire with potential of igniting neighbour's home. (Prevent structure to structure ignition)	2E x 3 1T x 1  Hold in staging until needed 1E x 2 2E x 2 1T x 2	27 municipal hydrants 3 standpipes	Area most likely to be at risk from hot embers landing in dead standing grass. Risk of structure to structure ignition. Equipment such as Skid Steer on a trailer pulled by pickup is most agile for rapid deployment to build fire guard around homes when threatened by ground fire.



[illegible]

BX19

[illegible]

BX20

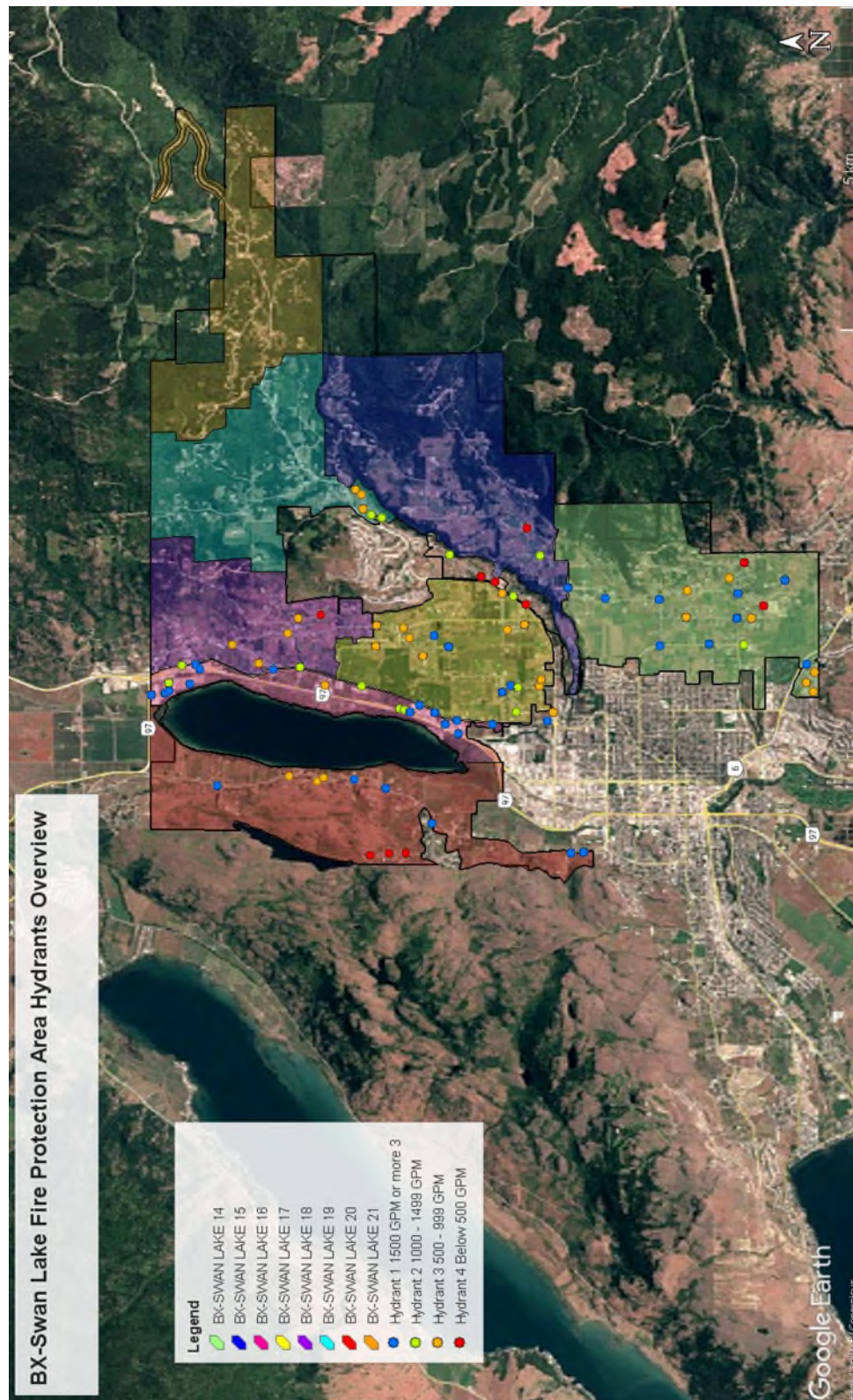
Primary Value RES. COM. OTHER	Location: Street / Unit #	Intermix / Interface	Triage Category: Not Threatened Threatened Defensible Threatened Non-Defensible	Tactical Actions Check & Go Prep & Go Prep & Defend Fire Front Following Bump & Run Anchor & Hold Tactical Patrol	Resources le: 3E = Type 3 Engine 2T = Type 2 Tender	Water Source	Comments
Residential / Seasonal Recreational	<b>BX 20 Old Kamloops Rd.</b>  135 – Single Family Residential - Medium lots 1- Campground	Interface and Intermix	Homes bordering the Okanagan IR have steep driveways and limited water making them Threatened Non- Defensible  Most of the area is Threatened Defensible	SPC's – Prep & Go followed by Tactical patrol after fire passes ENG – Bump and Run prior to fire front arrival ENG – Fire Front Following after the fire passes  Homes immediately off of Old Kamloops Rd with flat driveways ENG – Tactical Patrol during fire front arrival down wind of ember cast ENG - Anchor & Hold if structure catches on fire with potential of igniting neighbour's home. (Prevent structure to structure ignition)	SPC 5 Pack x 2 SPU Type 2 x 2  5E x 3 2T x 3  2E x 2 1T x 2  Hold in staging until needed 2E x 3 2T x 3	14 municipal hydrants 3 standpipes  Tenders filling from the nearest water source will be needed to support sprinklers and Engines	Wildfire risk greatest as a fast moving grass fire that could come from the Okanagan IR or an orchard burn pile.  Grass fire - Direct attack with ENG's



BX21

Primary Value RES. COM. OTHER	Location: Street / Unit #	Intermix / Interface	Triage Category: Not Threatened Threatened Defensible Threatened Non-Defensible	Tactical Actions Check & Go Prep & Go Prep & Defend Fire Front Following Bump & Run Anchor & Hold Tactical Patrol	Resources le: 3E = Type 3 Engine 2T = Type 2 Tender	Water Source	Comments
Residential / Seasonal Recreational	<b>BX 21 Upper Silver Star Rd BX</b>  Jackpine, Forsberg Rd.  123 – Single Family Residential - Medium to Large lots 4- B&B's	Intermix	Area is Threatened Non Defensible	SPC's – Prep & Go followed by Tactical patrol after fire passes  ENG – Bump and Run prior to fire front arrival ENG – Fire Front Following after the fire passes  Area threatened by fire embers down wind of fire ENG – Tactical Patrol during fire front arrival down wind of ember cast	SPC 5 Pack x 3 SPU Type 1 x 1 and Type 2 x 2  5E x 4 2T x 4  5E x 4 2T x 4	No Hydrants  Filling tenders from the nearest water source will be critical to support sprinklers and Engines  Proposed a seasonal cistern near 8745 Forsberg Rd. for tender fill site and or water source for MK3 and roof top sprinklers.	Wildfire risk greatest off of Jackpine, Rogers, Forsberg, and Ladner Rd. Homes are set amidst mature forest. Safety Zone and TRA are not present. Closest hydrant is 30 min turn around.  Consider temporary rental of 10,000 gal water storage tank during fire event to support MK3 pumps and roof top sprinklers for Forsberg, Rogers, Jackpine, and Ladner Rd. if wildland fire threatens the area.  Per Tactical Action - Bump & Run, coordinate structure protection utilizing resources such as cat guard, and aerial retardant.  Tactical Patrol after fire front passage for mop up around structures.

Date: Dec, 2022 Evaluator(s): Dalgarno



Dec. 2022

Community Structure Protection Plan

Building Fire Safe communities through education, planning and emergency response