

# RENEGADE FIRE BRIGADE

The Knutsford Model: Our Story

A Field-Guide to DIY WildFire Preparedness  
And Defense in Rural Communities

*Spring 2026 Edition*

James Bethell

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Cover Photo by Nat Anfield

ISBN: 9798245083667

Dedicated to those who refuse to sit on their hands and wait to be saved.

# Acknowledgments

I would like to first and foremost acknowledge my amazing community of **Knutsford, British Columbia**. Although this book is written in the first person, since I am writing from my own memory and experience, what has been achieved was only in a very small part my own doing. It was only made possible by the colossal coming together of hundreds of people - strangers, friends and neighbors - towards a common goal. It was nothing short of miraculous. Especially the many volunteers and generous benefactors who kept our crews fed during the big one.

The original core crew from 2021: Nat Anfield, Cristina Stobbe, Marney Bethell, Amy Bethell-Quickfall. We never would have been invited to challenge and ultimately change the system in 2023 if we hadn't put in all that work years prior.

The Rosehill Farmer's Institute, for allowing us to work under their umbrella while our incipient Society found its feet.

Terry Doi for his ongoing support, guidance and wisdom. Our own Fire Yoda.

Doug Haughton, Director, Electoral Area "L" (Grasslands), who always supported us and always seemed to be there right at the right time to nudge things along in the right direction.

Rossmore Lake Renegade Crew of 2023: Chief Terry Jessup, Captain Mike Connolly, Captain Craig Palmer, Fred Grausam, Karl Thorson, Lea Thorson, Cristina Stobbe, Jason Stobbe, Jakob Stobbe, Nathan Scott, Jim McQueen, everyone who came out for a day or two here and there, as well as everyone working as renegades in their own neck of the woods.

The Knutsford Community Response Society Board of Directors: Gordon Petersen,

Terry Jessup, Anne Richardson, Mike Connolly, Ainsley Gullage, David Ciriani, Verna Dewing, Cris Stobbe, with Jim McQueen not officially but still helping.

KIRT Chief Terry Jessup and KCRS President Gordon Petersen, for stepping up and doing all the long term stuff I really didn't want to (and let's be honest, if it had remained my responsibility, then I probably would not have).

Urban Systems for so graciously lending us their board room and GIS expertise. Cris & Jason Stobbe of Stobbe Excavating for always being there at the right time to make sure we had enough water. Captain Mike Connolly for his never ending research and investigating.

All the spouses and partners who put up with the late nights, filthy boots and smoke stinking coveralls.

Kate Corneille for putting up with me while this was going on and for taking care of me when I fell.

Paulyn Chua for all her hard work in getting our charity status, and being my friend.

My mom, who has always been supportive of me no matter what kind of zany nonsense I find myself cooking up. My step dad, Bill Barker, who let us take over his house and driveway with planning and supplies.

Finally, I would also like to acknowledge K22024 Incident Commander Mark Healey and the first TFL ever assigned to a crew like ours, Bryann Palmer. You stuck your necks out to give us a chance, you did something that had never been done before, and in so doing helped change and shape policy that will benefit rural British Columbians for decades in the future. This thanks extends to the BC Wildfire leadership who must have been behind greenlighting such an initiative. It could not have been easy to break so dramatically from long established policy and we thank you for having the guts to try something new.

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## *Free To Distribute Life Saving Information*

I've chosen to make this book - and the information in it - available as a free digital download. The reason is simple: there's a lot of knowledge in here that people who live out here should have:

How to keep your place from burning down.

How to stay alive when wildfire comes through.

Too much of that information is either scattered, buried in paperwork, or, worse, locked behind paywalls.

This is my attempt to put at least the basics of it all in one place, in plain language, for the people who actually need it.

If you have the means and want to support the work that went into this over the past five years, you can purchase a printed copy or visit the website to see other ways to help. Otherwise, take the PDF, use it, and pass it along. Spread it around in your community, you have my blessing.

You're welcome to share this with friends and family. I just ask that it not be sold or redistributed for money. This is meant to be shared freely - not monetized.

## *Forward*

This book started as a reply to a Facebook post.

Someone in another rural community posted to one of the fire watch groups: “Maybe we should look into starting a fire department or something? Does anyone know how?”

Why yes, I know how, I spent an entire summer doing just that.

And then another.

There’s an awful lot you need to consider however, and I quickly realized that a Facebook comment thread was a grossly inadequate medium to convey the amount of things that we, as a community, had learned in our journey.

I hope you find it useful.

## *Spring 2025 Edition (First Print) Note*

This is the Spring 2026 edition, which means that this is the FIFTH YEAR since I started writing it.

Every time I think I am ready to push it out to publication, we undergo another series of events that expands our knowledge of what to do and how to do it and it languishes on my hard drive for another year.

Check the website for updated editions.

**RenegadeFireBrigade.com**

## *BACKGROUND AND OUR STORY*

## *Disclaimer*

### This Book is About Preparation, Not Heroics

You need to understand something about wildfire defense: **the most important part of firefighting isn't spraying water—it's preparation.**

FireSmart principles and fuel reduction work - aka “yardwork” - done months before fire season are what actually save properties. You're not going to put out a "forest fire," but you can dramatically reduce the chances that a wildfire will threaten your property by creating defensible space, managing vegetation, and preparing in advance by gathering together your tools, training, and community to give yourself a fighting chance.

This book is primarily about that preparation, along with basic fire suppression skills for small problems before they become big ones.

This guide is written specifically for **rural property owners and communities** who live outside municipal fire protection areas.

If you live in an urban or suburban area with professional fire department coverage, **this book is not for you.**

The tactics and approaches described here are for people who truly are "on their own"—rural residents in areas where help may not come, or may not arrive in time to make a difference.

### This Is Not a Replacement for Training!

**Nothing in this book replaces proper training.** The information here is based on

real experience but is meant to supplement, not substitute for:

- Official wildland firefighting courses
- FireSmart assessments and planning
- First aid and safety training
- Local emergency preparedness programs

If formal training is available in your area, take it.

### **Work with - not against - the professional services.**

The goal of this book is to help rural communities work more effectively and cooperatively **with** their local or regional Wildfire Service and other agencies, not to replace or compete with them. Everything described herein is designed to:

- Make your community a better partner *to* and resource *for* professionals
- Reduce the burden on overstretched resources
- Create safer conditions for everyone involved

When professional firefighters do arrive, they're in charge. Period.

### *Evacuation Orders and Cooperation*

**This book does not advocate ignoring evacuation orders.**

When authorities issue evacuation orders, they should be followed.

However, the reality is that well-prepared rural communities can (and have!) become valuable partners to Incident Commanders rather than additional problems to manage. When you have proper training, equipment, and organization, officials *may* recognize that you can work cooperatively rather than being a liability that needs evacuation.

The goal is to be so prepared that when the cavalry arrives, they see a competent,

organized group that knows their limitations and can follow direction—not a bunch of untrained yahoos getting in the way. This preparation and demonstrated competence is what opens the door to productive partnerships with professional fire services.

## *Safety and Liability*

**Wildfire suppression is inherently dangerous.** While this book emphasizes safety throughout, no written guide can account for every situation or replace sound judgment.

- Always prioritize life over property
- Know your limits and respect them
- Have escape routes planned and ready
- When in doubt, evacuate

The author and publisher cannot be held responsible for injuries, property damage, or loss of life resulting from the use of information in this book. Use our tale at your own risk and always err on the side of caution.

## *A Note on Politics and Blame*

This book deliberately avoids discussing the causes of increased wildfire activity or assigning blame for current conditions. Regardless of your views on climate change, forest management, or government policy, fire burns the same way and threatens your family just as much.

We focus on pragmatic solutions for the reality we face, not the debates about how we got here.

## *Who This Book Is For*

I grew up in a region of the world known as the “ring of fire” on a beach front property in Victoria, BC. We had routine earthquake drills and from an early age it was made clear to me by my father that “one day the *big one* is going to hit, and the longer it goes before it happens the worse it is going to be.” Duck, cover, face away from windows, then evacuate to higher ground because of the potential for tsunami.

Perhaps it is that, in reflection, which instilled the “prepper” in me.

My family had an earthquake kit - water, first aid, some matches, a sawed-off shotgun and a box of buckshot. Not that my dad had ever hunted in his life or would have known how to dress a deer, it was more a matter of having things on-hand *before* you needed it, *just in case you needed it*. Even if *you* didn’t need it, someone might barter for something *they* had because what you had was something that they needed.

Having a flashlight with fresh batteries, and being able to access it, is super helpful when the power goes out. But that takes foresight and planning - you don’t order the flashlight or go trying to find fresh batteries after the lights have gone out.

I was fresh out of my teens when the Y2K hit, and I can still feel the collective anxiety leading up to it about what “could” happen.

Will the banks crash and everyone’s investments and savings accounts disappear in a cloud of digital vapour? Will the traffic signals lose their marbles and send bisecting streams of traffic into each other? Will the planes fall out of the sky and the toasters burn our toast *even though we only set it to “3”*?

January 2nd 2000, after we realized that nothing had happened (thanks in no small part to incredible numbers of people retrofitting software so that nothing indeed

happened), we breathed a collective sigh of relief, and then went about our lives as though it had never happened. I remember thinking at the time that it was a huge mistake, that we should take the experience of “what if” coming to a head and learn from it and be prepared *just in case* the thing we were worried about happened.

Not long thereafter I became a father and something bigger changed in me. Now there was this helpless creature who relied on me *by the minute* to ensure its health and safety. It would die without me to feed it and clean it and deter threats... or more often, intervening when it tried to hurt itself.

This is the fundamental basis that all “preppers” sprout from - keeping you and yours safe and healthy. Self reliance. The knowledge that you can take care of yourself and your family in the absence of external help, whatever might happen, and wherever it ought to come from.

As the years rolled by and I raised my son and then sons and then daughters (until I eventually referred to them as “my brood”), that feeling never left. One year I got \$1000 on my tax return, and chose to spend it on “stocking up” - extra 10KG bag of rice, canned soups and beans and dried legumes. Prepper 101 stuff, rotating it out on a “first in first out” basis.

Since that time I have done my regular grocery trips, replacing what is used (and buying extra if it’s on sale). My kids have grown up in a house with food security. We could go a solid six months by carefully rationing our pantry, without needing any additional provisions aside from water in the event of job loss, societal collapse or zombie apocalypse.

When 2012 came and went and the various supply shortages that it triggered throughout hit our stores, I had no fear of my children going without.

When *Covid* hit and suddenly the entire world was on lockdown and I found myself with *four* teenagers to house and feed, I had no fear that my children would go without. Minimum wage grocery store workers and those who have been deprecatingly called “bagboys” were suddenly *critical* to societal function because the average person can’t go another week without picking up supplies.

Although some may snicker at the meme of a guy with a bunker full of MREs and ammunition, the fact remains - particularly in more recent years - that this meme of a dude with a basement full of five gallon buckets full of food is arguably more rational than the person who has experienced these crises again and again and then

returned to the “everything is normal” mentality thereafter.

Imagine again and again, *almost* getting into a car accident but then saying “no, I don’t need to wear my seatbelt, the accident didn’t actually happen.”

However, something that has been woefully overlooked in the preparedness community is wildfire preparation.

I’ve read countless books and watched even more countless videos on prepping, everything from how to store food for years at a time to how to clear rooms in close quarter urban combat scenarios to how to clean water for drinking and what herbs to use in lieu of pharmaceuticals... but there is woefully little on one of the biggest clear and present threats facing hundreds of millions of people in North America and now the world abroad:

Wildfire.

You might have decided on your ideal firearm and have stockpiled ammo and have a plan for how to deal with the zombie apocalypse. You’re ready in the event that fundamental economic collapse takes place. Without rule of law, you have your team and you’ve trained and ready.

But what would you do if you, your family, or your community were surrounded by wildfires? Who is your team, and have you trained?

What *could* you do besides flee, abandoning all your preps and supplies to the whims of wildfire? Could you “dig in” and not face near certain death?

Your guns don’t mean squat. None of your traditional preps do. And yet this, more than anything else, is probably the most likely thing that could drive you out of your castle and into becoming a part of the horde itself, the unwashed masses of refugees fleeing *that for which they did not prepare*.

You’ve made a castle of your home and have all your preps ready for the next decade, you know how to grow your veggies and farm your goats. But no amount of negotiating with a wildfire will spare your home.

It’s a recurring threat in my neck of the woods. Every summer it starts back up. While some might argue that societal collapse is also a perennial threat, it’s one that seems forever teetering on the brink, whereas wildfires pop up and indeed drive thousands into refugee status every year.

If the roads close and the stores go empty, if the government locks down the citizenry and forbids travel, if there are riots and civil unrest you know what you'd do. You can chainsaw your staircase out to keep the zombies off the second floor and drill OSB over your windows and stockpile all the ammo in the gun store, but what good is all that prepping going to do for you if your cache, your *castle*, comes under siege from an enemy you can not shoot, reason or barter with?

Fire is perhaps our oldest societal threat. And it has moved itself back up the list of "things to be aware of" to very nearly, if not, the top.

At least in my neighborhood. And if you're in a rural area just about anywhere, very likely yours.

Chances are very good that within the next couple of years you might be facing the choice of either abandoning your stronghold, dying, or trying to fight a wildfire (while not dying doing so). If you choose the lattermost, you'd better have planned in advance because to just stand in the face of a wildfire and throw buckets of water at it is patently stupid.

You need a plan.

You need to have practiced.

You need to have done fuel mitigation and you need tools and equipment and you will not be able to do any of that the day before it turns up in your back yard.

Believe me, we tried.

Zombies might be a more entertaining daydream, but the fact is that if you live outside of an urban center then it's a near certainty that you are going to face the threat of wildfire and unless you have prepared for it, your only survival choice will be to run.

I'm not going to get into what's causing it. For some reason, this has become a political issue and we're not discussing politics here - survival transcends all politics. You can have your own ideas as to what's causing it or who is to blame, none of that matters - I am here to teach you how to protect yourself, your family, and your community from a clear and present danger which does not give a damn about your politics.

Pragmatic realities. You'll see this over and over again in this book. This is what's

happening, so this is how to address it.

This book aims to give you a fighting chance at the alternative - I have tried to think of everything you need to consider when setting up your own rural wildfire defence because these are the things that my community encountered when we were staring down the barrel of it.

From understanding how fire spreads and how to fight it to how to survive entrapment, to building a redneck firetruck, what tools you'll need and what to consider when choosing communications strategies and, when all else fails, how to know when to run for your life.

There are a million books on "prepping" and I'm not ashamed to admit I've bought a few. Although I never went all the way down the rabbit hole, I did buy a house in the country and the fact that it had arable land, a defensible position and a working well inside the house all played into my decision making process. My pantry is always stocked with non-perishables, and if civilization crumbled tomorrow I'm secure in the knowledge that I could take care of my family.

At least for a while.

All this I built up while still attending my day job in office technology and building and running a commercial recording and production studio, raising a gaggle of kids and doing normal stuff like shopping for new sunglasses and drinking on the balcony with my friends.

We have to carry on.

Experienced preppers, when asked "should you buy mutual funds or prep supplies?" will answer "Yes."

This book is written specifically for the preparation-minded rural dwellers and it is deliberately done in a tone of a friend giving you the low-down.

My goal in writing this has been to make it as accessible so that anyone can read it and begin to make a wildfire resiliency plan for themselves, their family, and their community.

## *How To Use This Book*

The goal of this book is to give rural property owners and community groups a solid foundation for building their own fire defenses safely and effectively. This guidance is based on the hard-won experience my own community of Knutsford, British Columbia earned during the intense fire seasons of 2021 and 2023, and then on an ongoing basis thereafter through our not-for-profit Society.

Any of the “core firefighting” points I cover are the same essential points taught to career municipal and forestry firefighters, because fire doesn't care about regional boundaries or jurisdictions. But it is no substitute for actual, in person training provided by a qualified trainer.

I noticed in adapting this material to suit my community's needs that much of the standard training isn't relevant to rural volunteers. There's no Strike Team Leader to radio our location to for aerial retardant drops. We're never going to decide on a tactical backburn because our goal is rapid attack—squashing a small problem before it turns into a much bigger one, or at least helping contain it until the cavalry can show up.

Sometimes that initial response can turn into a months-long endeavor, as we joined forces with BC Wildfire and our community worked at length to subdue the Rossmore Lake fire in 2023.

Most often, those who found themselves working a fire here were on their own in groups of between two and five, with few if any resources. Sometimes someone brought a CAT out or a local rancher came riding in with his tractor, and sometimes all we had were some shovels, Pulaskis, and a pickup with a cage tote.

Sometimes, all you've got is the boots on your feet. Depending on the size of the problem, you can still be effective with just your clompers.

However, there is some very important training these firefighters receive that could save the life of an "amateur." Because not much has changed about putting out a fire in the past ten thousand years besides some of the tools we use, in my view the most important part of the training is really about how not to get killed or maimed while you're doing it.

As a matter of fact, as we move into a future increasingly shaped by wildfire, I believe *Fire Behaviour*, *Basic Firefighting*, and *Entrapment Avoidance* should be taught in high school. In a world where wildfires are becoming annual events, there's no reason why every single citizen shouldn't understand how fire works, how it spreads, how to quickly put it out, how not to get trapped, and how to survive if they do.

This is going to be a fact of life for us and our children for at least the foreseeable future. There's literally no excuse. If you're reading this now, then you likely already agree with me.

Here we are back at *Pragmatic Realities*.

The fact of the matter is that people in my community—people in your community too!—are going to go and help when help is called for, regardless of how prepared they are at that moment.

And that means that they—we—all need to be prepared, we need to understand basic fire behaviour, entrapment avoidance, and fighting techniques.

## *How It Started For Me*

I was living in the rural town of Beaverlodge Alberta (home of the World's Largest Beaver Statue) in 2007 when I read a newspaper headline that stopped me cold: "Trailer burns in town, fire department does not respond." The article explained that the local fire department was desperately short of volunteers and if anyone was interested, they should apply at the hall.

At this point in my life, I had never even HEARD of "volunteer" firefighters. How can there be such a thing? You need training! You have to go through a hiring process! You need a mustache! You mean I can just walk up to the hall and BECOME a firefighter and get to drive the fire truck?

Turns out, that was partially true. Yes, you can walk up to the hall and become a volunteer, and yes, if you can drive a stick and your department has a truck with only two axles and hydraulic brakes, then you might end up driving the truck even with a plain Jane driver's license. But you do need training... and the training is provided.

In fact, some 85% of Canada is protected by volunteer firefighters.

It changed my life.

Over the next two years I was trained on and responded to every kind of call you can imagine and a few you never could have. Structure fires, vehicle fires, motor vehicle accidents, flooding incidents, cats in trees, wildland fires. Teenagers who had gotten their legs trapped in the baby swings at the park... everything. I carried a pager (if that doesn't date me...) and would leap out of bed into my truck no matter what the hour to rip down to the hall, jump into my bunker gear and then into a truck to go wheeling off into the night towards whatever it was that had happened in our response territory.

We learned laddering and rope rescue and confined spaces and breathing apparatus use and maintenance. We learned how to enter a burning structure and chase the fire down to its source, we learned how to mop up a house after you THOUGHT you had it extinguished (hint: it's in the walls). We learned how to rescue casualties from

within a smoke-filled atmosphere and how to run a pumper truck. We learned how to stabilize a vehicle that had rolled and wrapped itself around a pole and then how to cut that car apart like it was a tin foil BBQ pack to safely extricate the patient and deliver them to the paramedics. We learned how to stand under a landing chopper and direct it so it can set down on the highway that we had closed while bossing the cops around on what to do.

Not gonna lie, yelling at RCMP officers to "*get those fuckin' cars outta here!*" and then seeing them nod enthusiastically and scamper off to do as I ordered was a highlight of my early-adult life. It was AWESOME. What's not to love?

Second only to being a dad, it was the best job I ever had... and I never made a cent.

When my marriage collapsed and I moved back to Kamloops, the fire department was just about the only thing I missed. Unfortunately for my firefighting career, I ended up being a single dad with sole custody of three little kids, so joining the local municipal force with its shift work was absolutely out of the question, even IF they would consider my NFPA credentials valid (probably not).

Years passed and I bought a place just on the fringe of city limits in a neighbourhood known as Knutsford, "just south of Kamloops"—a rural acreage with a park-like back yard and a creek running through it, where we were more concerned with coyotes and bears rummaging through our porch than addicts and thieves.

But what it lacked was a volunteer fire department. Due to the geography of the area and how the city of Kamloops had annexed into it over the years, we were *partially* covered by *Kamloops Fire Rescue (KFR)*—some places got full response, some "might" get some response, and some were utterly on their own. If I had a fire at my place, *KFR* would show up with all the resources they had, but my mother who lives exactly one kilometer down the road would probably get nothing.

And her insurance is outrageous as a result.

But life goes on, doesn't it? This was all fine and dandy. The community Facebook group was mostly full of 4H fundraising and notices of loose livestock or dogs who'd escaped. Whether or not the main dirt road had been plowed yet, and planning for Oktoberfest. Nothing much ever happens in Knutsford anyway.

At least, nothing much ever used to happen in Knutsford... until the summer of 2021 arrived with a vengeance.

## *How It Started For Us*

Our region is known for its hot summers, but nothing could have prepared us for the *Great Heat Dome of 2021*—what has since been described as a once-in-1000-year event. Normally the temperature is tolerable all the way through most of July, and it's not until late July and August that you really start thinking about how damn hot it is.

But on June 23rd a "heat dome" had arrived, and by the 26th, the mercury officially hit an unimaginable 48°C (that's 118°F for our American friends).

That is out at the airport. On my porch, it said it was over 50.

I'll never forget the deafening, oppressive heat. I remember walking across the parking lot towards my office and thinking that the heat radiating off the pavement felt like I was standing on a fire line, except that I was wearing a button-up instead of Nomex and instead of smoldering embers, it was just the ground.

Over the next week I watched as the plants in our region—the "fuels"—dried to crisp tinder. I joked with my friend that "a grasshopper could cut a fart in that bush over there and the whole province would burst into flames."

And then, it did.

On the 30th, the town of Lytton basically burned to the ground.

Two days later, it was Canada Day.

Kamloops has traditionally held Canada Day fireworks down at Riverside Park, but for the second year in a row the tradition had been canceled by COVID.

Instead, I found myself enjoying a cold beverage in the blazing heat with a neighbour on my back deck while BBQing.

The *Sparks Lake Fire* just northwest of Kamloops had erupted a few days previous and its plume was visible over the hilltops to the southeast even from great distance, like a massive mushroom cloud left in the wake of an nuclear attack. Wildfire was on

everyone's minds and we found ourselves playing a game all-too-familiar to BC residents: "Is that a cloud or is that a wildfire start?"

Looming over the house, advancing from the south was an incredible mass of billowing cloud front. Is that a pyroclastic cloud? We checked our weather app radar nervously. It was definitely a storm front, and it was definitely coming right at us.

Special Weather Statements pinged our phones.

The sky darkened and the wind shifted restlessly.

Thunder rolled in the distance and faint flickers of light flashed through the clouds, though it was still daylight. I looked around at the yellowed grass of the surrounding hillsides nervously—it was only the first day of July yet the fuel conditions were already what you'd expect for mid-August thanks to an unusually mild winter followed by the goddamned heat dome.

Bad, bad, not good.

As the sun set, the lightning turned up in a beautiful, terrifying display.

Now, I've watched many storms with my friend and neighbour. We are both the type to turn off all the lights and set up some chairs outside with the best view of the action and cheer during particularly close or intense strikes. But this was different. We all knew how dry the vegetation in the region had become, how much closer to ignition the ambient temperature already was, and now suddenly we were getting multiple lightning strikes every minute.

At times it was like a strobe light. Later the news would tell us that over the course of a few hours we had over 27,000 strikes in the region—an absolutely unheard-of level of activity for our mountains and valleys to endure, regardless of fuel conditions.

Absolute worst-case scenario.

There was one strike directly to the north of our view that prompted us to turn on the scanner. Within minutes we heard the dispatch tones—all of them—as *Kamloops Fire Rescue* was dispatched to a fire in *Juniper Ridge*, a community of around 400 family homes some ten kilometers directly north of my place in Knutsford. Having lived in Juniper as a teenager with my parents, I knew that it had but one single road in and out—one SINGLE two-lane road for every person in that densely packed

suburban neighbourhood to evacuate through... and for help to arrive by.

We listened in stunned disbelief as they called for a tactical evacuation of the entire development.

Facebook filled with alarming videos of familiar Juniper roads at a standstill, a continuous line of vehicles bumper to bumper like a train while great flames licked up on the edge of properties.

We began packing our go bags in preparation for a disorderly escape, knowing that every possible resource in the city was going to be put on that incident and that if we got a something starting up here then there would be nobody left to respond.

Prescriptions were collected. The kids filled Rubbermaid bins with their valuables and some activities to keep them busy if we needed to get gone for any period. We decided not to hitch up the camper as it wasn't big enough to house all the kids anyway (they slept in tents when we went camping) and I didn't want to sacrifice the maneuverability in the event that things got very hairy on the road. The cat was put in a carrier so we didn't have to try to find and corral her if it came time to go.

I tried to convince my son that his Xbox was not something we needed to evacuate with.

Remarkable, the things you think of when you're getting ready to abandon ship. Just a few hours ago we were drinking beers while grilling a chicken on the BBQ.

We never did need to evacuate that night.

But those "go bags" remained in the living room by the door for the next three months. When we declared fire season over and unpacked them, we all commented on the various items we had thought were lost but which were in fact loaded for evacuation.

### *Admit You Have A Problem*

They say the first step towards a solution is in identifying that you have a problem.

That identification became crystal clear the very next night following the Canada Day fire fiasco, when we had a fire in our own area, up at Edith Hill. Someone told me that a fire had been "reported" on our community Facebook page, and when I checked in on the post there was an absolute panic.

All the post said was “fire” and was accompanied by a blurry picture of a flame surrounded by dark.

There were dozens of comments.

Some people were saying their husbands were “going”, others were saying that their neighbors were going to take a tractor.

But who was going? Like, specific names and numbers? *Where* were they going? How do we get a hold of them as there is no cell service in that area?

I thought back to my own firefighter training and my mind recoiled in horror.

So I threw a shovel in the back of my car and went to check it out. The campsite is only about five minutes from my front door, but it ended up taking about ten minutes due to the absolute bedlam I encountered on that road going up. Cars, trucks, RVs, trailers, going in every direction, all driving way too fast and recklessly on the washboard dirt road.

Once I got up there, the fire was nowhere to be seen. I managed to stop one of the trucks and they indicated that to access it, one would have to go through the fence and up a rough 4x4 road to the other side of the hill.

And that’s when I tapped out. There was nothing I could safely do to support the efforts, response was utterly disorganized and completely lacking in any sort of communication, and hiking up a hill in the dark when there is apparently a wildfire just over the hill with unknown numbers of others flailing around in the dark was just too dangerous of a situation.

I got back in my car and went home, but I had a hard time sleeping that night.

What I had witnessed - both on Facebook and in person up the hill - was extremely alarming. The Facebook discussion was a chaotic flurry of new posts and then comments and replies under various posts and comments. This thread would end up getting resurrected a week later during other fires, which only added to the confusion.

It was just the beginning of summer and I could tell that this was going to be something we would have to improve upon, so the next morning I made a post in the group addressed to the entire community: “We need to talk about fire preparedness.”

There is a copy of the post at the back of this book under “Facebook Posts” but essentially what I did was appeal to the community to consider what a dangerous situation the previous night had been, not just for the fire but for how we had responded to it, and that if we as a community are full of well meaning neighbors who are going to drop what we are doing and go running off to help, then we need to be better prepared to do so because it will be a real tragedy if someone gets killed trying to put out a grass fire.

It spurred a lot of discussion. Like, a *lot*. Apparently there are a lot of community members who are like myself, not usually interacting with Facebook, but when the shit is hitting the fan, are going to show up for it.

My suggestion was that we as a community possibly start our own volunteer fire department, since that was something that we clearly lacked.

By the end of the day we had organized an emergency meeting to be held at the community hall. We invited some representatives from the regional district and the day after that we held the meeting.

Things move fast and I am going to try to avoid telling this story as a blow-by-blow recounting. More than 100 people showed up to the hall for the meeting – possibly the largest community meeting before or since. It was so many that we couldn’t hold it inside the hall, due to COVID restrictions, and had to instead stand outside.

The regional district reps basically told us that their view was that the liability of assisting a us in any way whatsoever was too radioactive and “**you are on your own.**” I know I am not speaking strictly for myself when I say that this statement hit hard. There was a strong sentiment in the community that we pay a significant tax burden to be a part of the regional district, and they not only said that they would not help us get organized to take care of our fire problems as they might arise, but that when things got hairy at a provincial level, our area would likely be poorly provisioned due to the sparse population.

“That’s fine, we were doing it on our own already anyway,” I thought, but bit my tongue. We needed to be able to play nice with the authorities. So, we carried on, on our own. We took a list of contact info for anyone who was willing and able to help at all. We made a short list of who wanted to be on the forming committee.

There is more on how to do this for your own community under the *Incipient Organization* section of the next chapter.

Over the next month we met frequently and were in pretty much constant contact over a messenger group chat. We organized an emergency call out system. We built a contact list of about 95% of the community residents. We made lists of the things that we needed to buy, and then we started a *GoFundMe*.

There was some push-back against that platform in particular, but ultimately it was the easiest way for us to set up and receive donations from people.

And we got donations! We beat our funding goal. People who don't even live in our community but had heard about what we were doing "through the grapevine" contributed sometimes hundreds of dollars.

In my view, the most pressing issue was the lack of training. Most everyone in the community who wanted to respond to fires already had their own totes and hoses and pumps. What we really needed to *procure* was expertise.

Some basic wildfire suppression and safety training so that we are at least aware of the very basics of how to suppress a wildfire, and how not to get killed or maimed by it. Everyone knows to spray water on it, but things like how the types of fuels will burn and how to stage your escape should it come to that.

And rather than trying to re-invent the wheel, we should probably be taking the S-100 and S-185 courses that the BC Wildfire crews are required to take as it would cover all those things, and then should we ever need to interact with the pros when they show up, we can honestly say "yes we are trained to the same standard as required of your crews" which would give us more credibility.

However, finding someone who is qualified to deliver and certify is not an easy thing to find in July. Usually, those courses are delivered in the spring so everyone is already certified by the time they get called out. As well, there is a significant cost that goes along with such training. Typically, the cost is between \$200-\$250 per student.

For our first run, we were able to find a local trainer within a couple of weeks who came and did a class of 20 residents for \$225 a piece.

While we felt lucky that we were able to get training at all mid-season, it was a cost that it quickly became evident we would have to find a way to limit.

## *You're On Your Own*

There's a strong thread of self-reliance stitched into the cloth from which country folk are cut. Whether we choose to live in the country because of this trait or whether it arises out of necessity may be debated, but I think few would argue that ranchers, hobby farmers, horse lovers, rednecks, and ruralites of all stripes are generally very self-reliant.

For our purposes here, I'm going to describe "self-reliance" as not being dependent on anything beyond one's own wits, family, and community.

Well, and our tools. Without those, there's little that separates any of us from any other mammal.

So when the mighty fire season of 2021 reared its ugly head and our community held an emergency planning meeting to prepare for what everyone could see was coming. Over one hundred residents attended the meeting, along with some officials from the regional district, and hardly anyone in attendance so much as grunted when the officials told us—and I quote—"You're on your own."

"That's fine," I said in my next post. "We were already doing it on our own."

Over the two months that followed, we really organized.

We hired a qualified trainer to come certify a group of 20 of us in wildland firefighting. A core group gathered weekly and stayed in continuous contact to develop plans. We built *redneck firetrucks* and shared our learnings about fittings and assembly with each other. We developed communications systems. We built Geographic Information Systems detailing property owners' contact information and their resources. Volunteers organized into shifts of folks who would drive our long, dry country roads at all hours on firewatch.

We kept what would have otherwise been a rising tsunami of anxiety and panic at bay by being prepared and staying informed.

Don't be scared, be prepared.

## *Preparation*

What's most frightening about a wildfire situation is not the flames themselves but the feeling of helplessness, and we feel helpless when we feel unprepared.

Robert Jordan said "Prepare for the worst and all surprises are pleasant ones."

Early in the 2021 fire season I recognized from experience learned from so many previous bad wildfire years that the biggest challenge for the summer was not going to be actually fighting fires but rather fighting the communal urge to panic when fires are starting up all around us.

You can tell people not to panic all you want, but it will be about as effective as telling your significant other to "calm down" during a heated argument. (Pro tip: It does not work very well, trust me). What does have a calming effect is knowing that you've prepared to face what's frightening you.

How can you sleep at night when social media is an endless stream of new threats? The mind spins out every possible worst-case scenario.

Mine was waking to a glow outside our bedroom window and the sound of burning wood crackling, my routes of egress closed while I slumbered.

I rehearsed endlessly in my head as I tried to fall asleep how I would collect my children and through what routes we would attempt escape depending on where it had made its approach. How would we find the cat? Would the dog fit with all of us in the vehicle or would we take separate vehicles? Should we take the car and the SUV or would the car have too low clearance if we needed to go off-road to get around obstructions?

If you have lived anywhere near a wildfire you've gone through these exact same motions. Everyone knows by now to pack and have ready a "go bag" and it's for this very reason.

Yes, it's to make sure you have all the important things like identity and insurance documents and priceless mementos and clothes to change into at the ready... but at a deeper psychological level it is to help manage the anxiety that comes with living under threat of wildfire for weeks or months at a time. It helps you sleep at night knowing that if you should wake up to a cop or neighbour banging on your door telling you to run for your lives, you won't be scrambling around trying to find your

kids' birth certificates and various medications and trying to decide how many pairs of socks you should take.

This book is about the step beyond that.

Beyond being ready to run, you should at minimum have some understanding about fire behaviour so that even if that official word never comes telling you to get out, you can recognize when you should. And just about any able-bodied person should know how to quickly suppress a small fire problem before it turns into a major one.

That is the aim of this book.

### *Beware Dunning-Kruger*

I by no means aim to or am capable of turning you into a professional firefighter with this book.

This part is extremely important.

You must ensure you don't fall victim to the *Dunning-Kruger Effect*.

In short, the *Dunning-Kruger Effect* is a cognitive bias whereby people start out knowing they don't know anything about a subject, but then as they start to learn a little about it they begin to think that they know a lot more than they really do.

You see this in all areas of human society. How often have you seen someone on Facebook severely criticizing someone with an advanced degree in a very specific field of academic study on a subject they have spent their entire life studying?

How often do you see folks who have never even seen a wildfire up close in person on social media criticizing the professionals over their strategies?

That is not to say, of course, that professionals and academics with advanced degrees are infallible or are never stuck in an old way of doing something that has been proven over time to be less effective than they thought. The history of every science and trade is rich with examples of how establishment forces fail to keep adapting in the face of new data, and I think there is a strong case to be made for reform of our wildfire management practices.

In the past couple of years, I have observed change in that direction.

What it should do, however, is remind you to remain humble.

The second half of *Dunning-Kruger* is that after you have learned a little and feel like you know a lot, as you begin to learn more you realize how little you actually know, and it takes a long time and a lot more study before you become confident on the subject again.

It's that old saying about how a little bit of knowledge can be a dangerous thing. In the context of wildfire, it really can be a *deadly* thing.

So read this book. Go download the firefighting manuals I reference here and go watch all the videos you can on *YouTube* and take accredited courses and practice with your community and be prepared, but always remember that however much you learn, there will always be others who know more than you, and be ready to at very least consider the perspective they are offering.

Be humble enough to say "I don't know."

Be curious enough to say "but I want to."

Only then does real learning take place.

However much you learn, know that whatever you know is only a small part of it, and even old-timers with forty years of professional fire service under their gear will be the first to tell you that they are constantly learning.

**Important note:** If you are in an urban setting, much of this is not for you. The tactics that we employ are relevant to rural areas.

## *Why To Stay and When To Go*

Whenever I look at property, I think about how *defensible* it is.

One time, while visiting someone on the edge - but still outside - of an evacuation zone who had been asking for help in preparation, my skin was crawling with the danger. Nestled into a thick stand of evergreen trees with steep terrain on both sides and only one route of escape that was itself closely surrounded and covered by heavy, dry fuel.

I told him soon after arriving that I would not be staying with him and recommended that he didn't either.

Later, when he led us into an active evac order zone, Monte Lake, through a secret mountain road, the first property we came to - Dan's - was absolutely something I would feel comfortable staying behind to defend.

Yet Dan was the one ordered to leave.

Government bodies, tasked with ensuring our safety often claim a monopoly on that protection and will therefor tend to act "out of an abundance of caution." They don't have the time or resources to go case by case, property by property to determine how defensible properties are or how prepared or qualified those who reside there are to defend them.

They simply pull up a map in the Emergency Operation Center (EOC) and say "Ok, the fire is here and it's behaving this way, so everyone from here to here needs to get out."

Ultimately this comes back to that damn "L" word - *liability*.

In the same groups where you will see people bemoaning having been evacuated seemingly unnecessarily you will find others who are complaining that they were never told to leave at all. If those vested with the responsibility to do so never told you to go, and something awful happened, guess who is going to be blamed for it?

So the policy becomes simply “everyone get out of the way, we are dealing with it.”

Imagine the outrage you would feel if you were ordered out of your house so the “pros” can do their work, only to find out later that there was not a single firefighter or apparatus there, that they had literally ordered you out so it could burn freely... and possibly, so that there would be no witnesses.

This has been a reality for many people over the years. I have been told that’s what it feels like when you’re told to leave and you stay behind and realize that nobody else is there.

Like you’ve been left to burn. On purpose.

Which brings us back once again to self-reliance.

Many of us - particularly those of us who are experienced at taking care of ourselves - will look at the orders and think “I don’t need to.”

And for good reason. If you have planned and prepared for it, the appropriate default action may not be to flee. If you have applied the principles of *FireSmart* to your property and have mitigated the fuels and are equipped with adequate firefighting apparatus and structure protection. If you have a plan and strategy on how to fight it should it arrive, and know *how* you will survive, and outfitted and have trained and practiced for it. If you have established *Safety Zones*, then leaving the area could very well mean that you are just abandoning it all to burn unnecessarily.

A small, unknown number of folks stayed behind in Monte Lake in 2021 and there is not a doubt in my mind that those brave men and women spared the community from being a total loss. People who had already lost their own homes early in the fire fought for weeks afterwards, long after the immediate danger had passed, to keep feeding and watering the livestock and keep spot fires from flaring up and reducing structures which had survived the first round to ashes.

They were called “fools” by the Public Safety Minister at the time and they were called heroes by others, and much debate was held throughout social media.

The news media was repeatedly told fables about how these “holdouts” had endangered crews and had needed to be rescued, which is such a bald-faced lie it hardly deserves the dignity of dismissal.

To hear the official story on it, you’d think that there had been crews at the front line,

fighting with all their might to hold the fire back but had to drop their hoses and race up the hill to drag trapped civilians from entrapment to safety.

Anyone who knows how wildfires are fought can tell you that is a fairy tale because there were no crews left in the community - they had all evacuated.

New lines were drawn further back, and the whole community was labeled “in the black”.

One resident told me about seeing a crew wave at them as they left. He took it very negatively, like a “see ya suckers” gesture. Putting myself in the crew’s shoes, I could see that rather as a “we’ve been told by our bosses to leave so we’re going... good luck.”

All this being said, I see the other side of it as well.

Much of the Monte Lake is what I would have considered at the time to be utterly indefensible, especially parts of Paxton Valley - total lack of fire guards, no access to water, dried heavy fuel right up to within a meter of and overhanging major structures, single routes of egress, steep terrain and gullies full of many years of mixed fallen fuels in tinder dry setting.

A nightmare through the lens of entrapment avoidance, and absolutely anyone from those properties should have evacuated because there was nothing that could have been done to save them at that point, the preparations need to be done long before the fire shows up.

I absolutely agree that the evacuation order needed to be given, just not necessarily that it should have been enforced the way that it did. But that was before the possibility of working cooperatively with the ministry was a thing.

Note that I’m not saying it was inherently indefensible, but that those preparations needed to have been taken long before the flames had shown up, so when it did ignite, it was definitely time to GTFO.

But I also saw many properties while I was inside the evac order zone that were very much defensible, where the tree line had been cleared to a couple hundred meters, the grass was trimmed and well watered, tin roofs, sprinklers staged and an endless source of water and off-grid power available and well maintained.

I think of property owners like Dan and think he was one hundred percent right to

stay and fight. He was absolutely right to be mad at being shamed by the Minister.

No, you're not going to put down a Rank 5 fire with some garden hose. To be honest, you're not going to put down a Rank 5 fire with forestry hose and a bladder of water either.

But, what you *can* do is run around and stomp out the little spot fires that flare up *before they turn into Rank 5 fires.*

Someone needs to actually be there, and neither your government fire crews or the contract crews that support them are going to sit in your yard and wait for firebrands to squash, refuel the pumps and water and feed the animals.

Yes, the animals. I met with a pair of sheep farmers, Pat and Pat, who described their reasons for staying. "The evacuation order came at 8pm and by ten the next morning the highway was closed - you could leave but not return. We have far too many sheep to take out in a single load, so if we started evacuating them we would have abandoned all the rest."

Not just to the flames but to dehydration. As it happened, the fire had spared their farm (through their continual efforts) and even a week after the flame front had passed over them, the highway was still closed and access was forbidden and enforced by a downright hostile police presence at a road black. You could "apply for a permit" but permits were not being offered to residents, only contract crews and for Hydro and Telus.

Despite the imminent danger of fire having passed, their sheep - a rare breeding stock that are apparently endangered - would have perished alone from lack of water, thanks only to "an abundance of caution" on the part of officials.

How tragic would that be?

This is the kind of thing that, cliché as it might sound, "city folks" and bureaucrats simply do not understand. Ranchers don't treat ranching as their job, it is their *life*. "You survived!" Yes and now what? Go live in an apartment in the city?

Rural families work their entire lives to get their property into just such a way that it functions for their operation, to lose it is potentially the end of their ability to ever live their lives as they see fit ever again, and to hand it down to their children.

Setting up fences and corrals, building barns and shops and chutes and collecting all

the tools and setting up all the systems needed in running a ranch takes a lifetime. Often, generations. You don't just "rebuild". You can't just go to Costco and buy a new ranch off the shelf with the insurance money. Even if you had the dollar value that it would take to do so (which insurance rarely actually covers), simply obtaining all the parts and then deploying them would take years, possibly decades when you account for rebuilding those systems.

Dan told me "I'm too old to start over."

This leaves aside the animal husbandry aspect of ranching.

How would you feel to have done exactly what ranchers do - take care of their land and their animals - only to be berated by some suit in Victoria as fools because you didn't just abandon it all to perish unnecessarily.

We learned of ranchers in Paxton digging mass graves for their cattle with excavators. How he'd had to walk amongst his herd of mortally wounded and suffering livestock and put them down one by one with the very rifle he kept for protecting them from predators.

My eyes well up just at the thought of it even now.

Even if you have never lived on a ranch, you only need an ounce of empathy to understand why rural property dwellers are more likely to be reluctant to leave when ordered than their urban relatives, and it's not just stubbornness and ignorance, not by a long shot.

You will hear people say "it's only stuff" or "there's insurance for that" but what those people don't understand is that it's not "just stuff" but rather a lifetime of work and progress.

"I'm too old to start over," Gord told me.

It's a recurring sentiment.

And it's true.

The choice isn't always or even usually necessarily between "Death or Defense" and knowing how to determine that is going to be your key to survival.

No property is worth dying over - no hillside, barn, house or shop.

But if you have prepared, then choosing to stay may not be as dangerous as it has been characterized in the past.

## WHEN TO LEAVE

This is the hard part. You NEED to be able to know when it's time to flee. You need to decide this in **advance**, don't just think you will recognize it when you see it. No matter how tough or determined you are, no matter how much water you have in your hose, there comes a point when you have to withdraw to a safer location or face certain death.

**Listen to me on this, please.** This might be the most important message of this book and it could save your life.

Even the greatest armies in the world know when to make tactical retreats in the face of overwhelming firepower. There's nothing cowardly about it. Hopefully you never find yourself having to make this decision, but if you do, make sure you make the right one. Air on the side of caution. No hill or house is worth dying over.

I have stood in the face of a rank six fire and I swear to you, even with the unified resources of the western world at your back nothing can stop it. It has to run it's course and we are ultimately fragile, *flammable* sacks of bone and meat.

You will just die, and it will be a horrible death. The very worst kind of death. And, if somehow you miraculously survive, you will realize that it would have been better if you had died. Go ahead and ask any old time firefighter who's had to visit a comrade in a burn ward.

This is exactly why many western governments employ a policy of “as soon as it starts to get dangerous, get the plebeians out and leave it to the professionals.”

The Renegade Fire Brigade answer is *not* to ALWAYS STAND YOUR GROUND and ignore the BUREAUCRATS. There is a reason that policy exists, and it's to protect you. If you are going to choose to stand your ground, then you **must** employ the same knowledge, training, and understanding that the professionals would, and that includes having the humility to leave when it is time. If you've done the right things up to this point, your property will be defensible – cleared brush, fine fuels removed, no heavy fuels within a 30m radius of your home, all the things that the pros look for when deciding on which structures will receive protection – which *can* be saved - and which will not.

## *BUILDING YOUR TEAM*

## *Incipient Organization*

Here's the thing about rural communities: everyone knows everyone, and yet in a lot of ways, nobody really knows about anyone else. Maybe you know that Gordon down the way there was the boss at some sort of Urban company or something or other, but did you know that he has an entire woodwork shop including mills?

You know Bob down the road has a nice shop and always seems to have the right tool for any job, but you have no idea he spent thirty years as a heavy equipment mechanic for the forestry service.

You wave at Margaret every morning when she walks her dog, but you don't know she was a paramedic before she retired and moved out here for the peace and quiet. The people in your community are your most valuable resource.

Before you even think about forming a society or applying for grants, you need to get organized on a human level, and that means figuring out who's actually in your community and what they bring to the table.

### *The Kitchen Table Phase*

Every successful rural fire brigade or response society starts around someone's kitchen table. Not a community hall, not a formal meeting room—someone's kitchen table with coffee and maybe some cookies if you're lucky.

In our case, it was my mother's kitchen table. I can't remember if there were cookies.

This is where you gather the three or four people who are genuinely interested in making this happen. Not the people who vaguely say "yeah, that sounds like a good idea" when you mention it at the post office or thumbs up a Facebook post, but the people who actually show up when you say "let's meet Thursday at 7 PM to talk about this seriously."

Your kitchen table crew needs to tackle the most important question first: who else is out there, and what can they do?

## *The Great Neighbor Hunt*

You're going to need to become a bit of a detective, or have a neighborhood busy-body who already knows the who's who within your fire protection area and what skills, connections, and resources they might bring to the table.

Start with the obvious stuff: who has relevant professional experience? But don't just think about firefighters and emergency responders. Think about anyone whose job involves problem-solving under pressure, working with equipment, or organizing people and resources.

The retired heavy equipment operator who can probably figure out how to mount a water tank on a truck chassis. The woman who manages a trucking company and knows how to coordinate people and equipment. The guy who ran a small business and understands budgets and dealing with bureaucracy.

## *The Specific Role Strategy*

People are much more likely to get involved if you're asking them to do something specific rather than just "help out with the fire brigade." Nobody wants to sign up for a nebulous commitment that might turn into them being responsible for everything.

Instead, identify the specific roles that need to be filled and then match people to those roles based on their skills and interests.

Rather than trying to rope people into doing things they will dislike, find out what they are naturally good at and enjoy doing and they will automatically take up that mantle.

Here are the roles you absolutely need, even before you're officially organized:

**Community Connector** - This person's job is to know everyone in the area and be comfortable approaching people. They're the one who knocks on doors, makes phone calls, and asks the right questions to find out what people's backgrounds are. This is probably not going to be the shy, introverted type.

**Resource Mapper** - Someone needs to keep track of who has what equipment, skills, and connections. This person creates and maintains a list of everyone in the area, their contact information, their relevant experience, and what they might be able to contribute. They're detail-oriented and good at organizing information.

**Training Coordinator** - Even before you have equipment, you need someone thinking about training. This person researches what training is necessary and available, coordinates with other groups and organizations for mutual aid training opportunities, and keeps track of who has what certifications. They're the type who actually reads manuals and follows up on details.

**Equipment Researcher** - This person becomes your expert on what equipment you actually need, where to get it, what's good and what's not, and how much it costs. They're the one comparing pumps and radios online, figuring out what kind of attachments you need, researching and researching suppliers. They like researching and comparing options.

**Communications Manager** - Someone needs to handle the social media, make well thought out and communicative posts, create flyers, and manage communication with the broader community. This doesn't have to be a social media expert—just someone who's comfortable with basic online communication and can write clearly.

**Bureaucracy Navigator** - This person deals with the paperwork side of things—researching how to form a society, what the pros expect of us mere mortals when interfacing, understanding insurance requirements, and figuring out what regulations apply to you. They're the type who actually reads the fine print and doesn't mind dealing with government websites.

And, not least of all, **Operational Expertise**. You need someone who actually has firefighting knowledge and experience. If you don't have that direct operational voice in the organizing structure, you end up with weird problems, like accepting the gift of a municipal fire engine without anyone to point out that trees are not hydrants and 4" outlets are absurdly out of line with what would actually be helpful on a wildfire start.

### *The Skills Inventory Conversation*

Once you know who's in your area and has expressed interest in helping somehow, you need to have the "skills inventory conversation" with each person. This isn't a job interview—it's more like a friendly interrogation.

You want to know:

- What they used to do for work
- What they do now/what their interests and hobbies are

- What equipment they have access to
- What connections they have
- What their availability looks like
- What they're interested in doing vs. what they absolutely don't want to do

The key is to make this feel like you're asking for their expertise, not trying to recruit them for unpaid labor.

### *The "Would You Consider..." Approach*

Instead of asking people to commit to "being part of the fire brigade", ask them if they'd consider taking on one specific role.

"Would you consider being our equipment researcher? We need someone to figure out what pumps we should be looking at and where to get them and what the best price will be and how to maintain them. You know equipment better than anyone."

"Would you consider helping us figure out a comms strategy so we are able to communicate when there is no cell service in these hills? You know everyone around here."

This shows people that you respect their skills and it gives them a way to contribute without feeling like they're signing up for endless meetings and responsibilities beyond the scope of their ability (or willingness) to assist.

### *The Retired Professional Goldmine*

Pay special attention to retired professionals. If you are in a rural area, you will probably find there is a surplus of them. They often have:

- Relevant professional experience *and tools* they're not using anymore
- Time to contribute (though don't assume this, many people are busier in retirement than when they were working)
- Professional networks that might be valuable
- A desire to stay connected to their community

But here's the important part: many retired people moved to rural areas specifically

to get away from the responsibilities and stress of their former careers. Don't assume they want to recreate their old job on a volunteer basis.

The key is to find out what aspects of their former work they actually enjoyed and miss, versus what they were happy to leave behind, and if you are wondering how to do that: just ask! Ask them what their favorite part was and how they think that might be of aid in this endeavor.

### *The Connection Mapping*

Don't just think about what people can do—think about who they know. Rural communities are surprisingly well-connected if you know how to trace the connections.

The retired mechanic might still have a contact at the equipment dealer or a cash account discount with the parts place. The woman who used to work for the regional district might know exactly who to talk to about permits and regulations (or how to get around whoever is holding you up along the way). The guy who used to run a trucking company might know where to get water tanks.

Keep track of these connections. They're often more valuable than skills or equipment.

### *The "Not Ready to Join But Willing to Help" Category*

You'll find a lot of people who aren't ready to commit to being part of the fire brigade but are willing to help in specific ways. Don't dismiss these people—they're incredibly valuable.

Maybe they can't commit to responding to fires, but they're willing to let you store equipment in their shop. Maybe they can't attend regular meetings, but they're willing to help with fundraising events. Maybe they can't do physical firefighting, but they're willing to coordinate communications during emergencies.

Create a separate category for these people and keep track of what they're willing to do. You'll be surprised how much support you can get from people who aren't officially "members."

And don't forget: many hands make light the work. What is dissuading for folks is when they volunteer to help with one thing and end up carrying the whole show on their back. A good distribution of tasks will make your whole organization more

effective, grow community connections, and keep the key individuals from burning out.

### *The Documentation Challenge*

All of this relationship building and skill mapping needs to be documented, but not in a way that feels intrusive or bureaucratic.

A simple spreadsheet with names, contact information, relevant experience, equipment/resources, and what they're interested in helping with is usually sufficient. But make sure someone is actually maintaining it and that it's accessible to your core organizing group, while at the same time keeping it secure so that all that personal information isn't just disseminated into the wild.

The goal is to create a resource that helps you know who to call when you need specific help, equipment, or expertise.

### *Before You Move to Official*

Before you start thinking about forming a society and applying for grants, you need to have:

- A clear picture of who's in your community and what they bring
- At least a few people committed to specific organizing roles
- A sense of what equipment and resources you can access locally
- Some idea of what your community actually wants and needs

This groundwork phase will take months, but it's time well spent. You'll end up with a much stronger foundation for whatever comes next, and you'll avoid the trap of forming an official organization that doesn't actually have the community support to be effective.

Remember: you're not just organizing a fire brigade. You're building a network of people who care about community safety and are willing to do something about it, something that will hopefully outlast your own involvement in it long into the future.

That network is ultimately more valuable than any equipment you'll ever buy.

## *Preparedness Committee*

Once you have got your core “kitchen table crew” you have essentially formed a committee, so go ahead and call yourselves that. It gives you an official designation that carries with it meaning and nuance and expresses what you do - you aren't just a bunch of worried people getting together and worrying, you are a *committee* of community volunteers who are working towards a goal.

We decided to call our committee “Emergency Preparedness In Knutsford” because it covered what our committee goals were, and because it made for a cool acronym.

Why yes, we are EPIK.

It is important that you stay organized at this stage. Me personally, I am not, but luckily everyone else was, and they took good notes, so I was able to show up, beak off, and it was all recorded for posterity.

Our first few meetings were essentially brainstorming what was needed and then triaging how urgent it was needed, updating each other on progress we had made with our tasks and pet projects, discussing things that had happened, and basically brainstorming.

We would come up with action items and discuss how urgent they were, possible solutions, and assign the tasks to different members according to their knowledge of that particular domain - and their eagerness to undertake it.

For example, Cris runs a trucking company and as a result has a good amount of experience with GIS mapping. She already knew what to do and so she just went about developing the mapping platform. Nat was already acting as a kind of Information Officer but posting updates and interfacing with the community, so when we decided we needed an autodialer, naturally it made sense that the messages would be distributed by her and on their call displays it would read NAT ANFIELD, whom they all knew.

All this coalesced by the end of August into our “EPIK Tactical Plan”. There is a

copy of it in its entirety in the back of this book that you can take and use as a template for your own uses, just keep in mind that we were addressing needs that were specific to our community at that specific time. Much has changed for us since then, and much will be different for your community as well.

### *Working Under An Established Society*

One thing that proved to be very helpful was the fact that we had a long-established not-for-profit society in our area called *Rose Hill Farmer's Institute (RHFI)*, whose history stretched all the way back to the frontier days and which managed a community contact list and the local community hall.

And, my mother was the president at the time, so we have a good working relationship (we go way back) in addition to their implicit cooperation.

Since the RHFI was a community interest organization, they were able to help us get started but because the focus at emergency response was so far outside of their society's stated purpose, we couldn't just integrate with them, and thus forming a separate committee (and later Society) became necessary.

One of the first things they were able to help us with was by allowing us the use of the community hall essentially any time we asked, free of charge. This was important because everyone knew where it was, it was visible as it was right on the corner on the highway, it was right at the community mailboxes were located, and it was a neutral place that could accomodate large numbers of people.

It is one thing to be gathered around your mother's kitchen table with a small crew of folks that are quickly becoming friends, it is a whole other thing to invite the community at large along with elected representatives, regional district dignitaries, emergency operations liasions and so forth to your house, so having the community hall was a valuable resource we were most grateful for.

Another huge advantage we had right out of the gate was that the RHFI had, since the days when the mail was literally coming in by horse and carriage, kept a contact list of everyone in the community. Over the years it had modernized to including e-mail and that became extremely important because many people don't use Facebook at all. There was quite a contingent in our community who had opted out of social media altogether and who otherwise might never have learned about what we were up to unless they had received a mailout from RHFI alerting them to it.

Finally, when the community began outpouring support - specifically, financial support - it gave us a structure through which to collect and then disperse donations. None of us individually wanted to expose our taxes to the complication of being named the beneficiary of a GoFundMe campaign, or in needing to explain why several thousand dollars had been E-transferred to our bank accounts.

And crucially, it gave us some accountability and separation from the funds.

When people make donations towards a cause they believe in, they need to trust that it is going towards the things that will support that cause.

If, for example, I was personally receiving these transfers, then there is no outside accountability for how much was actually received, or what it was spent on. To someone suspicious of the effort, it would be very easy to say “oh he is just taking the donations and blowing it on his personal needs.” How would I counter that? Print out my bank account statement?

No thanks.

The Treasurer for the RHFII became the beneficiary for the GoFundMe and it was their bank account - a trusted, long established community organization - which received the E-transfers and handled the payouts. We saved receipts and made spreadsheets for the expenses, submitted them to the RHFII treasurer and they paid us back for our out of pocket.

Some of our out of pocket, anyway. At this stage of the game, you have to expect if you are going to go down this path that there is going to be a certain amount that you are going to spend that may be difficult to quantify for reimbursement or is otherwise difficult to track.

Having this established society to lean on was convenient in streamlining the organization process in the beginning. It allowed us a shortcut to things like receiving donations or obtaining venues for meetings at short notice without having to expend all that time and energy on those things.

But we were also clear from the start that our goal was not to remain as a sub-committee under the RHFII, but to establish our own not for profit society that was focused on the emergency preparedness and response aspect.

Nevertheless, once the chaos of the fire season quieted down, we all let our minds

think about something other than fire. The next year was thankfully a quiet fire year and looking back at my message history with Nat, all that had been said was “We need to get sorted for this year if we are going to get a society up and running.” And “Yes we do time flies holy crap I can hardly believe it.”

This is something you might also experience too, if you aren’t careful, and maybe even if you are careful.

We were *tired*.

Despite having a whole community at our back, there was around a half dozen of us who had done hundreds of hours of work organizing and researching and managing and ... we were *tired*.

It is a monumental undertaking, and we were fumbling in the dark.

If you are reading this now, then you at least have the benefit of our experiences to springboard from. So much of what we were trying to achieve was coming down to literally going to google and searching terms like “how to start a fire department”.

We didn’t even have AI like we do now.

It was all manual, calling people and searching and researching and it was exhausting.

Nothing brings a community together like an existential threat, so when Rossmore Lake blew up in 2023 and our preparations paid off, we were suddenly back on everyone’s radar and it spurred quite a bit more interest and support in our little project, ultimately drawing in new members and expertise we hadn’t previously had, such as Gordon Petersen offering to act as foundational President when we went to form the not for profit Society.

## *Forming a Not For Profit Society*

We realized in pretty short order that what we really needed to do as a community was to form a not-for-profit Society to handle things like funds, grants, and insurance.

None of us wanted to be accepting a \$10,000 e-transfer from a generous donor and risk having it counted as income at tax time.

None of us wanted to shoulder the burden of liability insurance for a rag-tag collective of redneck firefighters.

At some point in your fire protection journey, you're probably going to realize that having a proper legal structure will make things a lot easier. And if you are going to take part in the BCWS as a *Cooperative Community Wildfire Response Group*, you will need to be an incorporated business entity, "such as a non-profit society or fire brigade".

In BC, a non-profit organization is called a society and is governed by the *Societies Act*. The good news is that it is not a particularly complex or archaic process, you can incorporate a new society almost instantly through the online system so you don't have to deal with the old paper filing headaches.

But before you dive in, understand what you're getting into. A society is a legal entity separate from its members, which means it can own property, enter into contracts, and be sued. It also means you'll have ongoing obligations like annual reports, keeping proper records, and following the rules set out in the *Societies Act*.

### *What You'll Need to Get Started*

First, you need at least three people willing to be the initial directors. These people will be responsible for getting the society up and running, and they'll have legal duties under the Act. Choose people who understand what they're signing up for and who you can count on to stick around for a while.

This goes back to what I was saying earlier about getting to know the folks in your community and what their particular skills and strengths are.

As it happened, we had a lawyer who was willing to generously donate her office's time in getting the application properly filled out and allowed us to use her office in town as our permanent mailing address for incorporation purposes. We also had a community member who had chaired a number of boards over the years and volunteered to act as the first President.

You'll need to come up with a name that's not already taken and that follows the naming rules. It needs to include "Society" or "Association" at the end, and it can't be confusing or misleading. In our case, we chose "*Knutsford Community Response Society*" as it was broad enough to allow for adjacent emergencies such as floods. The registry will check this when you apply, but it's worth doing a quick Google search first to avoid disappointment or delays.

The two main documents you'll need are a constitution and bylaws. The constitution is pretty straightforward - it basically just states your society's purposes. The bylaws are where you set out how the society will actually operate - things like how you elect directors, how meetings work, and what powers the directors have.

### *The Constitution*

Your constitution needs to include your society's purposes, and this is where you want to be thoughtful. Make them broad enough to cover what you might want to do in the future, but specific enough to be meaningful.

For the Knutsford Community Response Society, we settled on:

- To sustain and build community resilience, strength, goodwill, and collaboration.
- To respond to the needs of Knutsford Community as it relates to emergencies.
- To support restoration of the community following an emergency.
- To liaise and work in collaboration with individuals, government, corporations, and other agencies that advance our purposes.
- To acquire, hold, lease, manage, rent or sell any real property or personal property in support of the purposes of the Society.
- To enter into contracts with any person, body corporate, government or

government ministry, department or others that support the purposes of the Society.

- To solicit, receive, acquire and hold donations, gifts and legacies and to collect and receive rents, profits and other revenues, grants, appropriations and subsidies and to enjoy all of the benefits of ownership thereof that support the purposes of Society.
- To operate as a non-profit Society; and
- To do all other things as are incidental or conducive to the attainment of the purposes of the Society and the exercise of the powers of the Society.

However, when in the process of obtaining our Charitable status, the Canada Revenue Agency wanted us to be a bit more concise, which meant that we had to revise our constitutional purpose statement.

To do this meant we had to hold a special meeting of the membership and hold a vote on it. At the time it was like “do we or do we not want to have charity status?” Duh. Of course we did, so we voted for it.

Something to keep in mind while you our founding your own Society, if eventually Charity status is something you will wish to pursue.

The revised purposes are now:

- To protect the safety of the Knutsford community by providing timely and effective responses to the threat of emergency situations such as wildfires,
- To provide wildfire training courses developed by the BC Wildfire Services and occupational first aid training to communities in British Columbia, and
- To undertake activities ancillary and incidental to the above-mentioned charitable purposes.

## The Bylaws

The bylaws are where the rubber meets the road. The Societies Act includes standard bylaws that apply automatically if you don't create your own, but you'll probably want to customize them to fit your situation.

I have included the KCRS Constitution and Bylaws in their entirety as an Appendix here in this book, and it is also available on the KCRS.ca website.

## *Key Areas to Address in Your Bylaws*

**Membership Structure:** Who can be a member? How do they join? What are their rights and responsibilities? For a rural response, you might want different classes of membership - maybe active firefighters, associate members, and honorary members. Our bylaws keep it simple - anyone can apply for membership, and the Board decides on applications. This is for membership to the society. For active Team members who will fall under the command structure, they are also society members, but they must apply to become part of the *Knutsford Initial Response Team*, which is a separate entity that exists under the Society.

**Board Structure:** The Act requires at least three directors, but you can have more. We chose to have between 3 and 9 directors, which gives us flexibility as we grow. Think about what makes sense for your community size and the workload involved. We also built in staggered terms so that only one-third of the board turns over each year, which helps with continuity.

**Meeting Requirements:** When will you hold your annual general meeting? How much notice do members need? What constitutes a quorum? The new Act allows voting members to pass a unanimous resolution instead of holding an AGM, which can be handy for smaller organizations. We set our quorum at just 3 voting members, which reflects the reality of small rural communities where getting people together can be challenging.

**Financial Authority:** Who can sign cheques? What spending authority do directors have? How will you handle financial reporting? This stuff matters a lot when you're dealing with grants and donations. We require two signatures on contracts and financial documents - typically the president plus one other director, with fallback options if the president isn't available.

**Officer Roles:** While the Act doesn't require specific officer positions, it's practical to define them. We designated president, vice-president, secretary, and treasurer roles, with clear responsibilities for each. The secretary handles all the filing requirements and meeting notices, while the treasurer manages the money and financial reporting.

**Special Provisions:** Don't forget the clauses that protect your non-profit status. Our bylaws include specific language about operating without purpose of gain and what happens to assets if we ever dissolve. These provisions can only be changed by unanimous vote, which protects the society's charitable character.

## *The Incorporation Process*

Once you've got your paperwork sorted, the actual incorporation is pretty straightforward. You can do it all online through *Societies Online*, and it happens almost instantly if everything's in order.

You'll need to pay the incorporation fee (currently around \$100), and you'll need to provide information about your initial directors. Each director needs to provide their name, address, and confirm they're eligible to serve (basically, they can't be bankrupt or have certain criminal convictions).

The system will check your name availability and review your documents. If everything looks good, you'll get your certificate of incorporation right away. If there are problems, they'll let you know what needs to be fixed.

## *What Happens After Incorporation*

Congratulations, you now have a legal entity! But that's just the beginning. Your first order of business should be getting your organizational ducks in a row:

**Get a bank account:** Most banks will want to see your incorporation certificate, bylaws, and a directors' resolution authorizing the account opening. Shop around - some banks have better deals for non-profits.

**Set up your records:** You're required to keep certain records at your registered office, including your constitution, bylaws, minutes of meetings, and a register of directors and members. Start good habits early.

**Get insurance:** Your association may not be able to obtain insurance - whether vehicle, general liability, or directors and officers coverage - without a legal vehicle such as a society. This is especially important for the types of things that you will be dealing with as they are inherently dangerous activities.

**File your first annual report:** You'll need to file an annual report each year and pay the annual fee. Set a reminder - the penalties for late filing aren't fun.

## *Ongoing Obligations*

Running a society isn't a "set it and forget it" deal. You'll have ongoing responsibilities:

**Annual reports:** Due within 30 days of your annual general meeting, along with a fee (currently \$25 for small societies).

**Keeping records:** Financial statements, meeting minutes, and other records need to be maintained and available to members.

**Director changes:** Any changes to your directors need to be reported to the registry within 30 days.

**Bylaw amendments:** If you change your bylaws, you need to file the changes with the registry.

### *Some Things to Keep in Mind*

The biggest mistake a new society can make is treating the whole thing too casually. Yes, it's easier than ever to incorporate, but you're still creating a legal entity with real obligations. If you don't take it seriously, you can end up in hot water with the registry, CRA, or even face personal liability.

Another common issue is not thinking through the bylaws carefully enough. It's tempting to just use a template and call it done, but your bylaws are going to govern how your organization operates for years to come. Take the time to customize them to your specific situation.

And remember - being a director of a society comes with real legal responsibilities. Directors have duties to act in the best interests of the society, avoid conflicts of interest, and ensure the society complies with the law. If you're asking people to serve as directors, make sure they understand what they're signing up for.

Finally, don't forget that societies have less stringent reporting requirements than charities, but they cannot issue tax receipts for donations.

If you think you might want to issue tax receipts down the road - which is incredibly useful when soliciting for donations - you'll need to look into charitable status. With the help of some amazing volunteers, we were able to also achieve this, but it was not easy, took quite a bit of work and waiting, and is for another section of this book as it is a whole different process with the Canada Revenue Agency.

## *A Word About Auditors*

Your bylaws can include provisions for appointing an auditor, which might be useful as you grow and handle more money. Our bylaws allow for an auditor to be appointed at the annual general meeting, and they can attend meetings and provide reports to members. For a small rural emergency response society just starting out, this might be overkill, but it's good to have the option built in.

## *The Bottom Line*

Forming a society can be a great way to formalize your fire protection efforts and open up opportunities for funding and partnerships, and ultimately if you want to participate with BC Wildfire under the Cooperative Communities Partnership, you will be required to be a not for profit society.

But it's not something to rush into without understanding the commitments involved. Take the time to do it right, and you'll have a solid foundation for your organization's future.

The key is to think of incorporation not as a bureaucratic hurdle, but as a tool that opens doors. With proper legal structure, you can apply for grants, accept donations without personal tax implications, get proper insurance coverage, and present a professional face to government agencies and other emergency services.

At this time, it is also the only way your crew is ever going to be able to work *with* the pros should you have an incident in your area.

These advantages far outweigh the modest administrative burden once you get your systems in place.

## *Initial Response Team*

Once we had our legal structure sorted out with the society, we realized we needed to think carefully about how to organize the actual operational side of things. You can't just have a bunch of well-meaning volunteers showing up at a fire without proper training, equipment, or coordination.

That's how this all got started in the first place.

We decided to structure our organization in two separate parts:

1. **Knutsford Community Response Society (KCRS)** - the overarching legal entity that provides the framework for the actual responders to do their jobs. This is the part that takes donations, gets insurance, applies for grants, and handles all the administrative stuff that keeps us legal and functional.
2. **Knutsford Initial Response Team (KIRT)** - the actual operational group who train for and respond to events. These are the folks who show up when something is happening.

This dual structure has worked really well for us, and is how I'd recommend any community set up their own response capability.

## *Membership Structure*

According to our Society bylaws, anyone in the community is welcome to join the Society and become a voting member, and all members of the team are members of the society, but not all members of the society are on the *Team*.

To join the response *Team*, there's an application process.

This way we're able to allow the community to be part of our society while keeping a separation so that we don't have just any random community member showing up at a fire expecting to take part when they haven't been through training or aren't following the rules we are required to maintain our good relationship with our Ministry and Regional District counterparts.

The application process doesn't have to be intimidating - we're not running military boot camp here. It is a balancing act as we know that we are all volunteers and are busy with our properties and families and retirements. But we do need to know that people are committed, physically capable of the work, and willing to follow our safety protocols.

We ask for basic information about availability, any relevant experience, and why they want to join. More importantly, we have a conversation with each applicant to make sure they understand what they're signing up for.

One of the reasons for this is that there are *Personal Protective Equipment (PPE)* requirements to follow and meeting those requirements is a significant expense so we need to ensure that we're not just having hundreds of dollars of custom fit kit handed out every time someone says "I wanna try that."

The reality is that not everyone who wants to help is cut out for active firefighting.

Some people are better suited for support roles, logistics, or community education. Having the broader society membership gives these folks a way to contribute meaningfully without putting themselves or others at risk by being on the response team.

Back again to the whole "getting to know your community" aspect.

### *Training and Team Building*

During fire season, the society Board of Directors takes a back seat to operational needs. Instead, KIRT gets together every couple of weeks to participate in team building, formal training provided by professionals, and to practice scenarios. This isn't just about fighting fires - we train for medical emergencies, search and rescue, flooding, and other situations we might encounter.

The training schedule is critical for several reasons. First, it keeps everyone's skills sharp and ensures we're all on the same page when it comes to procedures. Second, it builds team cohesion - when things go sideways at 2 AM, you want to know you can count on the person next to you. Third, it helps us identify equipment needs and operational gaps before we're in a real emergency.

We've found that mixing formal training with hands-on practice works best. Sometimes we'll have a professional instructor come in to teach specific skills like

medical first aid or equipment operation. Other times we'll set up scenarios in our own area - "what if there was a lightning caused fire at that tree right there?"

The key is keeping it regular and keeping it real.

## *Communications and Dispatching*

Good communication can make or break an emergency response, and we learned early on that we needed a reliable system for getting information to our team members quickly and clearly. After trying a few different approaches, we settled on using an app called Telegram as our team communication platform.

Telegram works well for us because it's cross-platform - it doesn't matter if you have an iPhone or Android, everyone can use it. More importantly, it has features like location sharing which can be turned off and on, something which is incredibly useful when we're doing patrols or responding to incidents in our large rural area.

## *Our Communication Structure*

We set up three four channels, each with a specific purpose:

**Dispatch** - This is our emergency channel, and we configure it to break through "do not disturb" modes so that everyone will get the notice immediately. Many of our team members set the notification sound to an air raid siren or similar attention-grabbing tone. When something goes out on this channel, everyone knows about it.

**Priority Traffic** - This channel is for official notices of upcoming events, training sessions, and scheduling information. It's also where team members give notice when they're going to be unavailable - vacation, work commitments, medical appointments, whatever. This helps us know who's available for response and lets us plan training sessions around people's schedules.

**Team Chatter** - This is our general discussion channel where team members share news items, discuss equipment, ask questions, and maintain team morale. It's less formal than the other channels, but it serves an important purpose in keeping everyone connected and informed.

**Leadership Discussion** - This is where the leadership can discuss things outside of the view of the rest of the team. It doesn't get a lot of traffic, mostly discussing who will be in charge based on who will be away and things the regular team don't need to hear about.

The key to making this system work is separation, just like we did with the separate Social Media channels on Facebook. Everyone needs to understand what goes where so that the air raid siren isn't going off every time someone comments on a news item that is shared.

### *Logging Hours and Documentation*

One thing that might not seem important when you're starting out but which is actually hugely important - and a colossal pain in the butt if you have to go back after the fact and try to figure it out (just as Chief Terry did) - is keeping track of your training and response hours.

This is crucial for several reasons.

First, there are tax benefits available for volunteer firefighters that can provide some not-insignificant financial recognition for the time and effort people put in.

Second, having good records helps with grant applications and insurance requirements.

Third, it's useful information for planning and resource allocation.

### *The Volunteer Firefighter Tax Credit*

In Canada, volunteer firefighters and search and rescue volunteers can claim a tax credit if they perform at least 200 hours of eligible volunteer service in a year. This includes both emergency response time and training hours. As of the 2024 budget, it was increased from \$3000 to \$6000 in tax reduction.

To claim this credit, you need to keep detailed records of your volunteer hours, and your organization needs to be able to verify them. This means tracking both training sessions and actual emergency responses. We use a simple spreadsheet system where team members log their hours and we verify them against our training records and response logs.

### *Documentation Best Practices*

Good record-keeping serves multiple purposes beyond just tax credits.

Insurance companies want to see that your volunteers are properly trained and that you're maintaining appropriate safety standards. Grant applications often require

information about volunteer hours and training levels. And if something goes wrong, having good documentation can be crucial for legal protection.

We track several key pieces of information:

- Training hours (what type of training, who provided it, who attended)
- Response hours (what type of incident, who responded, duration)
- On-call hours (when we are expecting there may be trouble)
- Equipment maintenance and inspection records
- Safety incidents or near-misses and post-incident reflection
- Continuing education and certification updates

It doesn't have to be complicated - a simple logbook or spreadsheet can work fine. The key is being consistent and making sure everyone understands the importance of accurate record-keeping.

### *Operational Flexibility*

One of the advantages of having a separate operational team within the broader Society structure is that it gives us flexibility to adapt to changing needs and circumstances. During fire season, we might be training and responding multiple times per week. During the off-season, we might scale back to monthly meetings focused on equipment maintenance and planning.

The society provides stability and continuity, while the response team can be nimble and responsive to immediate needs. This structure also makes it easier to handle personnel changes - if someone needs to step back from active response duties, they can remain involved in the Society while we bring in new team members.

### *Building Team Culture*

Don't underestimate the importance of building a strong team culture within your response group. Our community is extremely spread out and as a result we might not have ever met many of the people we are teaming up with.

One thing that really helped us build team identity was getting an official crest designed for KIRT. Having a professional-looking patch that can be stitched onto the

shoulders of our uniforms, as well as on hats and t-shirts, might seem like a small thing, but it makes a real difference. When people see you wearing that crest, they know you're part of something legitimate and organized. More importantly, it gives team members a sense of pride and belonging - you're not just a random volunteer doing pointless grunt work, you're part of an official response team.

The crest also helps with public recognition and credibility. When we're out on patrol or responding to an incident, having that official insignia makes it clear to the public as well as other agencies that we're a legitimate organization, not just a bunch of rednecks with fire extinguishers.

We are *official* rednecks.

These people are potentially going to be working together under high-stress conditions, often in dangerous situations. We all need to trust each other, communicate effectively, and work as a cohesive unit.

Some things that have helped us build good team culture:

- Regular social activities outside of or following our training sessions
- Clear expectations and standards for all team members
- Recognition and appreciation for people's contributions
- Open communication about problems and concerns
- Shared commitment to safety and professionalism

We foster a culture that is open, respectful and receptive to every member's input. Just because someone is new doesn't mean that they should keep their yap shut. Just because someone is senior doesn't mean that they get a free pass to be ignorant or dismissive.

Remember, you're asking people to volunteer their time for potentially dangerous work. The least you can do is make sure they feel valued and supported by their teammates and the broader community.

### *The Bottom Line*

Separating your legal entity from your operational team might seem like unnecessary complexity, but it's actually a smart way to balance community involvement with

operational effectiveness. The society gives everyone a way to contribute and provides the legal framework you need to operate. The response team ensures that the people actually showing up to emergencies are properly trained, equipped, and prepared.

This structure has allowed us to maintain broad community support while building a professional, effective response capability. It's not the only way to organize things, but it's worked well for us and might be worth considering for your own community.

## *Chain of Command*

When you're just a handful of volunteers from a small rural community - especially when you are fledgling - talking about "chain of command" might seem like overkill.

But here's the thing - when you're responding to a real event, you *need* to have one person who is designated as being in charge. "Too many cooks stirring the pot" is never more real than when you are staring down the barrel of a wildfire.

You can't just have everyone running around freelancing at whatever they get fixated on.

From a pragmatic perspective, the agencies that you will be interfacing with need a central point of contact. When the media wants to do an interview, they need to know who to talk to.

There is a reason that all emergency operations utilize the Incident Command system, and it isn't because they all want to LARP at being in the army.

### *Why Chain of Command Matters*

I've seen too many emergency scenes turn into an absolute gong show because everyone thinks they're in charge, or worse, nobody thinks they're in charge.

When the adrenaline is pumping and there's smoke in the air, you need clear lines of authority and communication. Someone needs to be making decisions, someone needs to be coordinating with other agencies, and everyone needs to know who they're taking orders from.

It's not about ego or playing dress-up. It's about safety and effectiveness. When you have a clear chain of command, people know their roles, they know who to report to, and they know who's responsible for making the big decisions.

This reduces confusion, prevents dangerous freelancing, and ensures that resources are used efficiently.

And, if you have put some effort into developing a healthy Team culture, you won't need to "pull rank" on your Team - they will follow the instructions not because they are orders but because they respect you and know that you are doing the right thing.

### *The Reality of Small Teams*

Now, I'm not saying you need to run your rural response Team like a full blown fire department or military unit. On the contrary - this whole thing started because rural people are independently minded and don't like being told what to do by the authorities when they have their own asses to save. Becoming too strict or authoritarian risks fracturing the community into a further level of renegades.

We're talking about practical leadership structures that work for small rural teams. In our case, we might only have three or four people responding to an incident, but we still need to know who's in charge.

The key is keeping it simple but consistent. We designate an Incident Commander for every response, no matter how small. By default, it is the highest ranking member and that is generally whoever has the most experience.

### *Establishing Command Structure*

When we first got "brought into the fold" with BCWS, I was the defacto "chief" by virtue of having been the one who organized the training back in 2021, by being the squeaky wheel that had prodded our regional district representatives into action, as well as with the help of an associate I had made by way of my work in the Monte Lake fire in 2021. When the Incident Commander for our fire complex got my number and phoned me, he told me to bring my *trained* and *certified* people for a stat hire and made me the liaison between our community group and the IC structure.

I never wanted to be a *Fire Chief* though - mainly because I was not qualified. I had experience as a firefighter, and I had often found myself in leadership roles throughout my professional life.

On our crew was a wealth of experience so we just naturally started sharing the responsibilities around. Mike had 30 years as an auxillary member for KFR. Craig had been in various firefighting roles for just about as long. Terry had just retired after a 35 year career as an Advanced Life Support paramedic. No shortage of emergency response experience in our crew.

After a few weeks, when it became clear that we needed a defined structure, we settled on the following:

**Chief** – The senior leader who's responsible for overall team management, training coordination, and major incident command. This person needs to have the experience and judgment to make tough decisions under pressure, and be willing to assume the burden of command and the work that necessarily follows from such a role. We unanimously agreed that it would be Terry Jessup, by passing the White helmet to him one evening after a long day of digging guard.

**Assistant Fire Chief** - The second-in-command who can step in when the chief isn't available and helps with training and administration. This role is crucial for continuity and succession planning. Craig Palmer accepted that responsibility.

**Captains** - Experienced members who can take charge and make decisions in the absence of the more senior leadership and lead smaller response teams. Mike Connolly and myself accepted those roles.

**Crew Members** - Everyone else on the team. Don't underestimate the importance of having people who can follow orders effectively and work safely within the command structure.

In municipal departments, helmet colors designate roles - White are the Chiefs and Assistant/Deputy Chiefs, Red are Captains and Yellow are Crew. The helmets we settled on using did not come in Red or Yellow so we went with neon Orange and Green instead.

### *Making It Work in Practice*

The trick to making chain of command work with volunteers is balancing authority with respect. These are your neighbors and friends, not subordinates. You're asking them to take orders from someone they had a beer with last weekend.

**Earn respect through competence, not just titles.** People will follow someone who knows what they're doing and keeps them safe. If you're going to be in a leadership position, you better be the best trained and most experienced person on the team. You need to be able to make good decisions quickly. You need to be able to remain calm under pressure, and then radiate that calm to your less experienced team members.

**Be clear about when command structure applies.** At the coffee shop, we're all equals. At a fire scene, there's a clear hierarchy. People need to understand when that switch happens and why it's important.

**Train the structure, don't just talk about it.** Practice scenarios where different people take command. Make sure everyone knows how to step up if needed and how to work within the system.

**Keep it simple.** Don't overcomplicate things with unnecessary ranks and titles. Focus on the essential roles and make sure everyone understands them.

And, it needs to be said, ***don't be an asshole***. Nobody is volunteering to get yelled at by some self-important prick who thinks he's special because he has a different colored helmet. If you build respect with your crews, you won't need to *order* them to do anything - you will say what needs to be done and they'll do it.

### *Working with Other Agencies*

One of the biggest advantages of using ICS principles is that it makes you compatible with other emergency services. When the *Red Shirts* show up, or when you're working with neighboring fire departments, or in huge events where all sorts of random agencies are swirling around, everyone speaks the same organizational language.

This is especially important for small rural teams because you're *not* the authority and will absolutely need help with incidents. If you can integrate smoothly with incoming resources, if you can effortlessly “pass the baton” when a more experienced and better resourced agency shows up, you'll be seen as professional and competent rather than a hindrance and your reputation will spread.

Rather than having the pros show up rolling their eyes at the yokels they have to try to deal with, they will be glad to get to meet you and treat you with the same respect they offer their colleagues.

### *Training Your Command Structure*

Leadership skills don't just happen naturally. Even in a small volunteer organization, you need to invest in training your officers and potential leaders. This includes:

**ICS training** - Basic incident command courses are available through emergency management agencies and can usually be taken online. At minimum, your officers

should understand ICS-100 and ICS-200.

**Scenario-based exercises** - Practice different types of incidents with different people in command roles. This builds confidence and identifies strengths and weaknesses.

**Decision-making skills** - Emergency leadership requires quick, sound decision-making under pressure. This takes practice and experience.

**Communication skills** - Leaders need to be able to give clear instructions, coordinate with other agencies, and keep everyone informed.

### **When Things Go Wrong**

Even with the best planning and training, things can go sideways. Having a clear command structure gives you a framework for dealing with problems:

**Accountability** - Someone is responsible for decisions and outcomes. This might seem scary, but it's actually protective - it prevents blame from falling on the whole team.

**Problem-solving** - When there's a clear decision-maker, problems get addressed quickly rather than being debated by committee.

**Learning** - After-action reviews are more effective when there's a clear record of who made what decisions and why. More on this in the next section.

Chain of command isn't about creating a bunch of little generals or stroking egos. It's about creating a framework that allows your team to function effectively and safely, both in "peace times" and under pressure. Even with just a few volunteers, having clear leadership roles and decision-making processes will make you more effective and help you work better with other agencies.

Start simple, train consistently, and focus on building competent leaders who are willing to stay the course, and who can earn respect through their actions. Your community deserves emergency responders who can work together effectively when it matters most, and that only happens when everyone knows their role and the team functions as a cohesive unit.

Remember, in an emergency, there's no time for democracy. Someone needs to be in charge, and everyone needs to know who that is.

## *After Action Reviews*

Every time we respond, we hold an *After Action Review* where every member gets the opportunity to discuss what they think went well and what could be improved in a round-table format.

This isn't about pointing fingers or assigning blame - it's about learning from every incident so we can do better next time. There's no room for ego or defensiveness. If something went wrong, we need to know about it so we can fix it. If something went right, we need to understand why so we can repeat it.

The reality is that even the best-trained teams make mistakes, especially when they're dealing with high-stress situations and unpredictable circumstances. The difference between professional emergency responders and amateurs isn't that professionals never screw up - it's that they have more opportunities to learn from their mistakes and continuously improve their performance.

For a small rural team like ours, *After Action Reviews* are especially valuable because we don't get the volume of calls that the pros do. Every incident is a learning opportunity, and we can't afford to waste any of them. A municipal fire department might run hundreds of calls a year, a ministry wildfire firefighter might be on a dozen different major wildfires over the course of several months every year, and we might only see a couple of smaller incidents annually.

We need to squeeze every bit of learning out of each one.

### *How We Structure Our Reviews*

We typically hold our After Action Review within 24-48 hours of an incident, while the details are still fresh in everyone's mind. If you wait too long, people start to forget important details or their memory gets influenced by conversations they've had since the incident.

The format is deliberately informal - we sit around in the main room of our meeting space, usually with coffee and donuts, and work through the incident systematically.

Everyone who responded gets to speak, regardless of their experience level or role. Sometimes the newest volunteer sees something that the veterans miss, or they have a perspective that highlights a problem we've been overlooking.

## *The Process*

We start by reconstructing the timeline of events. What time did the call come in? Who responded? What did we find when we arrived? What actions did we take? This helps establish the facts before we start analyzing performance.

Then we work through three basic questions:

**What went well?** This isn't just feel-good back-patting. We need to identify what worked so we can make sure to do it again. Maybe our new radios worked perfectly, or someone made a great tactical decision under pressure, or our new satellite uplink performed exactly as expected. These successes need to be recognized and understood.

**What could we improve?** This is where we get into the problems - equipment failures, communication breakdowns, tactical mistakes, or safety issues. The key is to focus on systems and processes, *not individual performance*. If someone made a mistake, we want to understand why and how we can prevent it from happening again.

**What can we do differently next time?** This is where we turn problems into action items. Maybe we need additional training, different equipment, revised procedures, or better communication protocols. The goal is to come out of each review with concrete steps to improve our performance.

## *Creating a Safe Environment*

The success of After Action Reviews depends entirely on people feeling safe to speak honestly. If team members are worried about being criticized or blamed, they'll keep their mouths shut and the opportunity is squandered. This is especially challenging in a small rural community where everyone knows each other and relationships extend beyond our little fire brigade.

We've established some ground rules that help:

**No blame, no shame** - We're looking at systems and processes, not pointing fingers at individuals. If someone made a mistake, we want to understand why and how to

prevent it, not make them feel bad about it.

**Everyone's voice matters** - Regardless of experience or rank, everyone who was there gets to contribute. Sometimes the person who's been doing this for twenty years has a blind spot that the new volunteer can see clearly.

**Focus on improvement, not perfection** - We're not trying to be perfect, we're trying to get better. Small improvements over time add up to significant gains in capability and safety.

**What's said in the room stays in the room** - These discussions are for the team's benefit, not gossip material for the coffee shop. People need to know they can speak freely without having their words repeated around the community. As well, we may have been exposed to information pertaining to members of the community that could be sensitive or embarrassing. This is also a benefit of having the Response Team as being separate from the Society proper, as we are able to keep these kind of details confidential from Society Minutes.

### *Documentation and Follow-up*

We keep written records of our After Action Reviews, but we focus on lessons learned and action items rather than detailed blow-by-blow accounts. The goal is to capture information that will help us improve, not to create a legal document that might be used against us later.

More importantly, we follow up on the action items that come out of these reviews. If we identify a training need, we schedule training.

If we need new equipment, we start the procurement process.

If we need to revise our procedures, we do it.

There's no point in identifying problems if you're not going to fix them.

## *Fundraising*

Let me start with the uncomfortable truth: you're going to need money. Not just pocket change, but real money. Even if you're building your own "redneck firetrucks" and doing everything as cheaply as possible, you're still looking at thousands of dollars for radios, PPE, training, pumps, hoses, tanks, and basic safety equipment.

The good news? Rural communities are often pretty affluent and can be surprisingly generous when they understand what you're trying to do and why it matters to them personally.

In our case, our organizational structure arose out of a need to deal with the donations that were already coming our way.

Our Neighbourhood Supermom, Nat, started designing and then producing "Knutsford Strong" hats and T-shirts, which she sold at the community events - garage sales and dances. She covered her costs and then donated the profits to the cause.

Other people were eager to make cash donations, sometimes to the tune of thousands of dollars.

We set up a GoFundMe and collected several thousand more dollars.

But this all arose out of there already being a crisis in our community and the community being so impressed with how we all responded to it. It generated enormous amounts of goodwill that still carry even today when I run into locals at the community mailboxes.

If you are starting out from the perspective of preparation, then I would suggest that your first funding conversations shouldn't be with your neighbors over the fence but with the people in your community who have the most significant assets at risk.

This means larger landowners, anyone with substantial outbuildings, people with livestock operations, and anyone running a business out of their rural property. These folks don't just have more money—they have more skin in the game.

Often, our biggest donors weren't even solicited for donations; they knew that what we were doing was going to be of benefit to them and they came forward to support our efforts.

Imagine how much a rancher would lose if a grass fire took out their hay loft. To them, a \$10K donation towards your fire defense efforts is just good business.

And, even if you do go “hit them up for it”, it is a very different conversation than knocking on their door and asking for donations for your child's soccer team or summer camp.

### *The Magic of Corporate Sponsorship*

Every rural area has businesses that depend on the local community—feed stores, equipment dealers, mining operations. These businesses have a vested interest in keeping their customer base's properties from burning down.

But here's the key: don't just ask them for money. There's very little value proposition in that for them, economically, unless you are a registered charity and can provide tax receipts.

Instead, offer for them to become "Community Safety Partners" or some similar title. Give them something in return for their investment.

This might be their logo on your equipment or website, a billboard on the corner to honor corporate sponsors, or just the right to say they're supporting local fire protection. But make it clear that this isn't just a handout—it's a business investment in community stability.

And, because a sponsorship is not a “donation”, it can be considered a tax deductible expense. Like buying advertising. It generates good will and builds relationships with the communities they work in, and they still get a little tax break even if you're not a registered charity.

## *Grant Writing: It's Not as Scary as You Think*

Most small rural fire initiatives assume grants are beyond their reach—too much paperwork, too competitive, too bureaucratic. But there are actually grants specifically designed for exactly what you're doing.

Provincial and federal governments have various rural safety and disaster preparedness grants. Regional districts often have community safety funding. Some insurance companies even offer grants for fire prevention initiatives.

The key is to frame your application properly. You're not asking for money to buy toys for volunteers to play with. You're proposing to increase community resilience, reduce emergency response times, and potentially save lives and property.

One warning though: grants often come with strings attached. Make sure you understand the reporting requirements, equipment standards, and ongoing obligations before you accept grant money.

Sometimes the "free" money ends up costing more in compliance than it's worth.

### *The Ongoing Reality*

Here's what nobody tells you about fundraising for a fire brigade: it never ends. Equipment breaks, needs upgrading, or simply wears out. Entropy is a law of the universe. Insurance premiums come due annually. Fuel costs keep rising.

This is why building relationships is more important than just raising money. You need people who see the value in what you're doing and are willing to support it year after year, not just make a one-time donation when the smoke is still hanging in the air.

Think of it as building a community fire protection subscription service, not organizing a one-time fundraiser.

### **What People Actually Want to Fund**

After a few years of this, I've learned that people are much more willing to fund specific, tangible things than general "fire brigade operations."

If you are just holding your hand out with some vague notion of operational costs, you are much less likely to succeed than if you have specific goals, like "upgrading

our communications equipment to standards that have interoperability with BCWS systems”.

Always give people something specific to fund. Even if some of it will need to be used for boring old general operations, frame it as contributing to specific equipment or capabilities.

### *The Uncomfortable Ask*

Eventually, you're going to have to directly ask people for money. This is where many well-meaning rural fire initiatives fall apart—good people who are willing to risk their lives fighting fires but can't bring themselves to ask their neighbors for financial support.

Here's the thing: you're not asking for a hand out.

Don't beg.

You're proposing that your community invest in their own safety and property protection. Frame it that way, and the conversation becomes much easier.

"We're putting together rural fire protection for our area. The equipment costs X dollars. That works out to about Y per property. Are you interested in contributing to that?"

It's direct, it's honest, and it puts the value proposition right up front.

### *Don't Forget the Non-Monetary Support*

Not everyone can write a check, but almost everyone can contribute something. Maybe it's storage space for equipment, mechanical skills for maintenance, or just helping with organizing and communication.

Sometimes the person who can't afford to contribute financially turns out to be the one with the welding skills you need to build custom equipment mounts, or the one with the property where you can set up training exercises.

This comes back to “know who you have on your team”.

## *Interacting in The Community*

Even in communities like ours, where it seems like the whole community comes together, there will always be members in any community who just don't want to participate.

They think this is stupid, they think you are stupid, they think it's nobody's business.

They just want to be left alone.

And that's fine - it takes all kinds. You can't (nor should you) force anyone to take an interest in what you are up to, no matter how relevant you believe it to be.

Sometimes, they are deeply suspicious of anything even remotely government adjacent and by putting on any kind of uniform, even if it is just some coveralls, you are marking yourself as some kind of boot-licker who buys all the propaganda.

Over the course of doing this I have met people who literally thought that *PPE* requirements were just nonsense nanny state mechanisms by which governments exclude citizens from taking an active role in their own defense.

This one really got to me.

Do you really think that requiring people to wear clothes that won't melt to your skin in radiant heat when they are fighting fires is a conspiracy? Have you seen what polyester does to human skin when exposed to high temperatures?

At the end of the day, there will always be people who disagree or see things differently, so don't get caught up in it. Sometimes they come around, as I have personally witnessed, and sometimes they just hunker down and mind their own business.

Even without the buy in of the entire community, there are things that you can do to help.

One of the biggest problems we encounter is in describing locations. Even if it is on

the main road, a 10 kilometer stretch can be incredibly convoluted to describe in the dark.

Something one of our community members did to help with this that turned out to be a life saver was to number the cattleguards.

There are five cattleguards on Long Lake Road between where it comes off the highway and where the pavement ends. So, they wrote in a number on the orange CATTLEGUARD sign just before each one.

Then, when we were having little fires breaking out all up and down that road, it became a matter of simply saying “so and so is back just past the first cattleguard but we have another fire up the road between 3 and 4.”

Amazing.

Another thing is actually having visible addresses.

It might be something you don’t really think about because everyone who stops by your homestead already knows where you live and usually you can’t even get mail or food delivered all the way out there, so to what purpose?

Well, when everything is going sideways, you will find it extremely valuable for visitors to be able to identify the entrance to your property.

Check with your regional district. In the TNRD, you can have a reflective green and white number sign made up for just \$15. Just search up your regional district name and “civic address signs”.

Even if you have that one neighbor who excludes themselves from it, having yours up will give people a good idea of where they are.

## *The Importance of Fitness*

At the risk of sounding pedantic or condescending, I would be remiss if I offered some kind of firefighting training without covering the importance of physical fitness and the adjacent topics.

Full time firefighters must first pass a rigorous physical training test and then maintain athletic levels of physical fitness - and for good reason! The work is long and hard and often times physically gruelling. I've often deflated young firefighters sense of ego by reminding them that most of what we do isn't all that different from emergency landscaping.

Dragging 1.5" hose through the bush is physically demanding. Hiking up and down hills through dense brush is physically demanding. Lifting piss tanks and pumps and swinging Pulaskis and rapidly digging lines is all physically demanding.

I can only speak for myself, but middle age hit me kind of unfairly. Perhaps it was my penchant for beer throughout my 30s, or the 25 year long tobacco habit I'd only quit a few years back, or a lifetime of eating fast food while on the road for work or sitting behind a keyboard to earn much of my living... ok, maybe middle age hit me fairly. But regardless of whether or not I deserved it, suffice it to say that I wasn't exactly a peak specimen of fitness when the big one landed on our doorstep.

It's not that I was sedentary; far from it. I walked my dog for 1km daily, took the stairs rather than the elevator when it was practical, always parked my vehicle at the end of the grocery store lot so that I would have to make the extra steps, went snowshoeing with my kids in the winter and kayaking in the summers... but I was really not prepared for the extent of exertion I was signing myself up for when K22024 blew up on us and I threw my hat in for all-day, every day exercise.

There's a huge difference between being "pretty active" for a 40-something and the downright athletics required of a full time wildland firefighter in the middle of a 12,000ha fire.

But I did it! It ultimately landed me in the hospital, twice, and prematurely ended my

full-time involvement in the fire.

After about a month of almost every day pulling 9-20 hour shifts, my back started really giving me trouble. Early in the day, I felt compelled to pull off my chest rig as I felt that it was constricting my breathing. Not long after, I ended up climbing out of my coveralls, which were ever so slightly too small and kind of tugged on my shoulders in a way that stiffened my back.

Later in the evening, I came home early to ask my wife to rub my back. It was really hurting, right in the wing of my right side. Not long after, I began having difficulties breathing. Every time I inhaled, a sharp pain would stab me in the ribcage on that side, cutting my breath short. And in short order, those short breaths were beginning to affect my oxygen saturation levels, while I breathed shallowly to avoid the stab that robbed me of a good full lung, I was getting progressively more and more light headed. My monkey brain tried to override it by forcing bigger breaths, which were then cut by a sharp stab in the ribs.

Finally I agreed to have her take me to the hospital. Long story short, they ran a battery of tests on me including CT scans trying to figure out what was the hell was wrong with me. In the course of doing so, they discovered a pulmonary embolism (blood clot) in my lung somewhat near the area of complaint and decided that it must be the cause of my discomfort. Could it have been from firefighting? Possibly. Tons of smoke and ash inhaled, athletic work and no recovery socks? Nobody really knew, and with something to pin it on and nothing else to do for me, a script for morphine and blood thinners was cut and I was sent packing out the door.

But I ended up back there about 24 hours later because... well, I couldn't breathe. Whatever they'd shot me with at the hospital the first time had worn off and even though my thinking mind knew that I wasn't going to suffocate, the ancient animal parts of my brain were detecting the low oxygen saturation levels and started causing me to panic. Like drowning. This in turn caused me to try to breathe more intensely, which caused more pain. Even the 100mg of morphine in my blood wasn't touching it... It was like a knife being stabbed between my ribs with every breath.

Back to the ER I went. Nobody knew what to do with me. I was clearly in distress and as a part of the emergency services family they trusted that I wasn't embellishing it to obtain drugs or attention - truly the last place I wanted to be was in the emergency room, even as I sat sweating and grunting on the hospital bed I was trying to work out how I could get back on the line. But there wasn't anything to do besides

ride it out. Besides, a blood clot shouldn't be causing this kind of pain. This time the doc ordered heavy duty muscle relaxants to try to tame the back muscle that apparently might be causing this, upped the narcotics to hydromorphone, and again sent me on my way.

My partner at the time was a great nurse, even though she's not an actual nurse. Also, her mother is an actual nurse and they designed a regimen for my medication such that all I had to do was sit up and swallow my pills at the appointed intervals. Additionally, our chief is a 40 year veteran ALS paramedic and he (Terry) kept checking in to make sure my recovery was progressing.

Every few hours she was there for me - here, take this. Go to sleep. Now wake up and take this and go back to sleep.

She was amazing.

It also kicked off what I can only describe as a week long psychedelic trip. I literally lost a week. The psychological effects of these drugs were astounding. Even through the drugs the pain was real and I found myself laughing as I squeaked and grunted with every breath... it was ridiculous. I'd been a recreational drug user previous to having children and this felt very uncomfortably familiar. Even for a week following cessation of the meds I would catch myself questioning reality.

I came back a whole different person.

Retrospectively, the cause of my unexpected need to withdraw from the fire line that year wasn't the blood clot - that was a coincidental finding, something I'd probably had for years as a result of my poor choices in years past.

What pulled me from the line and from real life for two entire weeks was a plain old muscle spasm.

My Lateral Latissimus Dorsi muscle - the middle back muscle on the right side - decided to spasm continuously for days. It cramped to the point that it was like it was trying to tear itself from my skeleton, and as a result when I would inhale and my ribcage would expand as my diaphragm did its job, the muscle would send knife-jabs of pain through my ribcage, thus causing my inhalation to abort and the whole cascade of effects.

Something as simple as a muscle spasm.

Was it a shortage of vitamins or minerals? Who knows. Did I just push my out-of-shape ass too hard until my body rebelled? Probably. I wasn't going to let myself down. I wasn't going to let my community down. No matter how exhausted I was, I was going to push on because it had to be done. Drink another gatorade. Eat another packet of peanuts. Push.

Ultimately it was my actual body that rebelled because my mind was too damn stubborn to say it was too much.

All this is a personal way of saying, physical fitness is important and is something you need to take into consideration as part of your training to be really working the long hours.

For weeks us "old guys" were running circles around the "young bucks." Each of my sons, who are trained, joined us on the line, but only for a couple days at a time because the work was so intense and they couldn't keep up. Most people couldn't keep up. We joked about how the retirees were running circles around the teenagers.

# APARATUS & EQUIPMENT

## *Personal Protective Equipment*

I once had someone – a filmmaker, of all things – argue to me that PPE requirements are a tool that governments use to disqualify ordinary citizens from helping themselves.

What a load of horse shit.

I have to have a section in here at the beginning of equipment because this is aimed at rural folk, and what "gets it done" on the homestead, ranch, or acreage isn't necessarily what would pass muster with OSHA. But I also think that people who have been actually "doing it themselves" long enough know that their body is their most important tool and respect the importance of protecting it.

Like I would always tell my kids: "You will probably find that you enjoy having hands and eyes, so take a second and protect them."

There are some important points to cover, so I'll try to keep it brief and not preachy.

When I was in Monte Lake in 2021 assisting "those that stayed," one of the fellows I met had an injury to his foot. We'll call him Mike. Seems Mike had been fighting fires in shorts and hiking boots when an ember wafted in and went down the tongue of his boots, trapping the ember against his skin. Laced up as they were, he wasn't able to dig it out quickly enough before it caused a significant injury to his foot. Although relatively minor in the life-and-death scheme of things, this nasty blister hampered his ability to walk for the duration of the fire. He was the first to admit he knew his error and was sheepish in telling the story. If he'd been wearing pants that covered the tongue of the boot, it would have been avoided.

Fighting minor fires can absolutely be done in your daily work clothes (cotton, **not synthetic**), and many minor fires have been dealt with by guys in jeans and T-shirts. It's not ideal, but more often than not, that's what you'll find yourself wearing.

Nobody is going to realistically leave a tiny upstart flaming out while they drive back to their house and don their full Nomex outfit.

### *Flame Resistant Clothing*

First point: make sure that your clothing is in fact made of cotton if it's not made of some kind of fire-resistant product like Nomex.

Synthetic materials can burn very easily – they don't even need to be exposed to direct flame, just radiant heat, and they will melt onto your skin. They call this "shrink wrap" and it will give you a lifetime of skin grafting and indescribable pain.

Wet cotton will not burn. I have spent plenty of time working mop-up on a fire line in my work jeans and a T-shirt, making sure to get some water on me. It helps to keep you cool and also will prevent a random firebrand from burning a hole in your shirt.

That all being said, Nomex or other fire-retardant materials are preferable, and if you intend to be taken seriously or integrate with the pros, it is required.

According to the *BCWS Cooperative Community Wildfire Response Group* guidelines, part of the required criteria for response groups to be activated is that your clothing needs to be:

*Flame resistant, non-synthetic clothing that meets CAN/CGSB 155.22-2014 (or 97) or NFPA 1977 Standards. Clothing cannot be red in color.*

Incidentally, it can't be red because BCWS are "*The Red Shirts*." Contractors tend to wear yellow, and that is the color that Knutsford went with as well.

In case you are wondering about what "**CAN/CGSB 155.22-2014 (or 97)** or **NFPA 1977 Standards**" are, they are very long and detailed documents that specify exactly what the performance requirements are for wildland firefighting protective clothing. Basically, you need to find shirts, pants, and coveralls that have those certifications on the tag, because plain old cotton does not in fact qualify.

### *Coveralls: The Easy Button*

Coveralls are great because you can just step into them over top of whatever you're already wearing, and they don't offer anywhere for embers to get trapped and injure you. In the summers I keep my coveralls in the back seat along with my helmet and

gloves so if I am out and about when things happen, I can quickly jump into them and be safe while meeting requirements.

Instant uniform.

Bunker gear works the same way. The key is to have the layers flow over each other like roofing – so that the top portion is always overlapping the lower portions.

If you have a veil (dangly bit that hangs off the back of your hard hat), it goes *over* your collar. Your top needs to hang *over* your waist. The pant legs need to go *over* your boots.

I've worn coveralls a lot, and they're great for being able to just step into and be fully donned in PPE. For longer engagements, I'm an advocate of proper shirts and pants. There's a reason that BCWS and the contract crews all wear this outfit: it's more comfortable.

### *High-Visibility Gear*

If you are working at night, or around equipment, it is extremely important to wear something with high-visibility markings for obvious reasons – namely that you want to be able to look out in the field and tell where your people are. As a matter of fact, it's just as important during the day.

And again, according to *BCWS Cooperative Community Wildfire Response Group* guidelines, they are required.

If you're working in a team of two – one on nozzle, one with a shovel/pulaski – you'll realize very quickly how your partner can disappear behind a single sprig of scrub. You get one of your guys following their nose 20 meters into the bush and all of a sudden they disappear even if you're looking right at them.

I keep some extra fire-resistant vests that you can just throw on and attach with velcro over top of whatever you're wearing in my truck, if not for myself then for whoever I run into that ought to be wearing it.

However, be sure that any fire-resistant hi-vis product you are wearing is rated as fire-resistant. The plastic hi-vis vests you get for very cheap are particularly bad as they have very low flashpoints and can melt from radiant heat even from a great distance, shrink wrapping you or whoever was unfortunate enough to have put it on... so don't even keep them anywhere near where someone will be tempted to put

them on if they're going anywhere near a fire line.

I've got some over-jacket high-vis vests that are kept in my truck only during the winter. If you break down at night and need to be seen, then that's what they're there for. But they stay in a bin in the house during the summer because you'd be better off getting run over from not being seen than having them melt to your skin.

### *Getting Proper Gear*

It's absolutely worth having a pair of Nomex coveralls dedicated for your fire work. They won't catch on fire, they won't provide anywhere for embers to get trapped, they have hi-vis already stitched into them, you can just jump into them right over top of your street clothes and zip up and you're ready. Plus it can give your crew credibility when the pros show up all wearing the same outfit, and as we keep saying, if you are going to work alongside the pros, it is required.

Four cowboys in blue jeans and cowboy hats working a fire are much more likely to be told to get lost by the authorities when they show up than four people dressed in proper PPE. Even better with crests on their shoulders.

Never underestimate the power of a uniform.

Get some crests designed for your brigade and have them stitched onto the shoulders. The design can be whatever makes sense for your community - it could be a cow with fire shooting out of their udders (as I've repeatedly suggested for our crew) – it actually doesn't matter.

Uniform = professional, and professionals don't get dismissed summarily.

If coveralls are out of the question or just not available at the moment, you can sometimes find a used set of "bunker gear" for sale second-hand for around \$100. Sometimes free.

Bunker gear (sometimes called "turnout gear") is not as ideal for wildland work because it's very bulky and hot as hell to work in under the August sun, but it absolutely won't catch fire and you can just step into it while wearing your street clothes.

Because bunker gear is thermally insulated for interior firefighting operations, you will find that it's quite hot. Outrageously hot.

The coat can be made more bearable by removing the liner from it, which will give you some minor thermal and ignition protection, but it's still generally much too warm for daytime summer use.

### *Hand-me-Down PPE*

Sometimes you can connect with certain individuals who collect "decommissioned" firefighting equipment and PPE for donation to third-world countries, and if you can get them on board with your plan, your entire community of volunteers could get outfitted for FREE.

Just look around, make some phone calls, have your pitch ready and you'll probably be able to find someone in your area who has a sea can full of stuff they can't use anymore in any official capacity because of regulations but which will be a million times better than fighting fires in your shorts.

Just keep it on the down low, as "officially" those products have been decommissioned.

One additional word of caution about used bunker gear, if that is all that is available and you are going to take some home:

Used gear has generally seen action and if the gear has seen some action (particularly in municipal fire departments), then the toxic smoke it has been exposed to can be trapped in the fibers and slowly release, for months or even years, and if you take it home it could be gassing off into your home environment.

The materials in our modern world are full of carcinogens that are released when burned, and those cancer-causing agents soak into the equipment. As a result, many fire departments have increased washing frequency and begun storing their PPE in special, segregated and ventilated areas.

If you do manage to procure some used bunker gear, be aware of what you're bringing into your home and how it might affect the air quality where you and your children breathe.

### *Boots*

Tall boots are important. How tall is really up to you. The *BCWS Cooperative Community Wildfire Response Group* guidelines are surprisingly open minded about this - all they say is:

“One pair of footwear appropriate for the work conditions, with coverage above the ankle. These cannot have nylon fabric or be running shoes.”

For me personally, I prefer my steel-toed work boots which only just go two holes above the ankle. They will support my ankle in rough terrain enough that if I stumble over something - as you will often do out in the bush - then I'm not going to break my ankle, and my pants will hang over them enough to keep any embers that I kick up while walking (or falling) out of my boots, like what happened to our bud Mike.

There has been some discussion surrounding steel toes in boots when firefighting.

I've heard some say that steel toes should NOT be used in firefighting situations as the steel can heat up and burn your toes. From my view, if you're so long physically standing in a fire that the steel insert in the toe of your boot is burning you, then the fire itself would already be doing the same. Anyone who's worn steel-toed boots for a while can attest to the utility of having what amounts to a hammer on the end of your foot while protecting your digits and the rest of your foot from the inevitable stubbing and dropping of equipment. So personally, I always recommend them.

Best of all, if you're living rurally then you likely already have a pair. They're designed to keep your feet safe and they're very good at that.

There are some soles that will readily melt. My Keen boots spent many hours walking around on embers without melting out, whereas Terry needed to buy new boots after about the second week on the line because they literally were falling apart. But my Keens were heavy, and swinging those on the end of my legs for weeks really upped the exertion; ideally I would have liked a lighter pair of boots.

If you connect with your local PPE collector, chances are you can get some rubber "firefighter" boots with the big hooks on them. The hooks are designed so that you can leave them attached to the pants and then hook them in your locker so that you just drop them, step into the boots and pull the suspenders up. These are really meant for municipal, structural firefighting.

You do not want to use these for wildland firefighting. Believe me, I did it for a couple of weeks.

They're better than running shoes and they slip right on, but there is no ankle support so you're at constant risk for rolling your ankle. Plus, if you put 20,000 steps through them in deep duff you're going to develop an awesome blister. These are truly meant

for stepping into and attending to structure fires, where your step count is going to be much lower.

If there was one place I'd suggest you spend money, it's on getting a good pair of boots that will fit you right. A good set of boots will set you back between \$300-\$500, but they might be the last pair you ever need to buy because they will last forever.

All that being said, if they're on offer, definitely grab yourself a pair even if its just for use around the homestead because they're about 1,000 times better than any gumboots you'll buy at Peavey Mart, they are fire and resistant so in a pinch you can step into them and know that they will be safe, and you can't beat the price if you're getting them for free.

## *Gloves*

Gloves are another thing I really recommend, and I have at least a half dozen different pairs in my truck at any given time. They will help you keep a grip when things get wet and muddy, they'll protect you from nicks and cuts and burns, even impacts. Even if you're away from the fire line running the pump, the exhaust of your pump gets extremely hot and touching it for even a split second by accident can give you a good burn. And now you've got an injury over something dumb.

My policy is to make sure that there is at least access to gloves for everyone who is with me.

This is another spot where the *BCWS Cooperative Community Wildfire Response Group* guidelines are surprisingly permissive, all they say is:

*“One pair of work gloves”*

Our policy is to use the leather work glove style that you can get in a three pack at Costco for \$20. You don't want to use the “gardening gloves” that are plastic or rubber palmed for the same reason I keep warning you about synthetic fibers in your clothes.

My personal favorites – and what were “handed out” in the fire department I belonged to previously – are the Mechanix gloves because they offer knuckle protection in addition to all the other benefits, are well fit and therefor more tactile than the old "work gloves." The rubber bumpers on the knuckles don't pose a burn

risk to you because they are on top of the leather housing.

You used to be able to get a five pack for a good price at the big box stores, but in more recent years they have really gone up in price - \$30 for a pair of gloves seems pretty steep to me, but I guess nothing is really affordable anymore.

Realistically, my gloves spend a lot of time in my pockets. They're there for when I need to throw them on and grab big bunches of sticks and so on, but when I need to hold the back of my hand up to an ash pit or dig it into the duff and cold trail to see if what we've done has actually extinguished a fire, you actually can't with gloves on.

My own son wrecked a good set of gloves by sticking them into a hot hole and melted parts of them before he realized how hot it was. If he hadn't been wearing the gloves, he would have noticed the heat before he even got his hand in.

On the other hand, I have had trainers suggest that they should be worn by default and only taken off when the task requires it, citing the example of tripping and putting your hands directly into an ash pit as the example.

In either case, you will want to “keep them on hand.”

## *Helmets*

If you've made friends with your local decommissioned firefighting gear coordinator and can get your hands on a proper firefighter helmet, then you are styling. They already meet or exceed all the standards for being in a firefighting environment and come equipped with a clear drop-down face shield which you may not think is that important but you will be glad you have when the ash pit you're working starts spraying ash and firebrands in your face. Or if you have a helicopter coming to land in front of you and the ground starts spraying rocks and sticks in your face.

However, for longer engagements, our crew learned the hard way that these helmets are not ideal. They are very heavy and when you're bushwhacking for 8-16 hours a day, you'll realize after a couple of days the strain it puts on your neck – and ultimately, your shoulders and then your back.

In BC our wildland firefighters use what are called Forestry helmets, which also have a drop-down face shield made of mesh instead of a clear polymer. They also have ear muffs attached that can be swiveled down and used if you find yourself operating around power equipment like chainsaws or pumps. More than anything,

they are light.

For our purposes, it's unlikely that you are going to be needing to cut down trees, so the ear muffs might seem like they are more weight on your head and be more likely to get caught on brush you're ducking under. But if you're going to be running the pump, then you very much should have some sort of hearing protection, and once you've been doing it for a while you'll see the value in having an earmuff that can connect to your radio. The little "in ear" adapters for radios can fit right under a muff and work surprisingly well in that circumstance.

And guess what - they are required under the *BCWS Cooperative Community Wildfire Response Group* guidelines:

One WorkSafe BC approved hard hat that has a chinstrap and approved hearing protection.

What we ended up settling on were some helmets that we were able to equip with muffs, shields and lights for around \$100-150 a piece. As with everything else we have discussed, links are on my website *RenegadeFireBrigade.com*.

There was a time when I thought that the helmet was the most skippable of the PPE, but over time I've come to realize that it's probably the most instantly identifiable sign of someone who's not a complete amateur, and the value in that alone makes it probably the most important.

If you're just running a pump or hose, running back and forth fueling machines and so forth, a helmet might be annoying. But also keep in mind that soldiers wear helmets not because they protect them from bullets but because they protect them from "bumps." If you're likely to be bushwhacking and in the thick of things, then a helmet is a good piece of kit to keep that branch you were pushing out of your way from bonking you on the noggin.

## *Flashlights*

It might not be the first thing on your list, but if you're working at night away from your truck, then a headlamp is going to need to be on your list. A proper fire helmet might already come with a mount for a flashlight; otherwise you can get headlamps just about everywhere including the dollar store, although I have found the quality of those units and the light they produce to be lacking. Costco routinely sells three-packs of a pretty decent quality one for around \$30 and they're worth every penny.

If you've never used a headlamp before, be ready to be surprised at how much you like it. It puts light directly at whatever you're looking at while keeping your hands free to do other things! What a time to be alive!

Keep these in your truck or permanently attached to your hard hat if you choose to wear one.

It's useful to pick one that you can turn on and off easily and with a glove on. At times it is good to be able to momentarily turn off the light and see what is glowing – if your particular lantern doesn't have a temporary disable, you can just cover the bulbs with your glove. Many headlamps now offer a "red" setting which is also useful as it lights you up so others can see your position without ruining your night vision.

Just be aware when working with a crew that when you shine a light in their eyes, you cause their pupils to dilate and therefore ruin their night vision. Humans have an incredible ability to generally see in the darkness when they are adjusted to it, but every time you hit them with your LED light you reset the timer on their pupil dilation.

A detachable or independent flashlight you can keep in your pocket is also super useful because, at night, you can hold it down around knee-height and shine it out across an area and see where smoke is rising from. These are cheap and plentiful, they use rechargeable 18650 batteries (again about \$10 each) and I personally own probably two dozen of them. I keep them near the door, in my bedside drawer, three or four in my truck. The batteries last forever, they provide an awesome light and there are many attachments to affix them to helmets and clothing.

Much of our firefighting was done by identifying things at night – either flames that were too deep in the bush to chase down at night but which could be seen and then marked on the map for day crew, or else by using the smoke detection technique described above to find the smoldering ash pots which might otherwise be overlooked in broad daylight.

### *Eyewear*

You will want at very least a flip down shield for your helmet, or a pair of proper “safeties”, but I am suggest that everyone should have some smoke goggles.

The very first time you “get smoked out”, you will be looking to buy a pair of these.

The *BCWS Cooperative Community Wildfire Response Group* guidelines only require:

*One pair of Canada Safety Association (CSA) certified safety eyewear for working around helicopters, foam or hose nozzles*

So pretty much any standard safety glasses. Personally, I am always wearing some kind of glasses because it only takes one random piece of grass or bug in your eye to stop you dead in your tracks and something like a stick to the cornea can ruin your day for a long time after the day is done.

## *Hand Tools*

Before we get into the sexy stuff like trucks and radios, let's talk about the tools that will actually do most of the work – the hand tools that separate the fire from the fuel, one swing at a time.

Here's the thing about wildfire suppression: at its core, it's manual labor.

*Wildland firefighting is mostly just emergency landscaping.*

You're going to dig, chop, scrape, and rake your way to victory. All that fancy equipment we'll talk about later? It gets you to the fire and helps you coordinate and cools it down enough that you can get a spade on it, but the actual stopping of the fire happens with the same simple hand tools they were using when television was still black and white.

There are three or four basic tools you absolutely must have, and I will begin with the most ubiquitous of the lot.

### *The Pulaski*

Named after Ed Pulaski, the forest ranger who invented it in 1911 after nearly dying in the Big Burn, this is the Swiss Army knife of wildfire tools. Even if you don't know it by name, you will immediately recognize it: It's got an axe on one side and an adze (a narrow hoe-like blade) on the other. The axe side isn't for chopping down or bucking up trees, cuts roots and low hanging branches, while the adze scrapes and digs. It's versatile, it's proven, and it's been saving lives for over a century.

Every firefighter should know how to use a Pulaski properly. It's not just a tool – it's a symbol of the trade. When you see someone who can swing a Pulaski efficiently, you know they've put in their time on the line.

## *The Hazel*

Truth is I found myself using my Hazel more than my Pulaski owing to its unstoppable cutting power when you are cutting line into rooty ground. It is a garden hoe with military strength. With a curved, reinforced blade that's sharper and tougher than a standard shovel, it's purpose-built for slicing roots, scraping stubborn duff layers, and trenching through dense terrain. Named after its inventor, Oregon firefighter Don Hazel, this tool has earned respect as a frontline warrior for initial attack crews.

## *The McLeod*

This looks like a rake had a baby with a hoe. One side has tines for raking debris, the other side has a flat blade for scraping and smoothing. It's perfect for final cleanup work and creating a clean mineral soil line. Named after Malcolm McLeod, a Forest Service ranger who developed it in the 1900s.

The McLeod is your finishing tool. We actually didn't have any of these on hand, and if you can't find one, the good old fashioned garden rake will do just about as well. They just tend to get sticks stuck in the tongs more easily.

## *The Shovel*

Don't overthink this one. It's a shovel. A "proper wildland" shovel will have a straight blade (not curved like a garden shovel) and a shorter handle for better control. They're perfect for throwing dirt on flames, digging out hot spots, and scraping down to mineral soil.

But honestly, a long handled, pointy ended spade is just about the best thing you can keep in the back of your truck, and when you roll up on something, 9/10 times that will be what you are reaching for.

You'll use more shovels than any other tool. They break, they get lost, they get loaned out and never come back. Buy extras.

## *The Supporting Cast*

Personally, we never used any of these, but since they are tools of the trade I have included them so you can take a look and see what you might like to use in your own setups.

## *Fire Rake*

Like a regular rake, but beefier. Good for clearing light debris and fuel from your fireline. It's not going to win any battles on its own, but it's great for prep work and cleanup.

## *Council Tool*

This is essentially a heavy-duty garden hoe, but don't let that fool you. It's excellent for scraping in rocky or hard-packed soil where a Pulaski might bounce off. Some crews swear by them for certain soil types.

## *Brush Hook*

A curved blade on a long handle, perfect for cutting thick brush and small saplings. It's like a machete's bigger, more civilized cousin. Great for areas where you need to clear a lot of vegetation quickly.

## *Combi-Tool*

A newer addition to the toolkit – it's a Pulaski head that can be fitted with different handle lengths. The idea is you can have a longer handle for digging and a shorter one for close work.

## *Tool Maintenance*

Here's something they don't teach you in the heat of the moment: dull tools are dangerous tools. A dull Pulaski will bounce off roots and potentially into your leg. A dull shovel won't cut clean lines and will wear you out faster. You will burn yourself out trying to cleave through a branch with a dull blade and make stupid mistakes.

Every firefighter should know how to sharpen their tools. Carry a file and know how to use it. Check your tools before every shift. A few minutes of maintenance can save hours of frustration and potential injury.

And for the love of all that's holy, don't leave your tools lying around the fireline. Always know where your tools are and collect them before you leave an area. It is so easy to just set a pulaski down leaning against a tree somewhere, then answer a call on the radio, and then next thing you know you are spending a half an hour walking around in the black wondering where you put the damn thing down.

## *Mark Your Gear*

One thing we did with the tools that were paid for by the donations we had received was that we had the handles laser etched by a community member who knew how to do such things. Name and a number. We put “KNUTSFORD STRONG” on ours.

When you spend a lot of time with your tools, you become fond of them, and build a relationship, and you end up striving to keep *your* tool in good repair and don't want to just grab another one from the sea can, *I want mine back*.

Finally, don't forget to oil your wooden handles with mineral oil. It will keep them from drying out and splintering, is actually easier to get a grip on, and they look a lot nicer when they're oiled.

Riding around in the back of your truck, exposed to the rain and the sun for an entire summer, you will want to re-apply it a couple of times over the season to keep it in tip top shape.

## *The Human Factor*

The best tool in the world is useless if you don't know how to use it properly. This isn't about swinging harder – it's about technique, efficiency, and stamina. You're going to be using these tools for hours at a time, often in extreme conditions.

Learn the proper grip, stance, and swing for each tool. Practice it. Nearly half of the official S-100 training is in practical use of swinging a tool and digging guard.

Your back will thank you, and you'll be more effective. Watch experienced firefighters work – they make it look easy because they've learned to work with the tools, not against them.

Most importantly, know your limitations. Wildfire suppression is a marathon, not a sprint. The person who can swing a Pulaski efficiently for eight hours is worth more than the person who burns out after two hours of heroic effort.

Especially for those of us who are *not* professionals who do this day in and day out, but who are often times retirees who are somewhat forced to learn such things.

### **What to Buy**

Get enough Pulaskis and shovels that there is at least two for each truck, then get a

few extra. I like to have at least one hazel and rake of some kind as well per truck, more if the trucks are hauling a full crew and not just individuals or pairs.

Don't cheap out on tools. Get the good ones the first time and you won't need to replace them (until they wander off, at least).

And remember – the best tool is the one you have with you and know how to use. Master the basics before you start collecting specialty equipment. A firefighter who's deadly efficient with a Pulaski and shovel is worth more than someone with a garage full of fancy tools they can't use properly.

## *Buying A Firetruck*

Don't just go out and buy a fire engine.

Seriously.

Once we got the ball rolling on our little *Renegade Fire Brigade*, more than one of our generous community members offered to purchase us a used fire engine.

These are surprisingly available, mainly because departments are required to replace equipment at set intervals to maintain their NFPA accreditation. Because they're very specialized equipment with little other utility, they don't sell quickly and as a result tend to be pretty affordable.

Go look in the online listings right now—I bet you can find one for sale within driving distance, maybe for cheaper than a used pickup. I just did it as I'm writing this and sure enough found one here in town for under ten grand.

It's a perfectly natural thought: we have a fire problem so let's get a fire truck! Although there's nothing I'd like more than to drive down the highway in a firetruck again with the lights flashing and the siren wailing “wee woo wee woo!”, there are pragmatic realities we had to consider that resulted in our committee respectfully declining the very generous offers.

## *Trees Are Not Fire Hydrants*

First and most importantly, if you're in a rural situation, you need to remember that trees are not fire hydrants.

Water sourcing is the constant concern for rural brigades, and what we think of as a “fire engine” is really a bus with a huge portable pump and relatively small tank bolted onto it. It is purpose built for urban situations where the furthest hydrant is within a couple hundred meters.

The 500-1000 gallons of water it carries is what's called a “bump tank”—really it is just there to prime the pump and get water flowing while the hydrant gets connected

and pressure from the hydrant settles into operations. The three or four inch lines any municipal fire engine you're likely to get will empty those tanks in a matter of minutes and are ridiculously over-spec'd for what any ruralite will require.

### *Pumps Are Finicky Machines*

Next, the pumps themselves are finicky machines that nobody can just walk up to and know how to use. If you've ever used specialized machinery you'll understand this—even if you've used a similar one or are already familiar with all the underlying principles, a pump like this is not something you can just start pulling levers and operating.

And just like any machine—especially older ones like you're likely to find for sale in the ten grand range—it will have "personality quirks" that take time to learn and understand and accomodate.

In municipal departments there's a dedicated pump operator whose full-time job is to know their pump's personality and operate it effectively.

These pumps are also notoriously picky about anything but pristine municipal water being inside them. You can't just throw a suction hose into a lake or random bladder and draft it into the tank, which is where you're likely going to need to pick up your water from out in the country.

At my old department we had a tender we couldn't use because it had previously gotten some debris into it while drafting off a pond, which destroyed the impellers. Repairing it was going to cost more than the whole truck was worth.

Unless you plan on driving it into town and filling it from the commercial water supply spigot every time you need a fill (which is both expensive and time-consuming), this alone severely limits its usefulness in a rural situation.

### *Terrain and Maneuverability Issues*

Another consideration is how likely it is that an apparatus like that can get within effective range of a fire you're going to action. Remember, this is basically a bus. Most of our fires start from lightning way up on hills and out in pasture land that's accessible by 4x4 but would trap something so heavy and... bus-shaped.

Maneuverability is a major consideration, not just in the type of terrain it can pass but in where it can turn around. Imagine getting your pumper halfway up a winding

dirt back road only to find yourself in the middle of a large fire on both sides. Unable to proceed and with nowhere to turn around, you now have to back three kilometers down in reverse in the dark and smoke until you can find a gate wide enough to give you space to turn the rig around.

Oh and there will almost certainly be other vehicles that have come up behind you.

It has now increased your chances of ending up in an entrapment situation, and not only are you unable to help but you're actually hindering whatever efforts might otherwise be attempting to action the issue.

### *Storage and Maintenance Reality*

Additionally, a fire engine truly needs a fire hall—a heated and covered structure that will protect it from the elements. For at least half the year wildfire is not a concern, and that means the truck will need to be stored. Even if you drain the pump and tanks, just think of how hard a cold winter is on your car or pickup truck when it sits for three months. Even when you THINK you've properly mothballed it for the winter, stories float around about startup departments who lacked a hall and parked their engine outside for the winter only to find in the spring that some water had found a way to stay in and had cracked pipes and tanks, rendering it useless.

Like any machine, it will require maintenance, and people who are skilled and knowledgeable in this kind of equipment are not nearly as readily available as you might hope. You can't just take it to the Jiffy Lube and get them to service it for the season.

### *Ongoing Costs and Licensing*

And there are other ongoing costs to consider. Fuel isn't going down in price and fire buses aren't exactly designed to be fuel efficient. Insurance and licensing are problematic for independent or renegade brigades.

You will need an established society before you register and insure it (unless you want to take on that personal liability, which would be madness), and even once that is in place, insurance won't be cheap as it's necessarily going into dangerous situations.

If it has more than two axles you will need at least a Class 3 license in BC, likely with an Air Brake endorsement as well, and this will limit who can operate it, which

increases the chances that it ends up not being usable when the need arises.

What happens if "your guy" is on vacation (or drunk) on the night of the big fire?

So, sorry to be a Debbie Downer, but for the vast majority of you reading this, a "FIRE TRUCK" as we know it just isn't reasonable or feasible.

Luckily there are other kinds of firetrucks.

### *Water Tenders/Tankers*

We were lucky enough that we had a couple of different members of the community who run trucking businesses which include delivering large amounts of water to remote locations.

Tankers (or "*Water Tenders*" as they're called in the Fire Service) are an extremely valuable tool for any rural brigade as getting large amounts of water from wherever you can find it up to where you need it is always an ongoing challenge. They can be used to refill the smaller apparatus you end up using (described later) or you can dump it into a bladder (a "pumpkin") or run a pump right off the back.

And, although they will end up costing more than a second-hand Kijiji Fire Engine, you can usually find them for relatively reasonable prices used or at auctions.

Ideally, however, you have someone within the community who is either naturally willing to come and help when needed, or will come to some kind of response agreement with your not-for-profit rather than having to purchase, staff and maintain one yourself, as all the same operation, maintenance and licensing and regulatory concerns that affect fire engines described above are also in effect for tenders.

Remember, if you buy one for yourself, it is likely to mostly be sitting around—even in fire season. It is the kind of thing that you hopefully won't ever need to use.

Whereas if you can connect with a local company who has an interest in their community safety, then it can still make money for them most of the time and therefore be well maintained and still be available to be called into service when the need arises.

### *Brush Trucks ("Bush Trucks")*

Also known as a "*Type 6 Firefighting Apparatus*," this is what municipal

departments call the trucks they use for going places their engines cannot for all the reasons I described above.

These are most often purpose-built on F-550 chassis. Some even have built-in nozzles on front fenders or on top of the roof so they can "run and gun."

They're very cool because they are very useful, and for that same reason you have a very low chance of finding one in the used aftermarket anywhere, let alone near you. If you go online you can find some for sale throughout North America in the \$70,000 USD range, and then you must be willing and able to fly down and then drive it back, complete with all the licensing, insurance and import issues that go along with that, and then all the same ongoing maintenance, all just to get what amounts to a used truck that's not going to be put to use for the majority of the time.

Purchasing new ones has much of the same problems although they tend to be more readily available—just understand that you may put more miles on it driving it back home from wherever you found it than it already has on it.

Oh, and they *start* at around \$200,000 USD.

Which is an awful lot of money to spend on something that you may or may not even have to use in any given season. Even if you *could* afford it, considering the feasibility of purchasing it and then keeping it in good working order (including winter storage), it is my feeling that you'll get more "bang for your buck" by going the way of building a fleet of your very own *Redneck Firetrucks*.

## *Building a Redneck Firetruck*

I'm a big fan of what I've come to call the "*Redneck Firetruck*." (I didn't invent it, but I gave it the name.)

Around my community and all over rural BC since the 2021 season, the sight of a pickup truck with a cage tote in the bed along with various hoses and pumps and bits of associated hardware became ubiquitous any time you drove down the road.

And for good reason: rather than going out and buying a firetruck that isn't going to suit your needs, you probably already have most of the more expensive parts you will need to build a "redneck firetruck" so anyone can build one on the cheap.

And they are damn effective.

A two-axle one-ton with a usable amount of water that can get to where a tanker or trailer unit can't go—straight up the hill right to the edge of the fire.

It is essentially the "brush truck" we discussed above that you can buy pre-configured but which costs a quarter million dollars and isn't exactly sitting on the shelf at Costco.

So build it yourself! All you need is a pickup of certain specs (which if you're rural you likely already have), a cage tote, a pump and some hose. And some other stuff, but we'll get into that.

### *The Tote*

Cage totes tend to range in capacity from around 250-325 gallons and are generally cubic or slightly rectangular in shape. The main liquid housing is made of a plastic polymer ("poly") and the structure is reinforced by a lightweight aluminum tube cage which surrounds it. There's usually an 8-12" screw-on access hatch on the top and a valve with a spigot on the bottom, and when empty they weigh between 50-100 lbs.

The great thing about these is that they are widely, readily available, and they hold a usable amount of water. They're light enough when empty that they can be

loaded/unloaded by hand with a couple of people or even on your own if you're tough enough. Or, just slide it off the back of the truck as I do when I don't have the extra hands and need to use the pickup for something not firefighting-related.

What's even better is that they are EVERYWHERE. Look in your local Facebook marketplace ads, visit your local agricultural provider. Even at the height of fire season I was able to find some within a couple hours' drive, although the price had gone up by about 50% from off-season. Generally they go for around \$150-\$200 at peak and possibly as cheap as free to twenty bucks when nobody's worried about fire.

So, rather than sourcing an expensive specialty tank and waiting for it to arrive, you can probably whip down to your local feed store and for a hundred bucks throw one in your truck and you suddenly have a 270-gallon bucket. That's very handy.

It's humble, but don't kid yourself—many million-dollar properties have been saved using a single beat-up old farm pickup with a cage tote and *Princess Auto Power Fist* pump with fifty feet of hose plugged into it.

And in my experience, “red shirts” (Forestry) crews are almost universally happy to see a rancher pull up with a full one of these in their bed. Whether you're attacking a new start on your back nine and the cavalry is an hour or more away, or wandering around mopping up hot spots, or tendering water from a nearby source like a lake or stream back to an established anchor-point apparatus, the cage tote in a pickup is truly the workhorse of rural DIY firefighting.

The way forestry initial attack crews work, they don't often show up with a lot of water on hand. Getting water in requires having bladders set up and pumps and lines. They are usually working with Pulaskis and shovels, so when a local with 1000L of water suddenly at their side is a welcome sight.

There are a few things that we have learned the hard way, so I'm going to share some of the design thoughts and tips I've accumulated from my own trial-and-error as well as that of those I've worked with in the community. Take them and modify them to suit your individual needs or circumstances according to availability and requirements. When you come up with a good design improvement, please share them.

Remember: if it works, it ain't dumb!

## *Securing Your Tote*

First of all, just be damn sure you SECURE the tote.

Water weighs 1kg per 1L (yay metric), which is about 8.34lbs per US gallon.

That means **your 270ga bucket weighs more than 2252lbs.**

You don't want that coming through your back window, and some of the terrain you run when you're getting to a new start or working a guard gets really gnarly. It is one sure way to wreck your whole weekend (and your truck).

Push the tote up to the cab end of the bed. This will balance the weight over both axles, reduce the amount of movement it experiences as you go over bumps compared to the tail end, and reduce the number of directions you need to secure it against.

No matter how securely you strap it, it is going to get flung around, but if it's already flush with the cab then you know it's not going to get enough momentum to come *through* the cab and take your head off.

This will also give you room to stick your pump closer to the gate, which is where you're going to want it.

A headache rack is also advisable—it will both protect you as well as your truck (and the back window, which is easily broken with a tap of a metal fitting as one of our teammates found), and help the structural bars of the cage work when braking the vehicle so that the inertial forces of the top half of the tote are supported and not trying to bend over the top lip of the bed were it meets the cab.

In my one-ton setup, my truck's bed had previously had rails for a 5th wheel mount installed, and as it happened, my tote fit within a quarter inch of the edge of those rails when pushed flush against the headache rack. Perfect. I just had to add some bracing to either side to keep it from moving laterally while cornering and then strap it down.

With big, thick straps. The kind they use on big rigs.

Don't cheap out on this.

Even using a very heavy-duty strap and really ratcheting it down good, something that was a marvel to me was how often it would pop out when going over even moderate bumps—and there are a lot of more-than "moderate bumps" out in the field. Ultimately I built clips into the edge of those rails in my bed that actually affixed the bottom rails of the tote to the surface of the truck bed.

Lesson: containing mass before it develops inertia is far easier than trying to collapse that inertia.

This is the whole idea we are pursuing in chasing down small fires before they turn into big ones. Said differently for this case, keeping the tote from moving while in transit is a lot easier than trying to stop it from moving once it's started.

### *Plumbing Considerations*

Unfortunately in my case, to fit my tote like this meant that the outlet valve on the bottom of the tank was pointing sideways. At first this was fine as I had just been putting the suction hose in through the access port on the top, but it wasn't long before I started thinking of ways to keep it plumbed in so that I didn't have to be jumping up and priming the suction line.

I needed an elbow before I could connect it to the pump inlet.

First of all, you need to know that the thread that comes on the stock outlet of your cage tote is not normal pipe thread because *of course it's not*—why would it be?

You'll have to go looking for "*IBC Tote Adapter*"—links are posted on the website. Once you've adapted the thread to something you can use, don't forget that you'll probably need some kind of nipple or extender to bring it out past the cage (as it is recessed), before you can put an elbow on it to get the flow pointing in the right direction to the tail and thus the pump.

It may be tempting, if you are like me, to get really into it and build a full pipe stand with various valves so that you can adjust the path and reverse the flow so that you can just throw a suction line into a pond and draft back into your tank without having to decouple a whole bunch of fittings and turn it into a legit brush truck.

But keep in mind that part of the advantage of a system like this over, say, a commercially built brush truck or firefighting skid is that it's modular and can be unloaded quickly by hand by a single person if you need to use your pickup for

something else. If you get too complex or permanently installed, you are going to need a loader of some kind to remove it without damaging all your hard work.

Remember, one of the main advantages of this type of setup is that in general, 99.9% of the time you don't actually need to have a "firetruck," so you don't need to pay to insure and maintain a vehicle that's not getting used the vast majority of the time. If you want or need to use your truck for things besides fighting fires, then I strongly suggest finding a happy medium between well-connected and easy to disassemble.

Many people who have the means to do so end up buying a pickup truck specifically to be used for firefighting. Whether their daily driver is too fancy to risk trashing on out in the field doing real truck stuff (I had my two week old Frontier bouncing down fire guard myself), or if they just don't want to have to swap things around, that is an option if you can afford it. Unfortunately, the type of truck I recommend means that you won't really get away with a \$2000 F-150.

Which brings me to truck size.

### *The Half-Ton vs Full-Ton Redneck Firetruck*

Most ranching properties will already own a one-ton pickup for its utility in hauling livestock and feed and heavy attachments and whatever else needs to be moved to and fro in the course of operations. My own property is not a ranch and we'd not had much use for a full-sized pickup until the Earth itself caught fire.

I bought a used 2014 Ram SLT 3500 at auction for the specific purpose of fighting fires with it, but for the "off years" and so on it turned out to be a waste of money. The damn thing was so thirsty for gas that I swear it cost me five bucks just to start the engine, and I found myself not wanting to use it. Even doing a dump run cost about \$30 in fuel.

So I sold it. But it wasn't long before I was missing the utility of a pickup truck. Sometimes we need a scoop of gravel. Sometimes we need to haul off a load to the dump. Sometimes we want to take the kayaks out.

In June of 2023 I bought a brand new Nissan Frontier. It was better on fuel than the Volkswagen I had at the time, which are famously good on fuel. Cool! I can do "truck stuff" without having to pay the "truck tax." It handles like a car, is small enough that I can parallel park it in downtown Vancouver, and has all the cool features that I as a geek demand of my cool new vehicles.

However, it was a half-ton, and come fire season a few weeks later, when everything was happening again, I started to miss my one-ton.

### *Weight and Sloshing Issues*

First of all, I still had this cage tote but its curb weight when loaded was way, way too high—my maximum load capacity was around 1500 lbs but a full cage tote weighed about twice that, not including the pump and all the kit that goes along with it (or the people riding in the cab).

I knew that "sloshing" would be a problem—it's the reason why tanker trucks have baffles installed in their tanks—but I didn't realize what a big problem it would be.

So I filled my cage tote to about 400 litres, which was more in the range of what my little Frontie could handle, and drove down to fuel up just to see.

If you have any doubt, I encourage you to go ahead and try this for yourself.

Just driving down the flat, straight road I could feel the swaying of the water's mass, pushing and pulling on the drivetrain no matter how nicely I drove it. And remember, when you're bouncing down a gnarly, newly cut fire guard that had been full of big rocks and roots, you're going to be doing a fair bit of bouncing!

That one single trip to the gas station was enough to convince me that this was not a feasible option. I considered cutting the tank in half and then re-sealing it at half capacity somehow, but the structural integrity of the tank is based on it being a single, continuous seal. I considered finding a way to fill the top half of the tank using whiffle balls or Ikea ball pit balls or something else that would be light but prevent the water from sloshing, but it was still unreasonable.

### *The 55-Gallon Solution*

What I settled on for my half-ton was a standard poly 55-gallon drum, of which I had collected several around the property. I opted to lay it down, with the bottom butted up against the back of the cab, in part to lower the centre of gravity on the load and in part because it was easier to secure it in this way, not to mention that the existing spigots were on the top and then the line would require priming if I wanted to pump upwards.

My truck had particularly deep divots running down the length of the bed which accommodated a pair of 4' 2x4s on an angle so that the barrel didn't roll side to side.

I also made a small brace out of scrap (free) 2x4s so that it sat nice and flush with the box so when it was all strapped down from front to back it didn't have anywhere to shift.

For straps I picked 1100 lb straps from Princess Auto and I had a chunk of foam that was pre-cut to accommodate these straps from a pair of kayaks I had bought, intended to go on the roof of cars that didn't have roof racks but which fit the barrel perfectly.

Filled with water it weighs around 600 lbs, which is about as heavy as you want to make a half-ton that also has to hump along a few piss tanks, a cooler, people, Pulaskis and so on.

Remember, with half-ton trucks you really do have a weight budget and every ounce counts towards that total capacity, so be a good Boy Scout and take what you're going to need but also don't blow your weight budget on things you really aren't.

For my Frontier, I could haul a big plug-in fridge cooler that can hold an entire flat of Gatorade, a small case of water and sandwiches for my crew at nice and cold temperatures even on the hottest days along with all the PPE we would need, two extra people (besides myself) along with shovels and Pulaskis and piss tanks, radios and paperwork and the water and pump itself with a full tank of gas still at around 80% maximum capacity, which is about as high as you want to go when you're bouncing around on bumpy farmer's fields and fire guards and washboard dirt roads.

### *Drum Modifications*

There are two separate screw-in divots on these drums. You'll have to drill out the bottom of each—use an expanding drill bit and not a standard, it will end up cracking the poly along the threads and then it will leak (I learned the hard way). These will take a standard thread nipple from any hardware store. From there it's a standard garden hose connection—for the top I connected a gated "Y"—a standard garden hose two-way valve.

In one direction, I built a small "snorkel" out of garden drip line tubing to act as the breather (use whatever you've got handy); this sticks up and above the level of the water in the tank when it is full. The lower one can be used to directly bleed off foam or water as necessary, or, to dump a little bit of water out of the tank onto your roll so that the roll is nice and moistened before you go dragging it across hot coals.

The snorkel also works as a convenient (foam) soap insertion point. I'll talk about that later under "additives."

You need the snorkel so that once you start pumping water out of the bottom, you don't collapse the tank—all that vacuum needs to be filled as you suck the water out of it. Don't forget! I've done this several times and I always hang my head in shame. Likewise when you're filling, all that air you are displacing needs to escape. I haven't exploded a tank (yet) but I bet it would be really fantastic and embarrassing.

In transit, I like to keep the gate closed so water doesn't splash around... just don't forget to open it back up before you start pumping.

On the lower half I attached the rigid suction hose that came with the pump. The great part about this compared to the IBC totes is that regular garden attachments work on all these fittings, so you can slap a dollar-store inline valve onto it and now you've got a cheap way of keeping the water from flowing out when you're switching fittings. I also installed a set of the same quick connects that I use on my garden hose onto it so that I wasn't twisting fittings or messing around with screwing things down while I was in a rush.

### *Additives*

There's an additive you can buy called "Wet Water." On the cheap, plain old dish soap does the same thing. What you're wanting to do is not make a foam party at a dance club but to simply break the surface tension of the water so that it spreads out faster, thus cooling and suffocating the fire faster.

It really doesn't have to be much—I was putting about 1/3 of a standard bottle of Palmolive into my 55-gallon tank and everyone who used my line was amazed at how much more effective my little stream was.

I added it to my tank through the upper breather (snorkel) while it was filling from the bottom. This would produce a little bit of foam that would vent out as it got to be full, then once the water started coming up out the breather I'd shut off the water and know that it had been mixed while it was filling.

Something you should consider is that if you are going to ever potentially be using your tank to deliver water to livestock—as is sometimes the case in these crisis scenarios—then you may want to opt not to use the soap, as even residual amounts that are non-toxic will still put the animals off and cause them to refuse to drink.

Another is to select a soap that is biodegradable. Sure, everything's on fire and you're acting in an emergency, but we don't need to be "salting the earth" with chemicals.

Another thing is that I was buying the plain-Jane green old school Palmolive because I could get a three-pack of the big bottles for about \$10 at Walmart, and when I was going through one or two bottles a day, the price adds up. An unintended side effect of this however is that just catching a whiff of that scent triggers something in me now. It's highly offensive. I wish I had alternated between scents—or better yet, paid a little extra for the scentless varieties, but I got the absolute cheapest I could and from now on even seeing green Palmolive is distressing to me.

### *Pumps*

If you take a forestry course on firefighting, you'll notice that probably half the course is dedicated to the operation and maintenance of a Mark III pump. These are incredibly expensive (\$7000-\$10000ish), incredibly noisy, and incredibly finicky in their operation.

They're extremely effective for what they're designed to do, but by no means are they the right choice for your Redneck Fire Truck, so even if "money is no object" to you, please don't go looking for one of these.

The Mark IIIs are really meant to be deployed off in the woods, hooked up to a bladder or a lake and running possibly kilometres of 1.5" line to feed smaller line in mop-up operations. They're not very portable, they're not easy to get going... they're just the wrong tool for the job.

For under \$500 you can get a Princess Auto Power Fist "firefighting" kit that will come with the "trash" pump (this means a pump that's a little more forgiving of the type of water you give it—i.e., it can have a bit more sediment and debris in it), a length of suction, 50' of 1.5" forestry hose, a 1.5" nozzle, and a whole bunch of adapters you might find useful as you build out your rig.

Believe me, I'm not getting paid to say this—in fact, I'm bound to take some flack from some for promoting it, but let's talk pragmatic realities again here friends—I have personally had mine for three fire seasons and have never once encountered a failure. Every guy on my crew used these as well. Take proper care of it, and these are perfectly adequate for what you're going to be doing.

Anecdotally, there was a fire that we attended that the pros turned up at. We had

found the fire and started building a guard, had gotten water up there but hadn't staged the pumps yet, we had just laid out the hose. They took over and deployed a bladder and had us dump our totes into the bladder, but they then tried for twenty minutes to get their fancy Mark III going to no avail. Then, they grabbed another one and tried for another ten unsuccessfully before Terry got on the horn, evidently tired of holding a limp hose at the fire, and said "we need to get some water on this so you go ahead and keep working on that but in the meantime lets get our pumps going", so we pulled a Power Fist trash pump off the back of a beat up old pickup, ram-primed the suction into the bladder and fired it up first pull. We put out that fire in the next ten minutes with a \$300 pump the pros disdainfully sneered at while their \$20K of fancy wildland pumps left them dry. Go figure.

Even after weeks of steady operations, 12-16 hour days running around and dumping tank after tank out the back of our trucks, not one of us had a pump failure situation.

Consider that even if you completely trashed a "consumer" level pump every year, it would take 20 years to make up the cost differential between a *Power Fist* and a *Mark III*.

Champion makes some 2" trash pumps that I have never heard a bad thing about. What you will find is that most of the "budget" brands are pretty much the same, and in fact often *are* the same and just stamped with a different name and painted a different color.

If you really want to spend a little bit more for a better quality pump, Honda makes some decent ones that go into kits like the Power Fist one described above for the \$900 range. That's up to you.

What I want you to take away from this section is that you don't need to spend thousands of dollars on a pump to get going. As a matter of fact, I urge you not to. As discussed, a 2" consumer level trash pump is actually better suited for the type of use you will be putting it to than a \$10K Mark III or \$8K Tohatsu or any of the "pro" equipment.

If you really want to spend a bunch of money, buy twenty piss cans and hand them out so that everyone in your community has one in the back of their truck.

Note, for my half-ton setup I didn't need as big of a pump as I was only feeding a 1/2" line. I didn't want to use the space that it would take, the weight that it would come with, or the gasoline needed to power it... so I got a little electric pump with

garden hose fittings and that fit the bill perfectly for my use as my Frontier has a built-in inverter and plugin right at the back of the bed by the gate.

It certainly didn't move a lot of water, but for what I needed it for it did the job. It squirted a stream that wasn't much more than an urgent pee, but I put out many dozens of hectares of smouldering ground fire with just a 55-gallon drum of water with a little dish soap in it and a rinky-dinky little electric pump with collapsible 1/2" garden hose on a spool, and a shovel.

## *Hose*

What's known as "forestry hose" around here is 1.5" with a half-twist quick connect, and it's ubiquitous—it's everywhere. Don't try and re-invent the wheel, base your setup on this as this is what everyone else will be using. If you come up a little shy of being able to get to where you need to, someone else can toss you one of their rolls and you can tie it onto the end without having to muck about with adapters. Hose gets borrowed and shared around as needed. It's great stuff. (Be sure you label yours)

All that being said, something I've learned is that you in all likelihood probably shouldn't be using straight 1.5" with a nozzle on the end to fight your fires.

Here's why: you go through too much damn water too damn fast.

Yes, it's super impressive to be blasting high volumes of water out the end of your hose, very manly and satisfying. But you can also stand there and watch your water level go down in real time. On average, even on "turtle" setting (lowest power) it'll take about five minutes to completely drain a 500 gallon cage tote.

That's not very long. Maybe long enough to knock down a problem before you can get to properly attacking it, but you need a lot more than five-minute bursts to squash fire, especially when you take into account the turnaround time of pulling up your hose, disengaging from the scene, driving to your water source, filling back up, turning around and getting back. Very disruptive.

Instead, keep the 50' 1.5" lines for getting it out as supply line but be sure to get yourself some "water thieves" and some "econo line" 5/8". You'll also want a 1.5" valve so you can close the end of the line as the water thieves just screw on in line and give you a spigot while carrying on to the next length of hose. These seem to be harder to find, so you can use a "Hansen Nozzle" (ie the twist on firefighting nozzle), and just close it . But you will have to be more careful about dropping the

line as it is plastic so if it hits a rock then you've busted the valve and the rest of your line won't work.

You'll also want "pony leg" or "pony hose" which is a 1.5" hose that's only about 10' long and has a valve on the end just before a water thief. This is long enough to get it from the pump sitting on the gate of your truck down to the ground where you can connect the econo line on to it.

Once you have had to run out 50' of hose and kick out all the kinks just to get it to connect to a length of econo, you will be glad for the pony leg. As an added bonus, you won't have to dry and roll 50' of 1.5" forestry.

You can run that same cage tote that you drained in 5 minutes at 1.5" for more like 45 minutes to an hour using econoline. Or have two lines off it, which is super effective, and still run it for around 25 minutes.

As you'll learn in the later training modules, most wildland firefighting isn't about rolling up and blasting a huge stream of water on a candling tree, it's about extinguishing the smouldering ground fire, and small streams of water combined with Pulaskis and shovels is far more effective at that than just dumping hundreds of gallons of water onto it right away.

## Other Essential Equipment

### **First Aid Kit**

As we discuss in the TECHNIQUE section, everyone on your crew should have at least their level one first aid. Even if they (or you) don't, you should always have a basic first aid kit in your truck at minimum capable of disinfecting and closing off any kind of minor injury—mainly cuts and burns. Any idiot can put a band-aid or burn pad on, and if you do manage to put your hand down on the exhaust manifold of your pump or trip and fall into a pile of hot ashes you will need to provide first aid as quickly as possible.

### **Drinking Water**

Fire work is thirsty work and you need to keep yourself and your people hydrated. It's definitely worth keeping a pack (of at least 24 bottles) of it in your truck at all times so if you do run out the door and forget to take your hydro flask with you, you're not left standing there getting progressively more desperate for hydration (or

considering drinking from your tote). Plus you can hand it out to others who are less-prepared than yourself—they will be most grateful.

### **Electrolytes**

Beyond plain water you need to replace the electrolytes you lose through sweating. Luckily there are a number of products now that you can add to your water to give it all the benefits of a sports drink.

Personally I'm a fan of the liquid flavoring additives—they cost about \$3 at the grocery store and a little squirt into a bottle of water goes a long way. They don't expire or require refrigeration so you can just keep it in the console of your truck and a single little bottle can easily flavor and electrolyte-enrich a couple of cases of water.

### **Snacks**

Jerky, granola bars, fruit and apple sauce cups, fruit bars... anything that comes individually wrapped and has a shelf life. I store a box of each under my back seat where it won't get exposed to sunlight and will last longer. Nobody plans on being stuck at a fire scene for very long but sometimes you can end up being up there for several hours with other folks ferrying in new water, and if the call came in just as you were sitting down for dinner then your blood sugar levels could crash.

### **Fire Extinguisher**

Yes, a good old fashioned dry chemical fire extinguisher in bright red. This is something everyone should have in the trunk of their vehicles because they're cheap and portable. Like we've been talking about throughout this book, if you catch a problem quick enough it can be dealt with with minimal resources. You don't have to deploy hose or prime and start pumps, just pull the pin and point at the base of the flames. They sell them at Costco for \$40.

No excuses.

### **Amber Flashing Light**

I found one in the liquidation section at Princess Auto for under \$20. Magnet-mounted with a 12V cigarette lighter plug. It's not something you want to drive around town with—there are rules governing their use just like everything else and if you try to wrap your head around them you're likely to just give you a headache. But

if you're staging an Incident Command Post or doing community patrols down winding dirt roads at night or directing someone to your location, a flashing amber light connects in seconds and makes you clearly identifiable.

Fancier ones are available online in the \$100 range.

### **Extra Fittings & Nozzles**

As time goes on you will develop a collection of extra fittings for your rig. Adapters for turning 2" down to 1.5", for converting forestry half-turn connections to camlock, for repairing hoses—it's important to have everything you might need for your own rig and to interface with others.

An extra nozzle or two is also highly recommended just in case something happens to the one you leave connected to the hose—they're \$20, it's not going to break the bank, but if the nozzle gets whacked on a rock or something and breaks you'll be glad you have a spare.

### **Straps, Twine and Duct Tape**

Whether you need to secure a load or pull a tree off a road, no truck is complete without a few good sets of straps. Not just skinny cheap ones either—try to have at least two really heavy-duty ones that could tow a vehicle if need be.

Show me a farmer who hasn't saved the day with a heavy-duty ratchet strap and I'll show you a guy who's on his first day of farming.

Baler twine is also the Swiss Army Knife of the rancher's tool kit because it's got an incredible number of uses, things you can't even imagine until you're stuck way off in the boonies somewhere. Whether your belt broke and you need something to tie your pants up with or to hold open a gate or tourniquet a busted hose, baler twine has possibly saved even more daylight hours than ratchet straps. Great thing about it is you don't need a whole spool of it—just a bundle of the extra you've cut off tied up neatly so it doesn't get tangled kept under your back seat could make all the difference.

Finally, duct tape. If you don't understand why having duct tape on hand might be useful, you've never lived in the country and I can't help you.

## **Chargers**

Every possible kind of charger you might need, for your phone and for your portable radios and any GPS or tablet device you might use for offline maps. It's no good to you if it's dead and you're not likely to remember to take it with you as you are running out the door, so buy a spare and keep it in the truck at all times.

Something I have found to be immensely useful is to have a portable battery bank charged up and ready to go in the glove box. On a bigger one you can charge a phone from dead 3 or 4 times on a single charge and they are super affordable.

## *Building a Fire Trailer*

Another option if you want to have a tank and pump assembly permanently ready with all the nicely connected pipe routing, but still need to use your truck for other truck stuff, is to build a fire trailer.

Some advantages of this are that they are quickly hooked up and dropped off, they are more easily loaned out or left behind when needed, they can be pulled by different trucks if your main vehicle is down, and insurance is quite a bit cheaper than having a whole extra vehicle.

That said, you'll still need to register and maintain the trailer, and you need somewhere to store the thing when it's not in use and over the winter.

A pickup's towing capacity is usually quite a bit higher than its payload due to the fact that the weight is supported by the trailer's axles and not the truck's, as well as the engine and transmission handling the pulling force instead of the frame carrying weight.

For example, where an older F-150 has a payload of between 1,500-3,000lbs but a towing capacity of between 8,000-14,000lbs. That would mean the difference between pushing your truck right to the very limits at all times and comfortably hauling your trailer. As such, this might be a viable option if you have the half ton but still want to be able to arrive with the kind of volume a cage tote would offer.

There are some things you should consider first, however.

Don't forget to check your hitch capacity - just because your truck can tow 8,000 lbs doesn't mean your standard receiver hitch can handle the tongue weight of a loaded fire trailer. You might need to upgrade to a weight-distributing hitch or higher-rated receiver.

You'll also need to deal with electrical connections for trailer lights and possibly a brake controller if the trailer's heavy enough to require electric brakes. It's not rocket science, but it's another thing to wire up and maintain.

And here's something nobody thinks about until it's too late - trailers are way easier to steal than equipment bolted into your truck bed. A fire trailer sitting in your yard is basically advertising that you've got expensive pumps and equipment just waiting for someone with a truck and five minutes of privacy.

The biggest problem is going to be your maneuverability. As we have discussed about the fire engines, the places where you are going to need to get to are not usually along the side of nicely paved or graded roads - they are across farmer's fields and around sketchy hairpins. Not only getting there, but getting out in a jiffy if you round a corner and discover a problem well beyond your means to deal with, as backing out of anywhere with a trailer is an order of magnitude more complex even under normal conditions, let alone when your adrenaline is pumping.

Beyond all this, it is my feeling that the most serious challenge you will face is how to securely mount the tank. As discussed in the Redneck Firetruck section, a full cage tote will have around 2,300lbs of mass that, even when full, has a little bit of a slosh to it, and as a result can exert enormous force upon whatever mechanism you use to secure it.

In the case of a truck bed, we can push it up against the box and headache rack, meaning we can really ratchet that sucker down and forward to the frame of the vehicle. In a trailer situation, depending upon what you use - but most likely a flat deck utility trailer - you will be practically floating it in the middle. Even if you bolt the bottom crossbars directly to the frame, just think of all the force the top half of that tank will be exerting on those bolts as you brake and it wants to roll forward.

It is for this reason that I strongly recommend against using a trailer with a cage tote.

I have seen some smaller setups, where the tanks are mounted on skids that are then mounted to the deck but those tanks are quite a bit smaller, and given the maneuverability you surrender by going to a trailer rather than the bed, it just doesn't seem like a good trade-off. But we all choose our own adventure and setups are as varied as the people who make them, I am just here to tell you about some of the things some of us have figured out the hard (expensive) way.

Oh, and one more thing - depending on where you are, there might be specific regulations about trailers carrying firefighting equipment or water. Check with your local authorities before you start welding, because the last thing you want is to get pulled over by some overzealous cop or CVSE who decides your fire trailer doesn't meet transport regulations.

## *Building a Structure Protection Unit*

A *Structure Protection Unit* (“SPU”) is basically a sprinkler trailer used in the Wildfire service that has all the doodads you might need to protect a structure (ie a house, shop or barn) from a wildfire. They are designed to be brought in and then set up and left behind so that the landowners (and firefighters) can start the pump and at a wildfire’s imminent arrival and flee, while hopefully saving the structures in the absence of human presence.

The idea is that the structures are enveloped in a humidity bubble, or water curtain, for long enough that the flame front can pass.

A little raincloud just for your abode.

A kind of last-ditch hail-Mary when controlling the direction of the fire has failed.

In BC these are owned by private contractors who build and maintain them to very specific standards determined by the BC Wildfire Service and the Office of the Fire Commissioner.

During the entire Rossmore Lake Fire we had a total of one (1) of these SPUs available to our entire 12,000ha fire.

As an aside, because these SPU trailers are so few, how they are provisioned is carefully considered. I have been told by many career firefighters that the best resources will always go to whoever has the best chance of them being successful, which in this case translates to whoever has put in the most work FireSmart’ing their properties. Why would they waste them where they are likely to fail on people who couldn’t be bothered to try to help themselves if there are others who have a chance of winning because they have tried? Yet another reason why you should take an active role in planning and prevention rather than just expecting that “they” will come save you.

One of the thoughts we had during our community response team’s inception was to build one or two of these - we could contract them out to BCWS when the troubles

weren't in our neck of the woods, and then when we were under threat, we could ensure that they were available for our home turf.

What we found was that building one to these SPUs to the specifications laid out by BCWS and OFC would cost upwards of a couple hundred thousand dollars.

When you're looking at a couple hundred thousand dollars for an SPU that might protect 25 structures, suddenly the math starts looking pretty different for permanent installations on individual properties.

Think about it this way - if you're spending \$200,000 to potentially protect 25 buildings, that's \$8,000 per structure. For that same \$8,000, you could install a pretty decent permanent sprinkler system on your own place that would be there whenever you need it, not just if you're lucky enough to get one of the few SPUs allocated to your area.

The basic concept is the same as the SPU - you're creating that humidity bubble around your structures. But instead of a trailer that shows up (maybe) when things get desperate, you're taking care of your own self and building something that's always ready to go. You can tie it into your domestic water supply, a pond or lake, or set up a dedicated cistern that's always full and ready.

A permanent system doesn't need to be nearly as complex as an SPU.

You're not trying to protect a whole neighborhood complete with all the contingencies that might entail - just your own buildings, which means fewer pumps, less hose, and a much simpler setup. You might get away with a single quality pump, a few hundred feet of hose (or piping), and a dozen or so sprinklers strategically placed around your house, shop, and outbuildings.

The beauty of a permanent system is that you can customize it to your specific situation. You know exactly where the vulnerable spots are on your property, you know your water sources, and you can take the time to do the installation right instead of trying to set everything up when there's a fire bearing down on you.

Here's what a basic permanent structure protection system might look like: Start with a dedicated water supply - either a large cistern or a connection to a reliable well. You'll want at least 1,000 gallons of storage, and more is better. A good quality pump - maybe a Honda or Briggs & Stratton centrifugal pump that can move 100-200 gallons per minute. Some permanent plumbing to get water from your source to

distribution points around your buildings, and then quick-connect fittings where you can hook up hoses and sprinklers when needed.

The sprinklers themselves don't need to be the fancy wildfire-specific ones that cost hundreds of dollars each. Good quality impulse sprinklers or even some of the better lawn sprinklers will do the job, as long as they can throw water in the right patterns to keep your roof and siding wet.

The key is having everything pre-positioned and ready to go.

Planning and preparation!

Just like everything else in this book, you don't want to be running around trying to find sprinklers and hose when you can see smoke on the horizon.

One of our community members paid a contractor to come and install a system when the fire was literally just over the hill. He didn't give me specifics, but when I asked how much it had hurt he smiled and winced and said that it was "over 25K".

Have your sprinklers mounted on stakes or stands that you can quickly deploy, have your hose connections already laid out, and have your pump positioned where it can easily reach your water source.

One thing that's easily overlooked is power. Your pump needs to run, and if the power goes out (which happens a lot during wildfire situations), you need a backup plan. That might mean a generator, or it might mean choosing a pump that can run off your truck's PTO or a portable gas engine.

The cost difference is dramatic. Where an SPU might cost \$200,000, a robust permanent structure protection system for a single property might run \$5,000 to \$15,000 depending on how elaborate you get and how frugal you are. That's the kind of money that makes sense for individual property owners, especially when you consider that you're not depending on someone else's equipment showing up at the right time.

And here's the thing - you can test and refine your system. You can run it every few months to make sure everything works, you can adjust sprinkler positions based on what you learn, and you can upgrade components as your budget allows.

Peace of mind comes from planning, not expecting others to come to the rescue.

The other advantage is that you can integrate it with other fire protection measures. Maybe you've got a system that can be activated manually when you evacuate, or maybe you've got temperature sensors that can turn it on automatically. You can tie it into your domestic water system for redundancy, or you can set it up to work with your existing irrigation setup.

Of course, there are some downsides to permanent systems too. They're your responsibility to maintain, they won't cover your neighbor's place, and they're not going to save you if you haven't done the basic FireSmart work around your property. But for most rural property owners, especially those in high-risk areas, they make a lot more sense than hoping an SPU will show up when you need it.

# TECHNOLOGY

## *A Note on Technology*

Possibly more important than the type of truck you've got or how much water you can carry is the type of technology you have and how you use it.

This is also going to be the section that ages the least gracefully – just look how much the toolkit has changed for us over the last decade. I can only imagine what it will look like five or fifteen years from now. We'll read back on things like this in a mere couple of years and marvel at how primitive we were and how we ever managed to get by using Facebook and iPhone apps the same way my children try to imagine me using rotary telephones, VCRs, and watching black and white broadcast television received with rabbit ears.

Even as I am editing this for publication in 2025, since I started writing this in 2021, the apps and technology has shifted and changed.

It's what we've got to work with for now and maybe in later editions this will be something I update to reflect the changing tools.

If I may take a moment to speculate however, I can see real-time mapping data - particularly satellite data - playing a huge role in emergency community fire response in the future. Rather than using Google Maps with its sometimes years-old photography we will be able to pull up a tactical map with real-time satellite imagery including different detection overlays for thermal and night vision, possibly even using AI detection systems that know when the average or expected temperature of an area has changed within a threshold and alerts those vested with the responsibility for monitoring such things before anyone even looks with their human eyes.

*Zoom! Enhance!*

Maybe we'll be able to get some sleep and let the technology do all that stressful sleepless work.

Until then, it's Facebook and iPhone apps and DJI drones from off the shelf at Best Buy, so here's how to do the best with what we've got.

One word of caution is this: do not become too reliant on technology. These are at the end of the day just apps and apps are basically websites custom fit to your phone screen, the data is not always accurate or complete and as a result you shouldn't rely on them as ultimate authorities on truth.

For example, if you think you will be safe to put a drone up to take a look at a fire because your *Flight Radar* app says there's no aircraft in the area yet, you will be committing an offense regardless of if there is or not, and further there may be - I often go to look up an aircraft I am looking at with my eyes and, for *whatever reason*, it is not showing up on the radar app at all.

Just because a lightning app doesn't show a certain area as having been struck doesn't mean that there won't be any fire in that spot.

Just because the weather app shows the storm is going to pass you to the north doesn't mean you're not going to get hit.

Use them as tools but like any tool, respect their limitations.

## *Phone Apps*

One of first things we needed to figure out in order to reign in the chaos that someone shouting “fire!” in a Facebook community group can cause was to stop having people “report” fires to our Facebook community group. Seriously, making a community post to say “there is a fire next to your house” is a long way from quelling fire anxiety, even if the poster was clear that it had already been reported to the proper authorities.

Which usually wasn’t the case - the very first time it happened, all the post said was “Fire” and had a blurry picture of some flames in distant darkness.

It’s the 21st century equivalent of shouting fire in a crowded theater.

It is very important at this point to underline the importance of procedure.

You need to make sure that you are not posing yourself as a replacement for calling the governmental authorities. Your team may be trained and equipped but you are not the regional fire center.

On all of the posts we have made sharing our contact numbers, on all of the fridge magnets we printed, we made it very clear that if someone needs to report a fire, their *first call needs to be to the authorities*.

In BC that is \*5555 from a cellular phone, or 1-800-663-5555 from a landline.

And when someone calls us, our first question is “have you reported this to BC Wildfire?” If they have not, give them the number and have them hang up and call them first, then call you back.

The calltakers at the fire center are trained on getting as much information as they can from the callers. They have tools at their disposal that you do not. And ultimately, they are the ones who have the resources to set up an appropriate response to any fire situation.

The sooner they know about it, the sooner they can get rolling.

Make sure that *they* are the ones calling it in, the ones who actually have eyes on it. I have had the frustrating experience of having a resident call - while I was out of town for a wedding - and then having to try to relay the information to the BCWS dispatcher as it had been imparted to me because the well meaning resident called our number, told me about it and then hung up thinking they had done their part.

**Make sure that the caller has already phoned it in to the authorities first.**

That said, you have some phone options to consider.

Many rural folks still subscribe to an old fashioned land line, but it is still hamstrung by the same limitations as they were fifty years ago - namely that they are expensive and anchored to your house.

You may consider handing out your cell number, if you are truly willing to have strangers phoning you at all times.

Like the Redneck Firetruck, it is something that you already own and is therefore not a new expense. Depending upon your community's specific circumstances, that may be sufficient for you.

But a phone app will likely offer a better solution.

I'm not just talking to the app on your phone that comes with your phone that lets your phone be a phone. There are third party apps that can let you add a number to your phone, which can have some pretty useful tactical advantages.

That's right, we put a phone app on your phone so you can app while you phone.

These "phone apps" are apps that you can download from your app store that allow you to add another "soft" number to your phone. Or two numbers. Or ten. They work over any data connection, and are surprisingly affordable depending upon how much you use them.

For example, Fongo is an app that will give you a local number, unlimited calling in Canada, caller ID, conference calling, messaging, call waiting, voicemail, call forwarding, call transfer, and even receive faxes. The last is something that not even the latest iPhone can do, which is ridiculous if you think about it.

Oh and all of that is free.

You can pay for add ons to get rid of ads, receive MMS (photos over text message), there are a number of options, but even at the higher end you are looking at \$12.99 a month for their “ultimate” package, which is an *awful lot less* than even the most basic cellular service on a pay-as-you-go plan.

Besides that, there are some serious advantages to using an app over a physical phone.

### *Sharing the Load*

One of the things we discuss in this book is the real need to delegate tasks and work as a team with others in your community. If your phone is *the* phone that will ring any time a community member sees a fire across the way, you are going to be on call 24/7 and that just sucks.

Human beings are not built to be on call 24/7. For those of us who have worked in emergency response or after-hours callouts for trades like plumbing and hotshot, we have shifts where we “are on call” and there are times when we are *not on call*.

If your cellular phone is the one number that everyone has the number for as contact with your local response group, then you might find out very quickly in the summer that this is less than ideal.

We all have families, hobbies and responsibilities outside of volunteer emergency response. Your group leadership needs to set a schedule where you will take turns as the call answerer so no one single person is the one who is always answering, and the easiest way to “share the phone” is to simply have it installed on multiple phones.

Unlike your cellular phone service, your third part phone app uses a login just like any other app, so that is a password you can share among the team.

As an added bonus, when a call *does* come in, the others will hear it ring, so they will know that something might be in the pipes.

Or, if it is ringing and whoever is designated as on duty isn’t answering, one of the others can snag it and the person who is calling never has to hang up and try a different number.

### *Redundancy*

Having second or third people on the same number who can answer if need be falls

under redundancy, and this kind of redundancy helps in other ways as well.

If in the course of bouncing through farmer's fields your phone flies off the seat and smashes itself on the shifter, or it falls out of your pocket in the dark while your a mile into the sticks, or you just plain forget to charge it because you already don't much care for cellphones and having a whole second one that demands your daily maintenance is annoying you... whatever the case may be, if you somehow lose the use of that phone, then that number is not going to work until you get the sim card into another physical device.

Depending upon when this happens, that might be a few days.

And Murphy states that this is when the shit is really going to be hitting the fan and you need it the most.

### *Old and Cheap Phones Suck*

If you do decide to get a physical second phone to pass back and forth, chances are you are going to get something either old or cheap.

Old phones stop getting updates and end up not working with half the apps you want to use and their batteries die quickly. You probably have a few of them in your junk drawer, and there is always a glut of them available on Marketplace for cheap. But there is a reason they aren't using them anymore.

It's because old phones suck.

And cheap phones suck.

There is a reason people (like myself) who end up having to use their phones a *lot* and as a result end up paying as much for the latest phone as a full size desktop computer, and contrary to popular belief it is *not* just because we have so much money to blow or are suckers for marketing.

It is because they are fast. They respond to the touch quickly, they load apps fast, they transmit data fast, they have lots of memory to store apps and videos, they support the latest apps, and their batteries last forever.

### *Dumb Phones*

I have seen response teams buy a "dumb phone" because "we don't need all that

fancy stuff just call me and I will talk to whoever.”

Honestly, I loved my old LG flip phone. If it were feasible for me, I would love to revert to a dumb phone. They are making a comeback for this very reason and are surprisingly affordable - you can pick one up on Amazon for between \$70-\$100 and they work just as good as cell phones did 15 years ago.

That’s all well and good until the person calling you only has enough signal to squeeze a text through but not enough to establish a voice call so you end up having to text back with old school T9 - remember that? Using the number pad to enter text messages?

Or if they want to send you a photo of what they are seeing, something that is immensely valuable, and you can only see it on a 1” wide screen.

### *Official Bidness*

When you have a separate number for reports, you know that when that number rings, then someone is calling you in your role as contact for your local group.

When my personal cell phone rings, it might be one of my co-workers, it might be my mom, it might be one of my clients or a friend.

I know it won’t be one of my kids, because people under 30 don’t just phone anyone up anymore. And honestly 9/10 times that my phone rings these days it is a scam spammer anyway: “This is the Canada Revenue Agency. We have detected fraud on your social insurance number. The police are on their way right now and will probably shoot your dog unless you send us \$1000 in iTunes gift cards immediately.”

When “the big phone” rings it will automatically give you a different mental attitude towards it than your own personal cellphone.

### Scam Callers

Speaking of scam spammers, I have noticed that for whatever reason, these “software” phone numbers get quite a bit less attention than actual physical cell numbers.

If you have ever answered a number on your cell that you were suspicious of but answered anyway because you were expecting a call and it is that CRA recording or

else it just goes *click* then you know that feeling, of *oh no now they know my number is active and I am going to get 10x as many calls*. This is how they work.

Next thing you know your phone is ringing twenty times a day. “Hello sir this is Microsoft Windows calling we have detected a virus on your computer.” Bruh.

A nice fringe benefit of having a soft number is that these problems are more subdued.

## *Cell Coverage*

We will get into cellular coverage challenges later under *Communications*, but it is worth mentioning that a soft number will work whether you have actual cellular data coverage, or if you are just on wifi.

It is true that wifi calling is a thing, but in my experience it is nowhere near as reliable.

Where my house is, we just barely get a cell signal due to a hill across the way casting a broadcast shadow from the tower. It is enough for calls to go through, but you often find yourself saying “hello? Oop I lost you hello? Can you hear me? Yes? Oh no lost you again..” For it being the year 2025, cellular coverage in Canada is absolutely abysmal, especially when you consider that we pay some of the highest fees in the world. But I digress.

If you live rurally, you probably already fight with this.

A soft phone will work over wifi or cellular, which means that even if your homestead gets zero reliable cell coverage, the emergency line will ring as long as your wifi is up.

In our case, we had Nat, and Nat was a retired RCMP major crimes unit officer and all around sleepless mom, so she was pretty much always available and willing to field all the calls. Her Messenger was always green lit and any time someone spotted something, she was there to directly talk to them.

I can’t understate the value of having Nat in your community. Hopefully you have one. They are indispensable.

That role is so important they they get their very own section of the Incident Command System - *Information Officer*.

## *Camera App*

One of the most useful apps your fledgling brigade can use comes stock with every phone - the camera app.

They say a picture is worth a thousand words. In terms of wildfire response, it can be even more valuable than that.

What looks to someone who is juiced on adrenaline as a major blow up might easily be put down by a single crew in a couple of hours. And it works the other way too, perhaps the inexperienced eye sees a little smoke and thinks that it isn't a very big deal, but they neglect to take into consideration the dense fuels it is adjacent to.

It is easy to use - just point and click! - it works whether or not you have cellular service, and everyone is already familiar with the use and concept of it so you aren't trying to get "old dogs to learn new tricks" as might be the case when trying to get a team of largely retirees to use a multichannel messaging app like Telegram.

But there is more. The modern smart camera doesn't just take an impression of the lighting. It stamps all sorts of valuable metadata to it that really adds value both in the moment when you are responding and after the fact.

For example, after all the fun has died down and you need to write a report on what had happened. What was the exact time that you first saw the smoke plume? What time was it when you arrived on scene? What was the intensity of the fire after you had been working on it for one hour, or four?

By taking pictures as you go along, you are taking literal snapshots. Not "it was just after lunch when I first saw the smoke coming over the hill" but specifically at 13:26. And then you will be able to say with confidence that it was 14:04 when you arrived on scene - and exactly what it looked like when you arrived. And how much you knocked it down by 15:45.

This is all valuable information for providing detailed reports. You don't have to take the time to write down notes - which, let's be honest here, you probably won't remember or want to do when you are first rolling up on a wildfire start.

Additionally, if you have configured it, your phone will stamp surprisingly precise GPS information into the metadata. One of the fastest ways to save a location is to snap a picture of it.

One afternoon I was heading up to a hill where we could catch some service so I could make contact with the fire center, and I saw a smoldering fire under a fir. It wasn't anything too pressing - we were in the black - but I wanted to come back and squash it after I had taken care of talking to the big wigs. I just pointed my camera at it and snapped a pic as I drove by.

Then when I got back with the crew, I was able to not only show them what I had seen rather than trying to relate abstracts like a rank 1-2 within 3m of laddering materials - but was able to copy the exact GPS coordinates and share them to their phones, rather than trying to relate that it was up the swamp mat road on the Philips upper field, left at the Y then up and around the bend then into the bushes on the north. ‘

As well, the BC Wildfire App allows you to report wildfires using the app and include a photo. I have spoken directly with those at the other end in the regional fire centers and they emphatically stress that reports that include photographs are helpful, for all the reasons I have discussed here.

In order for this to work, you need to make sure that your camera app is configured to save this information. There are definitely times you do not want to be sharing exact geolocation metadata when you send a photograph. Anyone who has tried dating in the last decade can tell you, it might not be wise.

This is most often managed not in the app itself but in your phone's privacy and location settings.

### *BC Wildfire App*

Obviously this is specific to BC, but if you're in British Columbia and even remotely concerned about wildfires, you really should have the BC Wildfire App installed on your phone — whether you're part of a response team, a property owner, or just someone who spends time out in the backcountry.

The official BC Wildfire Service App gives you real-time updates on wildfires across the province. You can see where fires are burning, what stage of control they're in, their estimated size, and whether crews are currently responding. It's essentially a live fire map in your pocket — and that kind of awareness is invaluable, especially during peak season when things can change fast.

But the real power of the app is that it lets you report fires directly to the wildfire

center. And not just a vague “I saw some smoke” — you can send actual photos and GPS-tagged locations. That means you're not just reporting a fire; you're giving the decision-makers on the other end actual eyes on the ground. They'll know what kind of smoke it is, what kind of fuels are nearby, how visible the flame front is — and exactly where it's happening.

In a situation where every minute counts, this can make all the difference in getting the right kind of response. The sooner a wildfire officer has accurate, verifiable information, the more likely it is that the fire will get prioritized and assigned appropriate resources. Even if you're not part of a sanctioned fire crew, your report might be the one that gets airtankers in the air or initial attack crews rolling in sooner rather than later.

Bottom line: if you're in BC, you should have the app. It's free, easy to use, and it turns your phone into a tool that actually contributes to the province's wider wildfire response network.

### *Scanner Radio App*

If you don't have a scanner on hand but have access to wifi or mobile data, there are apps that will provide you a stream of the scanner activity for your area. The one we use is called "Scanner Radio." Often you will get better audio out of the app than from your own scanner, as the people who produce these feeds are generally centrally located and have better quality antennas than you might have with the rubber ducky antenna on your handheld.

From my home I get very poor reception for fire events happening in the city on my own scanner due to the broadcast shadow cast upon my house by the hill between our house and town, but the app feeds perfectly clear audio to my phone. Very handy.

Something to consider of course is that it will be based solely around the frequencies that the feed host has programmed, which generally is the dispatch and main tactical channels, so you might be missing out on some channels that you would like to have programmed and monitored.

Because it is capturing a "live from the airwaves" feed and then digitizing it, sending it to a server which is then being pinged out to all the people dialed in on the app, there is a time delay between the actual transmission and what you would hear from an actual physical scanner. This can sometimes be as much as a couple of minutes.

There have been times I have only caught the tail end of a transmission on my hardware scanner, loaded up the app and waited, and then was able to catch the full transmission "live" the second time out of the app.

As well, because a scanner works by "scanning" through a list of frequencies until it finds one, it might stop on a channel that you are not interested in (say, a boring "man down" paramedic call) while a transmission you actually wanted to hear (say, an interesting back-and-forth between firefighters arriving on the scene of a structure fire and dispatch) is happening on another channel and is missed.

If you're running your own physical scanner, you can quickly press the HOLD button to keep it on frequency when there's something you're keen on, but with the app you are essentially listening to a single radio station that's broadcasting whatever it is they hear – which means you can't interact and hold a channel if you wish or skip a channel that keeps interfering with the one that's most relevant to you at the time.

Often when there's a lot happening I will run both – I have the phone connected to the truck's stereo via bluetooth streaming the scanner app feed while I have my Uniden scanner on the dash catching different feeds - especially for catching the Close Call frequencies (as discussed in the chapter on Communications).

### *Flight Radar Apps*

Even if you're not an aviation nerd like myself, the Flight Radar app is a must-have in your wildfire information apps folder because knowing where the aircraft are focusing their efforts can be very useful information.

Besides looking up to see a bucket chopper going overhead and wondering "where are they going?" it can also give you a very good idea of where the flanks of a fire are by showing you their exact flight path.

One important thing to keep in mind, however, is that for whatever reason, the app does not show EVERY aircraft in the air. You might expect that it's running off the same radar data that the airports are using, but many times I have opened the app up to see where a plane or helicopter I was looking right at with my own eyes was off to, and according to the app, there was nothing near me.

This is important to remember because if you were relying on this to tell you that there were no aircraft nearby and you put a UAV (drone) up to get an aerial inspection, you would not only be breaking the law but endangering that aircraft, the

pilot and any passengers they might be carrying, as well as anyone on the ground below who might be hit if your little DJI drone struck the propeller and caused it to crash.

## *Weather Apps*

Weather apps come pre-installed on phones and are arguably one of the most popular and most frequently used apps on the mobile device platform. Getting weather alerts or "Special Weather Statements" pushed out to your phone can be very handy if you're busy doing other things but need to know when a storm front is approaching.

The most useful function, in my view, is the radar. Weather forecasts for areas tend to be centered around the airport in urban centers, and often that is a completely different weather zone from your quarter section in the country, even if it is relatively close by country standards. If you're an old rancher then chances are you can step outside and smell the air and feel the way the wind shifts through your hair and look at the clouds and how they're moving and then wink at your chickens, and if they cluck you'll be able to tell if there's some weather moving in by how badly your left knee starts thereafter aching. But even if you have this talent, adding radar to your toolkit will enhance your own personal forecasts.

Once you get a feel for and some experience with watching weather radar patterns, you will be able to pull it up and watch the movement of weather systems and you'll begin to feel like an amateur meteorologist. You will be able to tell with some reasonable accuracy roughly when a system will arrive where you stand, how long it will last, and how intense it is likely to be.

Personally I use the *AccuWeather* app, but there are many - find one that works well for you. Keep in mind that it blends actual radar readings with forecasts based on their models, so radar that you see after the current time is not necessarily going to be exactly what happens, and often you'll see changes in what the future radar says as it gets closer to that time - on more than one occasion we got ready for a big storm that looked like it was going to plunk a nasty cell right over our heads only to find in the hour leading up to it that the cell instead pushed south and away from our area. And of course we've expected a storm to blow by and instead found it parked on top of our heads.

*Windy* is a good one for showing current and forecasted winds and their intensities - super useful when you're dealing with fires!

## *Lightening App*

Usually by mid-summer everyone's praying for rain, and along with a summer storm comes that which you least want when everything is tinder dry: lightning.

In the summer months when we can expect to have trouble following lightning strikes, I gather my crew and we watch it from the truck, ready to roll out as soon as it happens. However, there are apps which track lightning strikes on your phone which make it a lot easier to identify where a strike actually landed, as lightning often looks much closer than it actually was.

The app we use for this is called "My Lightning Tracker" on iPhone and it actually works pretty well. Again, don't expect it to be perfect, but it can spare you driving down the road scouring the landscape for smoke – which is especially hard to detect when there's heavy rain, which as we know often accompanies these events.

In one such instance we were able to look at the app, tell where it seemed to have come down, cross-referenced whose property that was on our own GIS (more on that shortly), and then call the property owner to confirm that yes there had been a strike that shook their home and no there was no resulting fire.

Saved us a trip up the road and it also meant that we were able to stay ready at the staging area in case there was one in another direction that DID start a fire.

Something that's worth noting about lightning strikes is that a ball of fire doesn't necessarily leap out of the ground after lightning has struck it. The Rossmore Lake Fire, the big event for 2023 in our area, "started" the same day as a couple of other fires. That is to say, it had warmed up and conditions were favorable for a smoldering ground fire to blow into open ignition. That smoldering ground fire was ignited by a lightning storm that had blown through the area a few days earlier, where we'd held our breaths and then exhaled with relief when "nothing happened."

In fact it had already begun and we just hadn't realized it.

## *Emergency Alert Apps*

In our area over the past few years both our regional district and the municipality we are next to have begun using an app called *Voyent Alert* to notify residents when there are evacuation alerts and order, and it has honestly developed into a pretty reliable system.

If you have the app on your phone, it will use the location data to alert you if you are in an area that is under evacuation alert or order, and even if you don't have the app itself, it will text you to let you know that your home address falls under one of those areas.

This is obviously preferable to trying to manage your own "emergency broadcast system", but there were still certain edge cases where that wouldn't work.

For example, there were some elderly residents who just plain didn't have cellphones - nothing but old fashioned landline - or even if they did have cellphones, they were dumb phones, or they didn't have cell service or wifi at their homes. In our area, there were a surprising number of people who were not getting any notifications at all, which was extremely alarming.

So we set up an account with an "auto dialer" service called "DialMyCalls.com" which allowed us to create a list of folks who wanted to be notified when there were threats.

This is the same kind of service as what schools use now to notify you if your kid was late to class (or decided to skip last block).

It dials with a specified number for the call display, and when the call is answered a message is announced.

You can subscribe by the month or pre-pay for a certain number of credits, the latter of which we decided was more cost effective and useful for our situation. It was around \$15 or \$20 to get a couple hundred credits, where each separate call out was a credit. This allowed us to set up the list and test it to ensure it was working, and also have some credits on hand for in case we needed to use it.

The way it works is you log in to the web site, select your list, and then type out your message and hit send. Over the next five or so minutes - but usually pretty much instantly - everyone on the list gets a call.

And as it turned out, we did end up using it a couple of times, and it worked very well.

Again, you don't want to be duplicating (or trying to replace) official emergency broadcasts, but if you identify gaps in the service as we did, this is another tool you can use to serve your community.

## *Drones / UAV*

Here in Canada they're legally referred to as "Unmanned Aerial Vehicles" ("UAV").

As a fan of aviation, I was an early adopter of modern remote controlled aircraft platforms and believe that they have a valuable role to play in our future society.

If you're a technically adept rancher you might already own one of these - I know a couple of "old fellas" that have and regularly fly DJI drones to quickly get an aerial view of their land to determine things like where the cows have wandered off to or how crops are growing (and yes, if that smoke is coming from our place or old Jack's across the way).

In the old days you had to employ or contract a plane or helicopter if you wanted an aerial view, and the expense was incredible. I remember as a kid someone rented a helicopter for an hour and flew down the beach I grew up on taking aerial photos of each of the houses, then printed them out and went door to door selling them to the homeowners for \$150 each (in 1990 dollars) because nobody ever got to see their homes from that perspective.

Now for less than that you can buy one from Temu with all sorts of amazing features and be in the air in minutes. They're relatively easy to pilot and have almost no fuel or maintenance cost compared to people-carrying airframes, and can transmit in real time a high definition video feed back down to the ground from kilometres away.

What a time to be alive. There are a few very important things to keep in mind where it pertains to wildfires, however.

Firstly, at least here in BC, you are absolutely forbidden by law in no uncertain terms from flying any kind of UAV near a wildfire. At all. Ever. Hard stop. No exceptions.

Not even a little bit, not just a "quick peek" - nothing. According to the Canadian Aviation Regulations, all wildfires are automatically considered to be automatically "flight restricted" within a radius of five nautical miles around the fire and to an altitude of 3,000 feet above ground level (AGL).

That means it doesn't even need to be reported yet. As soon as there is a wildfire, it

is restricted airspace.

And they're not joking around. At present, the maximum fine for an infraction is \$25,000 and up to 18 months in jail, and there are calls to increase that to an even more deterring figure. What's more, if you choose to do it anyway and it's decided that your sortie interferes with the wildfire control efforts, you can get a bonus \$100,000 fine and a year in prison.

Most of these devices phone home to their servers, and there's a lot of speculation that manufacturers like DJI might be likely to cooperate with officials in determining when illegal flights take place so they can prosecute infractions.

The reason for this is the same reason you're not allowed to fly your drone within 3 nautical miles of an airport - safety for the full-sized airframes and the people on board them... and ultimately, for those underneath them, should they come down.

I've crashed my RC's so many times I can't even recall half of them. And although it hurts to find your downed quad to discover a busted gimbal arm or propeller, it didn't hurt nearly as bad as it would if I'd been sitting in it.

A tiny 250 gram UAV can cause a propeller strike or be sucked into a turbine on a plane or helicopter and cause it to crash and kill everyone aboard (and under it). Your hundred dollar "toy" ends up costing millions, and possibly lives.

It's for this reason that if any pilot working on wildfire suppression spots a drone, even if it seems to be "at a safe distance," they will abort their mission and return to base.

Which obviously means that they're not going to be putting water or retardant down on the fire they're working on. It could be your fault that the fire spins out of control and eats your neighborhood. Nobody wants that.

Here in Canada - and in many places throughout the world - you are required to obtain a UAV Pilot's License and carry it with you at all times when operating your aircraft. The purpose of this, like any licensing requirement, is to ensure that if you're engaging in the activity then you know the rules surrounding its use, which ultimately are dictated so everyone is safe... so it's important that you obtain this certification if you intend to use UAVs as part of your strategy.

Wherever you are, learn and obey the laws surrounding drone usage - in periods of

calm as well as in the event of wildfires, because ignorance of the law does not excuse you from its consequences and I don't think many of us could eat a potential fine of tens of thousands of dollars without feeling it, regardless of whether or not you "knew" it was forbidden. The stakes are just so high.

All this being said, I am not going to get into specifics of when a drone would be legal and useful; it is too case-specific and will have to be a decision that you make for yourself based on the laws which apply where and when you find yourself considering their use.

One last warning is to not rely on "radar apps" to determine whether or not there are any aircraft in the vicinity.

I personally often check the radar to identify a plane I'm looking right at only to find that it isn't on the map at all. For whatever reason, they do not show ALL aircraft and for that reason you should not rely upon them in your decision making process.

From a personal perspective, I can say that there are many times - usually, as a matter of fact - where being able to put a drone up and get a quick bird's eye view of the situation would be hugely beneficial. There have been times where we've spent an hour trying to figure out "where that smoke column is coming from" when we could have just thrown up a drone, flown directly over it, geo-tagged it, and then returned it to the truck and driven directly to those coordinates.

I've discussed with friends and allies in the professional service at length about how advantageous this would be, and it's not lost on them - their helicopters are costing them upwards of a thousand dollars an hour to run. But for now, there just isn't a way that they could safely allow any kind of drone usage in an active wildfire zone, and for that reason you should never do it - at least, until things change.

Hopefully as technology (and policies) develop they will eventually come up with a way to determine for certain if any aircraft is anywhere near the ground crews so that they could use the technology to increase their situational awareness and effectiveness on the ground.

Until that happens, my strong admonishment is to not fly drones in or around wildfire areas.

## *Social Media*

Like it or hate it (I find myself in the latter category), social media is ubiquitous in our modern society and it can be an important tool in the modern renegade fire brigade's kit that I would be remiss not to cover in a document like this.

Social media is a tool in the same way a gun is a tool: useful in certain situations and dangerous in the wrong hands.

### *Facebook*

Although I'm loath to admit it, it was on our community Facebook group that our community was brought together on the wildfire cause. Our rural community has a long-standing community group where neighbours can report loose livestock, warn about predators being spotted, and post upcoming 4H events.

As we discussed back in "how it started for us," it was naturally the place where residents turned to notify the neighborhood that there was a fire problem up the hill and to request help.

It allowed us to share up-to-the-minute information with each other without having to reach out to everyone individually, as well as reducing the problem of how information morphs over repeated iterations. The old "telephone" game comes to mind, and especially when there's an imminent threat like wildfire, people's panic can spread faster than the flames.

The problem with up-to-the-minute information is that so often in emergency situations, there's nothing to update – whether you're sizing up a fire or you're working on it, there may not be any new information to share... and so folks will fill that void, often with their anxiety and imaginations.

Our humble rural Facebook community group became the panic room.

While some were out fighting the fires, others were glued to the Facebook group, frantically refreshing and winding each other up with panic. It's only natural – nobody's going to sleep when they've just learned there's a new fire in the bush just around the bend – and with everyone essentially standing around talking about it

while still being detached from the ground where it's happening, speculation and then anxiety and finally panic are bound to arise.

Anxiety is a natural part of our human evolution and it has a valuable role to play in our survival. We have millions of years of fire anxiety bred into us – arguably we are all the descendants of those who listened to their fire anxiety and survived, so it is little wonder it plays such a strong role in our mental makeup.

Electronic technology is a brand new invention in terms of evolution. Our monkey brains have not had a chance to adapt, and this is why we feel excitement and fear and joy and so on when watching movies or pretty much anything that happens on a screen in front of us. Rationally, we know that we are separate from the events we are witnessing, but millions of years of evolution still trigger all the same chemicals, whether it happens right before our naked eyes or on the screen of our phones in the palms of our hands.

Think of how everyone always comments about how "it was like a movie" when they witness some disaster firsthand. It's because they're experiencing the same emotional reactions they had felt while watching movies, only when they watched the movies they were able to talk themselves down.

At least, that's my explanation and it works for me. I'm no cultural psychologist, but I have been watching what happens with great interest and have developed some strategies to help curtail the panic reaction. Perhaps some of what we did will work for you as well.

It all comes back to preparedness.

## *SEPARATE GROUPS*

First we created a separate "Community Firewatch" group where anything fire-related could be posted and which was open to anyone in the community. Whether it was reporting a new fire or talking about existing fires or offering training, if it was fire-related it was to be posted in the Firewatch group instead of the regular community group. It did take a little while for the community to adjust to it, but they eventually did.

This was important because it gave a separation between the fires (which seemed ever present) and our ordinary lives (the loose cows and road reports).

We as humans are not meant to live in crisis constantly.

It's exhausting, especially when it's not necessary. An acute awareness of the dangers around you is definitely valuable, but it's not healthy for a community to simmer in anxiety for an entire fire season either. So, creating the separate Firewatch group allowed us to say "ok, I need a break from doom scrolling!" and instead see whose dog had escaped to whose house or if the local black bear was heading for your bee hives next.

It also allowed us to have better control over what news was spreading.

No, not like the government trying to control the narrative and hide the truth to pacify the unwashed masses.

The problem was that new fires would often spawn multiple posts which would then lead to many comment threads and sub-threads, with new arrivals asking questions in one thread and missing updates from another. Confusion about whether someone looking at the same fire from a different angle was in fact seeing the same fire or another separate fire.

It became a feverish race to keep up with them. By utilizing the Firewatch page separate from the community page, we were able to create a single post for each new fire which became the official super thread and meeting point so that questions and updates were always going to the same place.

Aside from the Firewatch page, we created a Community Fire Patrol page which was NOT open to the entire community, in part because early in the season we had one busy night where an arsonist drove all over our countryside lighting little fires, a total of seven in a matter of a couple of hours. Because of this, we decided to keep the Patrol group set to private and only available to members of the community who were known to each other and who were actively patrolling, just in case an arsonist was watching to see where and when people were patrolling to avoid getting caught and having their nefarious plans thwarted.

Because there are always "spies."

Whether they're lookie-lous aka "tourists" wanting to chow down on some disaster porn, or reporters looking to get some footage (my videos from the frontlines have ended up on international television, without permission), or thieves whose mouths are watering at the idea that there's an entire neighbourhood that's uninhabited and

ripe for the pickings.

Be sure to have a few admins on the page so it's not left to one single person to manage by themselves. Firstly, because no one person can do it all, but also because getting information out to the community is necessarily a team effort. Someone on the scene can shoot a message to another member of the admin crew with an update and maybe some photos, then get back to work, while the one who received it can format the information into the post and filter or answer any questions that may come up without hounding the one on the scene with messages from twenty different people.

### *The Social Media Site Formerly Known as Twitter*

Aside from the fact that not everyone uses Facebook, the manner of how it functions is not necessarily conducive to rapid transmission of useful information between strangers. This is where Twitter shines.

At least, it used to. These days it seems more like a political echo chamber, but in times of crisis, the core functionality is still there.

Hashtags are a quick and easy way to connect with other people – usually strangers – when circumstances align your interests, so it should be included in your toolkit when you're looking for information coming from the ground.

When the Juniper Ridge fire was growing over the hill from us and we were listening to the scanner with boiling anxiety, it was Twitter where we found videos shot from Valleyview, a neighborhood to the North of Juniper, showing the location of the fire to be in the hills between Juniper and Valleyview. This meant that for that fire to threaten our neighborhood, it would first have to burn through all of Juniper and then the open hills before it got here.

Long before any official report from the city or regional district, we had figured out what was going on.

Official accounts I follow in the Kamloops area are the Regional District, the City, BC Wildfire, BC Highways, and @Kamskan, a local who listens to several scanners and live-tweets exactly what they're hearing – very useful if you happen to miss an important transmission. Chances are, there are similar accounts near your part of the world doing the same sort of work.

Twitter is also useful because it seldom goes down. (Updated for 2023: the reliability of Twitter has significantly dropped, but it tends to still generally function as it should during emergencies).

In times of crisis when there is a massive influx of people looking for information, normal websites such as the local news channel that might see a few hundred requests a day collapse under the load of tens of thousands in a matter of minutes. On multiple occasions over almost every fire season, both the TNRD and BC Highways sites crash in the middle of evacuations.

Hopefully eventually their server admins learn how to set up (or are given the budget to afford) rapid elasticity and scaling with their servers.

It's unfortunate because that's exactly when people are looking for up-to-date information, and hopefully they are able to scale their operations to continue to function under heavy load. But the fact of the matter is that they can and do crash when it's the worst possible time, and that means turning to Twitter.

When the entire City of Merritt was placed under evacuation alert and there were multiple wildfires closing down the highways leaving town, people needed to know where to go if it came to that. Those who planned on fleeing through the Coquihalla to Chilliwack needed to know that in fact that highway was closed at Larsen Hill, and that also the Fraser Canyon route was closed as well, so was Highway 8 and 97C, and ultimately that night ALL the highways leading to the Lower Mainland were inaccessible.

The only route to safety was North to Kamloops, and for an hour there in the middle of the panic when the websites crashed, the only way to hear that from the horse's mouth was to go on Twitter.

## *Maps & GIS*

Possibly the coolest and most useful use for the mobile device platform is mapping.

Even ten years ago you needed a separate GPS device to tell you what your coordinates on the planet were. You had to remember to bring it with you and keep it charged and know how to use it, and the display was tiny and only showed topographical maps with outdated road information.

Now you are almost always guaranteed to remember to bring it with you because you always have your phone on you, it's connected to the network so you can get satellite overlays, and you can just touch a spot you're looking at and it will give you the actual GPS coordinates and directions on how to get there. What a time to be alive.

Always keep the satellite overlay turned on. A topographical or road map is not nearly as useful to you in the countryside as an overhead satellite view is. It will show you where the tree line is, gullies and fields. In the dark, when you can't see across a field, you can open your map and look at the satellite overlay and be able to tell whether or not there are structures or tree stands nearby in unfamiliar territory.

Even for reporting fires it is invaluable. I emphasized this with my own community because reporting fire locations is an ongoing struggle for any first responder, especially in the rural environment where street addresses don't work as well as they do in the city.

Someone sees a fire – where is it?

"It's five or six kilometers up that road, I can't remember what it's called, the one after the long lake on the right when you're heading from town. Go down about three cattleguards or so. If you see two brown cows facing east you've gone too far."

Teach your people how to use Google Maps to obtain a GPS coordinate.

Open the app, center on yourself and orient it so you know which way you're

looking, and then put your finger on the spot the fire appears to be at and keep it there until it "drops a pin." Then tap the pin and it will tell you the exact coordinates that anyone can use to find out EXACTLY where it is: 50.692246, -120.417031 is going to be much more useful to the responders than approximate mileage past a landmark they might not even see in the dark.

Getting accurate information from the reporter will lead to faster and more effective responses and save you from driving around in the dark with the windows open smelling for smoke and searching the darkness for this fire that apparently exists but you cannot seem to find.

Having very specific information on the location of the fire is useful for notifying nearby residents as well, which brings us to GIS.

## *GIS*

*Geographic Information System* (GIS) is a network-based software used by many industries and governments. It essentially gives you different overlays of information about a place on the map based on what information it has stored, which generally has to do with what it's being used for.

Mining and oil companies use it to refer to exploration studies they have done, what rights holders are related to a parcel, and so on.

Your own city or regional district almost certainly uses it as well – just search the name of your city plus GIS and you're likely to find a "Property Information Portal" of some kind that will let you click on a property and find out all the publicly available information on that parcel of property such as zoning information, lot size, garbage collection zone, school catchment, assessed value and more. That is just the publicly available information; your city or regional district has many other "private" layers that will give them all sorts of other information such as land title information, location of utilities, and who knows what else (it is not publicly available after all).

When we first started on this journey we were pulling old maps that had been provided to the neighborhood watch program years before by the regional district and screenshotting then printing satellite imagery.

Part of the problem with being out in the sticks as we are is that one piece of dirt may look like the one next to it, but one may be crown land and one may belong to a private ranch. Especially when you are looking at lightning strikes in real time, the

ability to know who owns what becomes absolutely indispensable.

What I wanted was to be able to look at a map and say "ok, we've got these properties that are in the area of this new fire so we need to get a hold of those people to let them know!"

Remember what I said about "build a team"? Well a couple of ladies from our group took on the tasks of figuring out the mapping problem and member information gathering respectively, and they worked together over the next month so that by the time the next set of thunderstorms rolled through we had a functioning community map database and emergency broadcast system.

Nat collected the information using Google Forms and fed it to Christina as CSV data which she then imported into the GIS software and allocated to properties.

We used the weather radar app to watch the storm's approach, called the crew together over Messenger, listened to the scanner app while we watched the storm, and when we saw a lightning strike we used the lightning app to determine where it had landed, who owned that property, and then phoned them up to confirm that yes there had been a massive strike that had shaken the house but no it had not started a fire.

Amazing.

The next level beyond this would be to be able to ingest that information that the lightning app is accessing directly into our own GIS layers in real time, and to keep track of them over time because lightening doesn't necessarily start a fire that you can even tell is there or not right away. There are an incredible number of layers that you can add as overlays right over your own map that you might find useful.

Once you are organized into a not for profit society, the opportunities for getting the extras for this at an incredible discount become possible. Take a picture of a spot that you see, have it automatically pinned onto a shared map so that the next crew coming through not only can see it with their eyes but have the exact GPS coordinates to it.

The company that produces the ArcGIS software is called Esri. The software is quite expensive as it is aimed at governments and big time business, but you can apply for their "NPO Program" and if they approve your application, you can get the products for around \$160/year at the time that we qualified for it.

One thing that is really worth underscoring here is that this is all incredibly complex. This is not something that you can just pick up and start doing over the weekend. There are high level professionals making six figures whose job it is to manage GIS systems.

In our case, we were lucky to have *Stobbes* as well as *Urban Systems* in Kamloops, whose former CEO was now the President of our Society, so we were able to tap some of their significant expertise with this software.

Utilization of GIS for our purposes is an ongoing project and later editions of this book may cover it more completely.

## Website

Every brigade or community group needs at least some kind of online presence. It doesn't have to be fancy. In fact, it's probably better if it's not.

But it does need to be free-standing, as in not a Facebook page. You should probably have a Facebook page also, but you need an actual *website*.

Your goal is to have a central place where people in the community—and later, when you're applying for charity status, asking for discounts, or looking for donations—other organizations can go to find out:

- Who you are and how you got started
- How to get involved
- How to contact someone
- How to donate
- What you've been up to lately

That's it.

If you've got someone in your area who knows how to build websites—fantastic. Ask them if they're willing to help out. Ideally, find someone who already owns or manages a local business website. They'll know how to register a domain name, set up basic hosting using a hosting provider such as GoDaddy and a content management system like WordPress (which is what we use), configure and maintain forms and mailing lists, and generally keep things running.

One thing I need to point out is that GoDaddy will offer you a good price for the first year but then it will auto renew at as much as 4x that. They rely on it being too big of an inconvenience for you to move providers. This is their business practice since the beginning, and I have managed a lot of websites and moved the services away from GoDaddy as a result many times over the last couple of decades.

If there's absolutely no one with the skills (or time), use an all-in-one service like Squarespace or Wix. They're more expensive than rolling your own - expect to pay around \$500/year by the time the dust settles, as compared to something more like \$200/year using a hosting solution - but they make it dead simple to set up a nice-looking site with templates. You can have a working page up in a weekend with no technical background at all.

Just keep it simple. Static. Clean.

Think: bulletin board, not magazine.

Avoid posting stuff like "More Coming Soon!" unless you know for a fact it's actually coming. A three-year-old post that promises an update next week screams neglect.

Include the important things. A couple of pictures. Maybe a crew shot. A "Join Us" or "Support Us" button. A way to contact you. That's enough.

Don't overthink it. Don't wait for perfect. Just get it up there so people can find you.

And make sure it is *secure*. The internet is absolutely awash with automated hacking attempts, so use a unique password and store it in a safe place.

# COMMUNICATIONS

## *Legalities*

The value of communication equipment cannot be understated, and if you doubt me just go ahead and disconnect your wifi and see how long it is before your kids come wandering up with connectivity complaints.

Buffering problems with YouTube cause enough anxiety in a normal, non-emergency household—just imagine what happens when you NEED to get a hold of outside help in an emergency situation and you cannot, or when you can see a danger at the fire line that the nozzle operator doesn't seem to notice and you need to tell them but over the roar of engines and fire they can't hear you.

This is another one of the places where we slide into legal gray zones.

As someone who has had a lifelong interest in amateur radio and is a licensed amateur radio operator, I'm certainly not going to advocate for unlicensed radio use, but when we're dealing with emergency situations there's a general understanding that any person can use any radio to call for help.

The general rule of thumb is that, in an emergency, anyone can transmit on any frequency.

Just keep in mind that Industry Canada has the ability to assess "Administrative Monetary Penalties"—what us lay people would call fines—that are substantial:

### **For individuals:**

- Up to \$25,000 for the first offense
- Up to \$50,000 for subsequent violations

**For corporations and other entities** (which could include your not-for-profit society or renegade fire brigade):

- Up to \$10,000,000 for their first offense

- Up to \$15,000,000 for subsequent ones

It's serious business and something you will want to take into serious consideration given how a \$25K fine could change your life for the worse.

So, everything we're going to talk about in the coming sections is just a primer to give you an idea of what's available and how to use it in the unfortunate event that you need to.

Ultimately, if you are going to be organized and prepared, it is well worth the investment of time to set up a properly organized not-for-profit society and then getting a frequency assignment and operating according to the legislation.

## *Comms*

*Communications* ("comms") are an incredibly important part of any emergency planning. It means not just the ability to call for help, but to talk to the people around you without having to be standing right next to them and shouting.

A fire scene is a very loud environment. You've got running trucks, running pumps, the roar of a fire, sometimes howling wind and chainsaws and helicopters and airplanes—even talking to someone ten feet away might not be possible over the din of the chaos.

If you're running the pump and there's a quarter tank left, how do you let the nozzle operator know when they're at the other end of 200' of hose? Or when you've refilled and are about to start the pump back up?

Don't ever start a pump up without the other end of the hose knowing that it's coming.

How is your lookout going to warn you that some ignited debris has rolled down the hill behind you and put you into an entrapment scenario without you noticing because you are laser-focused on turning the square meter patch of Earth in front of you into mud?

Lucky for us, there has never in the history of humanity been more options for communications, so we have some pretty excellent choices.

And just like when choosing to build your apparatus, the most cost-effective solution will be to choose something that everyone already owns—in this case, the cell phone.

## *Cellular*

It's kind of funny that we still call these devices "phones" because probably the least useful part of them is their ability to make phone calls.

The modern "smart phone" is a marvel and the ultimate tool for modern fire operations, owing mostly to the power of portability and connectivity and being able to use apps that can put your little renegade brigade almost on par with the quality of data that the "pros" are using today.

However, texting and telephone calls are not ideal in an emergency environment.

If you're going to try to write texts when you're under duress or wearing gloves, you're likely to find that autocorrect mangles your intended message, and being rapidly clear and concise is extremely important in those moments. Even making telephone calls takes too long to locate contacts and wait for the call to go through and then wait for the connection to stabilize - if it ever even does.

There's a reason police, fire and ambulance all still use two-way radios even though it's well into the 21st century, and it's not because they're just old and stuck in their old ways.

### *Zello: Push-to-Talk Over Cellular*

There is an option that can turn your cellular (and cellular network) into something resembling a two-way radio: Zello.

Zello is an app that lets you quickly record short audio messages and then send them to individuals or groups that you set up, rather like a two-way radio—hold it down and talk then let go and poof! Your message is broadcast to wherever you've set it to.

What's more, there are a number of emerging "radios" and accessories for phones (i.e., Bluetooth connecting devices and other "microphones" that plug into Android cellphones) that can link to Zello on your phone, so it really feels and behaves like a two-way radio but actually uses data uplinks (cellular or wifi) to transmit the

message over the internet rather than by using VHF or UHF radio frequency transmission.

This is actually better than "traditional radio" in many ways, in that you're not limited by "line of sight" or broadcast distance—ostensibly you could include someone in a different time zone in your group and they would get it at the same time just like any other internet communication.

No repeaters to build, install, maintain, and navigate.

We did purchase a few of these bluetooth remote mics but found that due to the inconsistency of connectivity to the cellular network while we were mobile, that Zello was too unreliable.

### *The Rural Coverage Problem*

Go around the corner up Goose Lake road and by kilometer two there are exactly zero bars on your phone, which means your "radio" isn't going to receive anything either, even if the person you're trying to talk to is ten feet away because it's got to go all the way to the internet before it comes back to them.

During the Rossmore Lake fire, most of the time we were outside of cell service. We knew a few spots where you could go on this stretch of road or that hilltop and park for a few minutes to "catch a bar of service," whereupon we'd be bombarded by all the messages that had not been able to be delivered. It was actually a major hindrance on our operations and on more than one occasion we had to send one of our team to go and park there to relay messages to the outside world.

If it were not for the "dead spots" then this absolutely would have been the route we would have gone—it is much more cost effective, requires almost no new equipment or (new) ongoing maintenance since you're already paying for your phone service, there are no frequency licensing issues and no matter how far from each other you get, as long as you've got data coverage—either cellular or wifi—you can hear each other as clearly as if they're next door. This is not the case with UHF radios. Depending upon the topography, you could be a few dozen meters away and not be able to break squelch.

### *Cell Boosters*

Of course, cellular boosters are an option you may want to consider if there are only

certain poor reception spots. If you're rural, chances are many of the folks in your area may already have them installed in their trucks and homes.

I know I do, and wonder why I hadn't invested in it sooner.

The basic principle of a cell booster is that it takes a big cellular antenna—just think of how tiny the antenna is inside your phone compared to the booster antennas that are themselves bigger than your entire phone—and it puts it outside of your vehicle. Remember, your steel vehicle is like a Faraday cage, interfering with all kinds of radio signals. This is why your handheld walkie-talkie is going to completely suck from within your truck. Then, it puts a smaller "cell tower" inside your vehicle with a linear amplifier in-between. Basically the bigger, outside antenna catches the signal, runs it through the amp which "turns up the volume" on the signal, and then broadcasts it to your phone inside.

They actually work. Like, "how did I live without this before, why did I wait so long to do this" work. Since installing a cell booster in my truck, I see a difference of between 10 and 30 dB. That's the difference of one bar to four bars. It's the difference between "c'mon why aren't you loading" and everything just working properly.

The caveat of course is that they are not a signal creator, just a booster, and because zero times two is still zero, if there's zero signal available to you then you'll still get zero signal.

It's one of the things that I think most people who live rurally or do a lot of highway travelling or overlanding and camping should probably have in their vehicles.

They're not too expensive, but you should expect to pay around \$700 CDN or so retail and if you're not handy with this kind of thing then also some more for the installation of it.

The one I bought was the WeBoost Reach OTR. This is not a paid review, it's just a product I bought and it works. It's well reviewed. I bought mine off someone for \$425 and they threw in an extra antenna and some bonus hardware. Check your online marketplace listings before ordering something new.

One thing to consider however is that this will provide you with a boosted cellular signal inside your vehicle but once you get away from the tiny cell tower inside your cabin on the other side of your booster, your signal will drop back to regular outside

levels, and so is not an effective solution if you were considering using a network radio product such as Zello.

### *Infrastructure Vulnerability*

Finally, in a truly catastrophic emergency event, there is a possibility (and often, a likelihood) that infrastructure will become damaged or destroyed—power goes out, cellular towers find themselves in the path of flames—and without reliable internet, if you're relying on cellular and the tower gets torched (as it did in Monte Lake in 2021), you're back to no comms.

One solution would be to build in a mobile satellite internet uplink capacity to your outfit.

## *Satellite Uplinks*

In the spring of 2023 I worked on a dev team for a telecom provider that was developing (and then building) a prototype field kit as part of a contract for the Government of Canada in an initiative to get internet access to remote First Nations communities. These were all-in-one Pelican cases packed with Starlink and network gear, designed to be shipped and very easily deployed under almost any scenario by almost anyone regardless of technical expertise.

They were super cool. You could plug any kind of power into it and it would automatically recognize it and start using it, plus it would charge the onboard batteries which themselves could run the unit for around 24 hours without any kind of power input. Basically a blindly launched desert island uplink kit.

My proposal was that we would do something similar, albeit quite a bit simpler and non-proprietary, as those kits were designed to work under an array of circumstances by any number of unknown end users, whereas we could design it to be used specifically in our use case—i.e., by our own crew and on a fire line.

Basically, we use a Starlink dish to pull network down to a truck.

### *Initial Design Considerations*

My original proposal included replacing the default Starlink router with a different router that would allow external wifi antennas, and then a high-gain antenna that would give the surrounding area a boost for the wifi service.

This turned out to be problematic as there are some pretty strict regulations in Canada on how powerful a wifi router can be, which includes how big the antennas can be. This is good, of course, for the vast majority of applications—imagine if the average person in a city decided "I am having connectivity issues so I will just buy a more powerful router"... it becomes an arms race of signal amplification and could make entire areas of cities unusable for wifi traffic.

Of course, when we are so far out in the back field that even cellular connections

aren't working, we aren't worried about interfering with other people's wifi connection, but that reasoning is why there aren't any readily available "high boost" consumer products available for purchase, and so it isn't a viable option for your renegade brigade.

As it turns out, the default router that comes with the Starlink dish is perfectly fine and we are all able to connect to it quite easily for a fair radius around the truck it is deployed from.

### *Our Setup*

So we bought a Pelican case that is designed to fit the Starlink dish and packaged it up so that it can be shared between trucks.

We had considered permanently mounting them to our trucks, but the "high incidence" dishes that can be used while in motion are quite expensive (like 10x the price of the regular residential dishes).

The truck it is deployed from needs to have an inverter so that you can plug the AC plug from the router into it to power the router and dish. Most new trucks have these built in; if yours doesn't then you will need to have one installed. A 300W inverter is sufficient.

### *Deployment*

For deployment, you need to set it out and plug it in. It will scan the sky and arrange itself so that it gets the best view it can from where you have put it. Being "higher" doesn't necessarily make a difference—it is already going to space, a few extra feet doesn't really matter—what does matter is that there aren't any obstructions. It sees through trees pretty well but the more clear view it has, the better your connection is going to be. The roof of your truck cab is a good spot, as it won't get tripped on there either.

Another thing is that the cable it comes with is quite long. These are meant to pretty much be installed on the roof of your house and then run the cable all the way inside, but here we will have the router right next to the dish basically. Use some good cable management so that you aren't having a jumbled mess of wiring flopping around your fire scene. Unfortunately at this time there is not a shorter cable available for purchase and it is a proprietary connector so you can't just build your own out of Cat-5, even if you have that particular tool and skillset.

## *Setup and Management*

You will need to have the app on your phone to manage the connection. Make sure that your service is already started before you really need it. Updates can sometimes take over, so make sure you are firing it up frequently. Also, I recommend setting the wifi password to something very simple and then sticking it to the router. Have everyone on your team connect to it at least once during peacetime so that when the poop hits the fan and you deploy the dish at the scene, they automatically connect to it and you're not troubleshooting internet connectivity while trying to get a fire squashed.

## *Important Limitations*

You might be tempted to permanently or semi-permanently mount the dish to your truck. Don't. These dishes are not built to withstand the shaking that a vehicle in motion will get. You will need to subscribe to the "mobile" service from Starlink which allows you to connect it in more than one location, but that does not mean that it should stay up and connected while moving. As your vehicle turns around roadways, the angle that the dish is pointing at will also change and you will lose the connection anyway. The motor that moves the dish is fragile and the dish is basically garbage if you break that. Just... don't.

Once you have finished and need to put it away, you will need to "park" the dish to get the arm to go back down so you can put it away in the case. This is done with the app. Select Shutdown from the app and it will park it away.

## *Two Way Radio*

This section is also going to be one of those legal gray areas because radio transmission is something for which you're legally required to have a license. Whether you are broadcasting music to the FM dial of people's car radios, dispatching courier pickups, calling CQ to other amateurs, or using logging road frequencies, either yourself or your equipment is legally required to have a license to transmit on whatever frequency it is doing so on.

You can *listen* to any frequency, without transmitting, which is the work-around for how legally gray radios like the Baofeng UV5R - which basically lets you just punch in any frequency and start using it - got around the import rules, at least at first.

There are off-the-shelf options that you can get. These generally work on the FRS or GMRS frequencies (more on that later), and technically when you buy a radio off the shelf at some retailer like Canadian Tire the license to transmit on those frequencies has already been paid for and applied to those radios.

These may may or may not be a good option for you, at least at first. We'll discuss that. But technically, those are not intended for use by an organized team of any kind. Their target market is “camping radios” and they work great for that. When my kids were little and I would go fishing early in the morning when we would go camping, I would leave one on the picnic table and take one in the boat with me, then whoever was making breakfast could call to let us know that breakfast was ready without shouting across the lake and waking the rest of the campsite.

But they also work great for when you have 200' of hose and a running pump.

I'm not advocating you break the law—on the contrary, I want you to understand what the law covers so you can comply... at least as much as reasonably possible under remote and emergency circumstances.

I'm just here to teach you the basics of what all this entails so you can make informed decisions about your radio strategy.

Ahead of time.

I'm going to try to keep this as non-technical as possible, but it will help if you are comfortable with technical concepts because some of it does get complicated.

If you have someone in your community who is a HAM radio operator - and it is very likely that you do, almost every community group I have talked to since has "found their ham" - then talk to them about being your "radio person".

Amateur Radio Operators ("HAMs") are generally very friendly and helpful and happy to share their knowledge, and are often dying for an opportunity to put some of all the cool stuff they know to work.

And honestly, if you don't have the foggiest about all of this, you probably shouldn't even be attempting to set up a comms plan without guidance. But hopefully this will give you a little bit of a primer on what's necessary and why.

## *Frequencies*

The overarching concept you need to understand when talking about frequencies is that the whole universe is a grand frequency spectrum of different energy, and if you have the right receiving equipment then you can detect a transmission:

- Energy of certain wavelengths aka frequency can be detected by your eyes and we call that light.
- Vibrations propagating through air as a medium between certain frequencies can be detected by our ears and we call that sound.
- AM radio is a band that your car stereo can detect and we confusingly call that radio but there are a lot of other “radio stations” that your car can not detect but which nevertheless are there.

Police, fire, ambulance, logging trucks, courier vehicles all generally transmit in the band known as VHF (“Very High Frequency”) and it’s likely the band that you’re going to want to be using.

Really, all radio transmissions are light, just light that your eyes aren’t set up to see. There’s brightness and shadows.

There are technical reasons for this, but at the end of the day it’s mostly to do with how far the signal can travel and how readily available the equipment is.

### *Consumer Radios: Better Than Nothing (but not by much)*

You may be tempted to just buy a set of radios from Canadian Tire or Amazon—four radios for \$125! Sixteen radios for \$300! They’re advertised as being for camping and they use what’s called the Family Radio Service (FRS) or the General Mobile Radio Service (GMRS), both of which share some channels and are in the UHF (“Ultra High Frequency”) band.

In the Rossmore Lake fire, one of our community members had already purchased a 16-pack of these types of radios for their own purposes, and that was what we had to

work with so that's what we used.

For what it's worth, we settled on Channel 15 which according to the band plan is the channel that allows you the most powerful output and therefore range.

I would often say "it's better than nothing but not by much."

They were surely a game changer to be able to communicate while on site, warning the nozzle man that the line was about to be charged, calling down to the guys off in the bush to see if that was their headlights you could see. Calling out as you arrived in the general vicinity of where you left them when you went to go pick up water to find out where they'd progressed to.

Sometimes you would hike deep into the bush chasing a smoke smell. It was really handy to be able to communicate back to the trucks without having to go back.

A thousand times better than nothing, but the range was so, so limited that we were often frustrated. Half a kilometre even line of sight and it was almost unreadable sometimes. Go just over the hill and you disappear.

This has to do with the band and the output power.

### *Understanding Power and Range*

There are many factors that go into how effective a radio's output is: the band it is transmitting on (which has to do with how wide or narrow the waves are), output power (wattage), which is how big the waves are, the antenna type and size and calibration, even the specific electronic components that go into its boards all play a role, among other esoteric things like if there has been a lot of solar activity.

No seriously, "because there was a solar flare two days ago" is a perfectly reasonable explanation as to why you couldn't understand the last transmission sometimes. Even just the sunlight itself interferes with the quality of radio transmission, which is why the best time for long distance "skip" and DX listening is done just after sunset.

Anyway, for our purposes, the biggest factors are going to be the band that it's on and the output power in Watts.

The UHF band is a higher frequency range than VHF which makes it better at penetrating through smaller objects like buildings (useful in urban environments) but not as good at longer range communications because it doesn't spread out around

bigger objects like hills or mountains, which you'll find is probably going to be more important out in your rural community.

In addition to being UHF, as they are working on the FRS and GMRS channel frequencies the output power is significantly limited—for example most of the FRS channels are limited to 0.5W output.

Compare that to your average VHF mobile device output of between 25-50W.

This is by design, of course. If your camping walkie talkie could broadcast to everyone on a channel within the region, they wouldn't be much use. You'd hear chaos all the time, which might make for entertaining listening but not very functional when you're hearing someone from a province over talking over the person you're trying to communicate with just over yonder.

### *Finding Existing Frequencies*

Of course, back to pragmatic realities once more, the fact of the matter is that many people already own these kinds of "camping walkie-talkie" portables so having the ability to jump in and communicate with them can be extremely valuable.

On more than one occasion I have shown up to help a group to find that they already had a set of programmed radios. Maybe it's a rancher with a large property who maintains his own radio license so he can communicate with the hands.

If you happened to have a radio that was capable of broadcasting and receiving on any frequency on the VHF or UHF band (although not necessarily licensed to do so), that would be extremely helpful in this emergency situation... but how do you find out what frequency they are on?

Two ways.

First, if you have cell service and therefore the internet, if it's an "off the shelf" product then you can pull the battery off of one of their radios and get the specific model number on the silver plate under the battery. So for example, "Retevis RT27" is a common Amazon item many people buy because they're cheap. It's actually a Baofeng BF-888 that's been rebranded.

So you then open up a search window on your phone and look up "retevis rt27 channel frequencies" and you will find that it's using the FRS frequencies. You can then search "FRS frequency list" and it will show you that channel 1 is 462.5625.

Dial that in and do a radio check (press the transmit button and see if the other radio picks you up).

A list of these frequencies is included in the back of this book. It is very convenient to keep them in your truck with you for this purpose.

## *Understanding Squelch*

Static is always there, it is a product of the universal background radiation and is made louder by everything from sunlight to local wifi and someone microwaving a hot pocket.

Squelch is just the basic mute function a radio uses to block out the "static" sound you hear when there isn't a transmission. The idea is that you turn up the squelch until the static disappears, and then any signal that is stronger than that "breaks squelch" and you can hear it. The AM/FM radio in your modern car uses squelch when you "seek scan" for stations.

With a traditional rotary squelch you may find that you have to adjust it from time to time depending on how loud the background noise is. There are times where there's a lot of Radio Frequency Interference ("RFI") from power lines or solar flares or WHO KNOWS what, so you will have to turn it up enough to keep it from popping through with loud and annoying *KSSHHH-KSSSHH-KSSSHH*. On the flip side, sometimes a transmission is distant and faint, so you might have to turn the squelch down because the squelch keeps cutting them off.

One thing I have found previously is that a lot of these radios use a "tone squelch" system.

Tone squelch deals with this by having all the radios in a set programmed to send a special tone the other radios are programmed to listen for before "opening up" the squelch. Like a very elementary password. In this case, even though I was standing right next to him and obviously transmitting powerfully enough to break through his squelch (his "receiving light" even came on), because I wasn't transmitting the special tone or password, his radio didn't allow my transmission to pop through and make a noise. It thought that my transmission was just really powerful interference.

Tone squelch can be very useful especially if you live in an area where you tend to get a lot of RFI, such as if you have power transmission lines overhead, but it poses interoperability issues. If it's only ever you and your family or team, then you can

manage the radios yourself and get them all programmed to play nicely together, but if you're in a spread out community where other neighbors might have their own radios it will make communications difficult when it's least convenient.

Chances are very good that they are all on the same frequencies, however, and if you tune one of your radios to channel 15 and transmit, their radios will make noise on channel 15 also.

It is worth noting that when using tone squelch, the interference is still there, you just don't hear it. So, if there is really powerful interference then the transmissions that still turn the tone squelch key will also carry that interference with them.

### *Using a Scanner*

The other way to "snag" a frequency when you're not sure what they're using is to have a scanner set up in your truck (or a handheld).

I've had scanners in my vehicles my entire life just because I am a radio dork and enjoy listening to what's going on around me, especially when there's major events going on such as a wildfire encroaching on an urban neighborhood.

My most recent scanner is a Uniden Bearcat BC335N that I picked up off Amazon for \$120. The best part of this scanner in this circumstance is it has what's called "Close Call," which is a feature found in many if not most modern scanners and which means that when enabled, it will constantly be checking for strong transmissions coming from nearby sources.

If you've got one of these, all you need to do is to ask them to "key up" (begin transmitting)—the scanner will beep to say that it's discovered a nearby transmission and tune in. Then just quickly press "Hold" and it will display the frequency. Dial that into your portable and you're in business. Assuming it's not set to use tone squelch, of course.

### *Choosing Your Frequency*

Throughout the world there are "band plans" and Innovation, Science and Economic Development (ISEC) in Canada and the FCC in the states are no different.

These band plans designate what part of the frequency spectrum is to be used for what, and when you purchase a frequency license for your business or organization it gets assigned according to that band plan. There are frequencies that HAM

(Amateur) Radio Operators are assigned to use for chewing the fat on and there are frequencies for businesses and aviation and emergency services.

The most important thing you need to understand is where NOT to transmit. Don't just pick a random number to dial in and decide "this will be our frequency."

420.690MHz is a frequency that Elon Musk might pick because it's funny but you aren't a billionaire who just gets to make up his own new rules and unlike him, you will see consequences for your actions.

You need to look into your area and see what frequencies police, fire, ambulance, wildfire, aviation, marine, and private industry are using and then stay away from them.

I can't stress enough how important it is that you don't just pick random frequencies.

Even if that one that you pick doesn't have anything on it, it may be close enough to something that does that your transmissions will interfere with it. This might be mission critical frequencies for emergency services, or sensitive scientific or weather monitoring and recording equipment, or a business who has legitimately licensed it.

The way radio works, there are no "channels" just a grand frequency spectrum. What we call a "channel" is just a frequency that the regulatory powers that be have decided is far enough from another "channel" to avoid the worst of interference.

This is *why* band plans exist, and it isn't just regulation for the sake of regulation.

When you broadcast on a frequency, it doesn't go just on that frequency, there is a curve above and below it where it bleeds out to. Think of tuning an AM radio up and down, you can hear the more powerful stations as you manually approach it before it is clearest on its actual frequency.

This is why radio operators and radios are required to be licensed. There truly is a lot to it that needs to be taken into consideration and planned for and if the average person just picks up a Baofeng and starts broadcasting wherever they like there will be chaos on many levels.

My strong admonishment continues to be that you should apply for and use an assigned frequency, legitimately. Failing that, in rural and emergency situations, FRS and GMRS radios are better than nothing when life and property is at risk.

But if you take nothing else from this section, is that you really **must not just pick your own frequency and start using it.**

### *Resource Road (RR) and LADD Channels*

One choice that several Renegade Brigades I have talked to have ended up using are the RR and LADD channels, and in my opinion it's the safest option short of obtaining your own frequency assignment and licensing to be certain that you will not be interfering with anyone else's critical operations.

Here in Canada there is a section of the VHF spectrum set aside for Resource Road (RR) and Logging Administration and Dispatch (LADD) usage, as well as five Loading Channels (LD), all collectively known as "the logging channels."

Also truckers in general have these radios in their trucks for those purposes, and with these channels now having eclipsed CB, to truckers they're often known as "the Highway Channels."

Basically these are channels that were set aside by ISEC for use by loggers and logging road users who needed to communicate with each other on a common channel plan while out in the bush, but could not necessarily be expected to obtain and maintain licenses and frequency assignments.

There it is again... pragmatic realities. Even the authorities recognize them sometimes.

They have essentially become the modern CB channels, and this is the reason that if you find and connect an old CB you will have difficulty finding anyone on it. At least in western Canada.

The RR channels are based around a map of regions within the province so that if you're in an area—for example Goose Lake Road here in Knutsford—then the channel to be on is RR-17. When you pull onto the road when there is active logging, you "call your kilometers" as these resource roads can be narrow and twisty and large vehicles (such as loaded logging trucks) have difficulty stopping when encountering another vehicle on them.

You pull onto the road and say what you are and where you are and the direction you're heading. "Goose Lake Road half ton pickup kilometer one up." If you get a reply that says "Goose lake road loaded logging truck kilometer two down" then you

know to hit the brakes and start backing up or looking for a spot where you can move over enough that a big rig can sneak by you because there's a heavy logging truck coming downhill towards you.

Don't forget to tell them you're doing that!

The defacto rules are the same as maritime rules: the smaller vessel yields to the bigger.

In northern Alberta in the oil patch these roads are used for oil and gas work more than timber activities, but the rules still apply. I have personally had the experience of coming around a corner and encountering a rig move. I should have been calling my kilometers, so then I got to go in reverse for about a kilometer until I got to an intersecting goat path I could back onto and let the rig pass by.

### *Why RR Channels Work for Renegade Fire Brigades*

The reason these frequencies end up getting used by so many renegade fire brigades is because there are so many radios out there configured already to use these frequencies, you know that you're not going to interfere with anything important and there's already an understanding that they are going to be used without the usual expectations of contact rules (and licensing) that HAMs are bound by.

When our renegade brigade began interfacing with BCWS, it was RR-17 that we were instructed to communicate with them on. Later on (once we'd built some trust) we were asked to use their own channels (named after types of metals like "Iron" and "Copper"), but those were all carefully controlled by Incident Command and there's a particular code of conduct when using those channels.

Look up your area's RR allocation map and see what's in use in your area. For us here in Knutsford, since we are in channel allocation for Greenstone which is RR-17, then we would not choose to use RR-17 for our operations just in case the frequency were needed by someone actually using a Resource Road. It also reduces the chances of some trucker who happens to be tuned in just in case someone calls a kilometer ahead of them stumbling into your fireline chatter and not understanding what you're up to and for a kick deciding to cause interference.

As well, during a major event, that particular channel is going to become congested with traffic as water tenders and equipment go up and down the roads. At one point we said "let's use RR-16" so we weren't competing with those other operators for

airtime. Then when RR-16 got congested we chose RR-15. It all spills over.

## *The Legal Reality*

It's important to note here that none of what I've covered here is technically legal.

There are very specific things that a radio that is going to use the RR channels needs to have in order to be compliant with regulations—the license is all based on antenna type and maximum output, etc.—and even using GMRS or FRS channels (as in the "camping walkie-talkie") are technically not for use for anything like what we're discussing here.

All that being said, there's also provisions in *The Act* that essentially say "in an emergency none of this matters."

To be specific, under **Section 4(1)(b)** of the *Radiocommunication Regulations (SOR/96-484)*

"No person shall... use radio apparatus to transmit anything except as authorized by a radio authorization or under these Regulations, except... (b) where the person operates radio apparatus in accordance with the International Telecommunication Union Radio Regulations for the purpose of obtaining or providing *assistance in an emergency*."

In effect, the idea is that if there's a real emergency going on, someone should not worry about reprisal for whether or not they are appropriately licensed to use a particular radio (or frequency) to call for help or do what needs to be done to end the emergency.

Although none of our radios were properly licensed, I can tell you that all the official folks were quite glad that we were able to communicate with them on the channels they needed us to when we needed to.

Eventually we were communicating directly with the pilots operating the helis in our area, directing them to problem areas and being sent away from other areas they wanted to hit. The ability to do so was priceless, legal or not... in a crisis, nobody cares about what the finer points of the legislation are.

There are war time rules and there are peace time rules.

And one of my favorite sayings is that *it is easier to get forgiveness than it is to get*

*permission.*

Ultimately if you are going to be an organized fire brigade or community group, you need to set your sights on obtaining a proper frequency assignment and licenses. To do this you will need to have an established legal entity (ie a not for profit Society) and all that takes time, for us it was around 18 months after the Rossmore Lake fire before we got things lined up to the point that we could get our frequency and licenses. More on that under “Going Legit”.

Next you will need to procure some properly certified name brand radios.

Something with "not too many buttons" on them because the more buttons there are, the easier it is for someone who doesn't know what they're doing to screw it up.

As with the decommissioned PPE, if you poke around and make friends with key persons in charge of certain aspects of certain organizations that deal with such things, there are often VHF radios sitting in a box somewhere - or worse, slated for *disposal* - that they would happily donate to your brigade as long as you keep it “on the down low”.

## *Portable VS Mobile*

Portable and Mobile might mean pretty much the same thing to you, but in radio-speak, "portable" refers to "walkie talkies" and "mobile" refers to vehicle-installed radio systems.

Even though a hand-held radio is indeed very mobile.

They each have their advantages and disadvantages.

The portable has the obvious advantage of being the most portable, so you can clip it to your belt or tuck it into your pocket or pop it into a chest rig and have it with you outside of a vehicle while you're working. It goes without saying that these are most useful on a fireline where you've got people in different locations who need to stay in contact with each other.

The disadvantages are:

- They are not nearly as powerful—average output is 5W.
- Their antennas are small and constantly moving behind obstacles and they work very poorly from within a vehicle (which acts as a kind of Faraday cage), whereas a mobile antenna is always fixed at a good location on your vehicle.
- They require batteries and if you were to pick up a radio to connect with someone and discovered that the battery is dead then you're suddenly in trouble.
- They are easily lost or stolen. If you are handing them out to randoms who are helping, there is a good chance they will not come back. They routinely "go missing" and every year I have to write off another few radios, despite my best efforts.

Before you leave your house, always turn on each of your portables and make sure that they've got a full charge of battery. Do it before you leave. The batteries last surprisingly long if you're not using them (transmitting) very much.

Always start with a full charge which means that whenever you come back after

using them, throw them onto the chargers.

If possible, keep a couple extra batteries (and radios) in your truck so that if things start to die (an 8 hour day turns into a 16 hour day), you can just pop in a fresh one like a fully loaded magazine in a pistol.

Chi-chick!

The mobile (vehicle-installed) radios have more powerful output (generally 5x-10x the output) and you can put a better antenna on it which is located outside of your vehicle. And as long as you're running your engine, the battery never dies.

I have a friend who bought a very expensive Kenwood portable that can talk across the city, if he is outside of his car, but the moment he got into his vehicle at the same location I lost the signal completely. Your vehicle acts as a Faraday cage, blocking the transmissions, so if you are going to be driving and communicating then you will find that having the mobile installed is highly advantageous. Also, because of the increased range it provides over portables, you may find that the driver can act as a relay between the folks on your fireline and someone outside of the range of their radios—for example the nozzle operator calls over that the nozzle just fell apart then the driver can radio to someone they know is on their way to check that they have an extra nozzle.

Also, on that note, always have an extra nozzle in your truck.

Ultimately, in answer to the question "should we get mobile or portable radios", the answer is "yes".

I have my mobile installed in the truck, the scanner installed in the truck, and four portables that are always charged up in there—one for every person in the truck, even though you have the mobile for the driver, if the driver needs to get out for some reason they need a radio too.

Always be sure everyone on the team has a radio.

When things were really popping off and uncertainty was the vibe every single day, I brought at least ten radios with me—fully charged—when I left the house every day.

Very handy for when someone new pulls up and is joining your line.

## *Mobile Radios*

When it comes to mobile radios, you can usually find some used ones for relatively cheap (expect to spend around \$200) on the online marketplaces and generally one is as good as the next, with minor variations between models.

Ideally you want one with at least enough channels that you can program in whatever frequency you end up using in your community plus the RR and LADD channels, possibly even the Wildfire frequencies (the metal named ones) if you're going to be potentially interfacing with them (just make damn sure you never transmit on them unless you're invited to do so).

I have previously picked up an old off-brand 35W VHF on marketplace for \$60. It only has eight channels so I had it programmed with the channel our community had settled on, the frequency one of our neighboring brigades used in case we ever did mutual aid or training with them, then the LADD frequencies and the Resource Road channel in use in our area.

Really, that's all we would ever reasonably need to have, although having a radio that had many channels would have been nice so that I could have had all the RR channels plus the BCWS channels programmed just in case I went into another part of the province and needed to access it, although I do have a \$5 antenna adapter that allows me to connect my vehicle antenna to my Baofeng portable, which is lower power but is capable of using any frequency I can type in should the need arise.

There are a few things that you'll want to look out for when buying a used mobile radio.

## *New VS Used*

Some folks like to buy stuff brand new so they know they're getting the latest and greatest, and so it's got a warranty if need be. I've owned both brand new and used radios, cars and houses, and honestly each has their advantages and disadvantages.

In my experience, local radio service centers will always have some stock of new

radios available and it's almost always overpriced. These businesses generally cater to other businesses that just need to contract a company to provide good equipment and have it set up right without having to worry about it, and it's a service for which they pay.

As an individual or startup brigade, you're likely to want to carefully watch how you spend your pennies so going to a local company to pick up a radio probably isn't going to be something you'll want to do.

Local retailers will, however, often have a box of used radios they might be willing to sell you for very cheap. Often, you can get them for free. Tell them what you're doing and see if there's something they can help you out with. Once they realize you're not going to spend \$1000 on a radio, quite often they'll be happy to make a few bucks off you anyway with what they consider to be some junk sitting in a box, and might even throw in the programming just to make it happen.

If they don't, however, there's always the online used goods marketplace and if there is stock available to you at a reasonable rate then I would have no qualms about purchasing used, assuming it works. Usually these ones come already programmed with the RR and LADD channels you'll want to use anyway, so you save on the programming fees—unless you can program it yourself, i.e., you have the right cable to connect it to CHIRP.

As an aside, although some "local" shops are not entirely cooperative and other times outright hostile if you're not their target demographic, some "local" radio shops that are perhaps in neighbouring towns are downright hospitable to the "less qualified," especially when they understand what you're doing. If you walk into the local radio dealer and they seem confused, uninterested, befuddled, or hostile, then check neighbouring centres because some of them can be very helpful.

However sometimes you'll just end up buying something off of Marketplace.

### *"IT'S BEEN TESTED"*

If you go to buy a used radio and they tell you it's "been tested" and especially if they don't have an antenna for it you should be wary and ask some follow-up questions.

People who don't know about radios will sometimes hook them up to power, without an antenna (likely thinking something along the lines of "my living room stereo doesn't have an antenna and it still picks up the CBC!"), and try keying up the mic to

see if the transmit light comes on.

This is bad.

When you are transmitting, you are basically forcing a flow of electricity down a specific path and out to be “radiated” out an antenna. Think of it like a sprinkler at the end of a hose.

Whereas, when you are receiving a transmission, you are actually catching waves that were made inside someone else's radio, like an upside down umbrella, even if they're hundreds or even thousands of kilometers away (as in the case with "skip").

If you receive without an antenna, your umbrella is just really small.

If you transmit without an antenna, the metaphorical valve on the end of the hose is shut and the transmission reflects back to the conductor that made it (like a "water hammer" which is something else we cover in pump operations), which creates a phenomenon called standing waves. Without getting too technical, think of these waves as in a bathtub, bouncing off the far end and then meeting the waves that are coming, doubling in size and creating super waves from smaller ones.

In physics it's called "constructive interference."

Just like the good old fashioned "double bounce" on a trampoline, or the reported “rogue waves” out at sea.

But with nowhere to go, all that energy stays inside the radio and very quickly builds up and unless it's got some good protective circuitry—which if you're buying a cheapie mobile off marketplace from someone who doesn't know about them, it probably does not—then it will basically fry the transceiver, and you'll have no way to tell just by looking at it.

## *PROGRAMMABILITY*

This affects the portables as well but not as much as I'm going to discuss a specific type of portable to get you started in that section.

With that little 8 channel mobile I picked up, I very nearly wasn't able to use it at all as it was an old, off-brand and I didn't have a programming cable for it. I took it to a local radio service company and they very nearly couldn't program it. In the end they did manage to squeak a few channels into it using some ancient software they had

kicking around on their service computer, but I did end up having to pay \$80 for this service—more than the cost of the radio itself.

If I had taken that into consideration when I bought it—that the price to make it usable was actually \$140 and not \$60—then I might have just bit the bullet and bought something better online for \$80 more rather than paying that much for an old, extremely limited 8 channel radio whose functionality was still dubious as I hadn't had a chance to test it at all.

If you choose to order a radio new—or at least get one that is somewhat current—then it might come with a programming cable or you can order one off Amazon for \$20 or so. That will be something you want to check for before buying, it is worth having because if you have to take it to a service center even once you will dramatically increase your costs and if you have to take it back every time you decide you want to add a specific frequency then it will get outrageous very quickly, especially if you're doing several radios.

These types of radios are generally programmed using some kind of microphone port interface, so don't worry if the one you've got your eye on doesn't have a USB port, very few do and the radios still need to be programmed somehow. The software sends frequencies to communicate with the radio very much like how dialup modems did in the old days (or fax machines still do).

All you need is the right USB adapter to connect to those microphone and headphone ports, which usually will be either a RJ-45 connector (like a network cable or "fat phone plug") or a standard portable radio "combo jack" (two barrel jacks next to each other, one 3.5mm and the other 2.5mm), and the right software to go along with it and that can usually be found on the manufacturer's website (or "CHIRP" which is a free and open source radio programming software that covers most radios and is referenced in the back of this book).

One thing you should check ahead of time is if the specific radio you are considering getting can be programmed with CHIRP. We were given a batch of Motorola radios, but unfortunately CHIRP couldn't talk to them, we needed to buy the proprietary software from Motorola. If you are getting 20 radios for free then it will be worth paying the \$100 for the software and then you can do it all yourself, but if you are getting one or two at a time, then either getting the cable and software to program it right or else taking it in to be programmed will be another expense you need to account for.

## *ELECTRICAL CONNECTIONS*

Any mobile radio you get is going to natively want roughly 12VDC, which is what your vehicle's electrical system uses.

Often you'll get a "cigarette lighter" style plugin for connecting it to power in your truck. These are very convenient because every vehicle has one and you can easily install a splitter if your existing one is already in use by a dashcam or USB power adapter. The cigarette lighter connection is great because you don't have to muck about with hardwiring it and it makes it easy to just pull it out and put it into a different vehicle if need be (as long as that other vehicle has an antenna, which we'll get into shortly).

As well, it will automatically turn on or off when your vehicle is started ("ACC" or "Accessory" fuse), which will keep you from shutting off your truck, forgetting to turn off the radio, and then draining your battery while you sleep. Furthermore, it'll turn back on again when you start the truck back up without having to remember to turn it on every time.

The fatal disadvantage to this is that because you're running it through your entire vehicle's electrical system, your radio is going to be much more prone to "engine noise"—basically everything else that's tying into the electrical system, from the alternator to the air conditioner to the spark plugs and headlights will create fluctuations and resonances in the power provided to the radio which results in a lot more background noise and interference when you're listening and transmitting as well.

If you ask any HAM operator they'll tell you the proper way to electrically install your radio is to connect it directly to the battery. This means routing the cable from where you are going to mount it behind everything and then finding a way to get through the firewall into the engine compartment and then along to the battery and then grounding it to the chassis.

Even in my brand new truck, when I first started the truck it would be nice clean reception but once it had been running for a bit and the alternator kicked in, there was a "blip" about once every second that interrupted reception and made it utterly unusable.

Despite the advantages of using the accessory plug, the only real solution was to go direct to battery and bypass all that high-tech system and alternator noise that turns

up.

Think ahead—if you're going with the permanent install, be sure to make the hole big enough to accommodate the antenna wire as well. In my case, I was able to send the antenna wire through the "flapper" in the back of the cab. The "flapper" is a port manufacturers put in cabs so that when you close the door the compressed air has somewhere to go so that you don't have to slam the door. Usually behind the back seats of the cab. That was perfect for me because I mounted my antenna at the back of the box, so the wire just ran up the length of the box under the lip and then through the flapper.

Be sure to fill any new holes that you drill with caulking and then tape (I usually use Tuck Tape or duct tape). Keeps the bugs and water and drafts out.

This will give you much cleaner reception and transmission but is obviously significantly more work. If you go this route, make sure you've got an appropriate fuse in line with the positive lead as you are bypassing the fuse panel and could accidentally blow up your radio. Do not connect the end of it to your radio until everything is connected to avoid accidental grounding or shorts.

One major disadvantage to permanent wiring is that you need to remember to turn on and off your radio manually. Unlike if you connected it to an ignition switched ("ACC") plugin or fuse location, when you shut your vehicle off the radio will stay on and drain your battery, leaving you with a dead truck when you go running off to save the day.

The solution to this is a little more technical but is the proper solution: obtain a "normally open relay" (for example, a Bosch 0332019150).

Wire the "normally open" contacts in series with the battery, so:

- Contact 30 is going to go directly to your battery (with a 25A fuse in line).
- Contact 87 will go to the positive lead on your radio (with the negative going to a good ground on the chassis and NOT the negative on your battery!).
- Contact 86 is going to go to the Accessory or otherwise ignition controlled switch in your vehicle (you could actually plug this into the cigarette lighter)
- Contact 85 is going to a good ground on the chassis (NOT the negative on the battery).

Notice I said NOT the negative on the battery, because going direct to the battery negative is a good way to start a fire under certain circumstances. There will be a

“GROUND” in your engine bay somewhere, a bolt that screws into the metal frame. That is what you must use.

## *MOUNTING*

Make sure whatever you buy comes with a mounting bracket because you will definitely want it mounted and not bouncing around and sliding under your pedals when you're bombing down a washboard dirt road.

Mounting location is going to be entirely dependent upon what radio you end up with and what vehicle you are installing it in and how much you want to mark up the interior.

In my RAM I just screwed it into the dash drawer down below the console as the truck is fairly well beat up already and I didn't care if there were a couple more small holes in the plastic dash.

In my Frontier the head unit of the higher end HAM radio I bought fit nicely into the console along with the Bearcat while the main radio unit itself was installed under the passenger seat (more on that in a moment).

In the past I have built boxes to fit over the ducting hump in between the driver and passenger seats which held the radio facing upwards so I could see the front panel. If you are going to rock a few radios, this might end up being a good option as it's hard enough to find a single mounting location in modern vehicles let alone some place that will accommodate multiples. Plus, it keeps the wires all down low and easy to tuck up behind the dash.

Some radios will have detachable or remote faceplates, and these are great because then you don't have to worry about running all the power and antenna and microphone and external speaker cables to wherever you decide is the best spot for it, so if you'd prefer to have the interface up on the dash where you can see it without taking your eyes off the road then a single wire for the screen and knobs and then the rest of the radio proper can be stuffed under a seat (and secured using hook and loop strips).

One problem with that is that it might become difficult to hear when the unit itself is stuffed under the seat, and even the models that use the microphone as the external speaker can be tough to understand. If your vehicle has an "aux input" via a 1/8" TRS audio jack then you can plug the "Ext-Spkr" jack into that and then your entire

truck stereo becomes your external speaker. Of course, then you can't use your vehicle stereo system for anything else, such as streaming scanner traffic from your phone (more on that later) or just listening to background music, audio books, etc.

In that case it's worth spending the \$20 and getting an external speaker. In my Frontier, what I did was clipped the speaker into a clamping cellphone mount that used a suction cup to stick it to the windshield and ran it over the left (driver's) side of the rear view mirror so that it was up closer to my face without blocking anything usable in the mirror.

Particularly because my radio was installed under the passenger seat and was almost inaudible without the external speaker, but also bringing the actual output up closer to your ear is hugely beneficial.

## *ANTENNAS*

There are a million antenna designs and if you want to go down that rabbit hole which is Amateur Radio then no doubt you are going to dream up a few of your own. Designing your own antennas is actually a sub-hobby within the hobby.

For our purposes here, you do not need to get too complicated with the types of antennas and the Standing Wave Ratio (SWR) of each and all that stuff. You're not an amateur radio operator, you just need to shout stuff at the guys across the field.

However, there are some basic principles that you do need to adhere to in order for the radio to be working at as close to peak efficiency as possible, and it helps if you understand why things are like that.

Antennas should be "tuned" for the frequency that they will be transmitting on—without getting too technical, this basically means that the length of the antenna should share some fractional relationship to the length of the wave (frequency) that it will be transmitting. What I mentioned earlier about transmitting on a radio that does not have an antenna on it and all that energy "reflecting" back into the radio? Well, an antenna with the wrong length will partially do the same. This is called SWR or Standing Wave Ratio. The higher the SWR, the worse your transmission is going to be. So be sure to make your antenna the appropriate length—"longer" doesn't necessarily mean "better", sometimes literally sawing a few inches off the length of your antenna can improve your transmission efficiency incredibly by reducing the SWR.

In other words, don't just buy the longest antenna you can and if you're not sure about this part, reach out to your local (or most helpful) HAM operator or radio communications shop and get help with it.

All that being said, in terms of portable setups, a magnetically mounted 10 meter (CB) radio antenna ("mag-mount") works perfectly fine and still offers you the portability of moving the radio from vehicle to vehicle and not having to drill holes in your truck.

In case you've never seen one, they've got a strong magnet on the bottom that sticks very effectively to the roof of your cab—up to 120Km/H. You just plunk it down and then run the wire in through the edge of your back door, then under the floor mats or under the edge of the trim up to where the radio is located and voila, you have an antenna connected.

Be careful that both the bottom of the magnet and the part of the roof you're installing it onto are clean and clear of any debris, and don't slide the antenna base around on the roof as it will scratch the paint.

Make sure you leave enough slack in the line that when you close the door it doesn't jerk on the cable. Also, try to pick a door to sneak in through that isn't used as frequently as the driver's door, as you will over time damage the cable.

A proper VHF antenna which is permanently mounted is preferable if you intend to keep it connected most of the time (and will give you better SWR when properly tuned as described above).

This is one thing that you can get at a local shop for around \$50. They'll also sell the correct mounting hardware for you for a few bucks more, depending upon where you want to place it.

With my Ram I initially installed it into the center of the headache rack and then zip-tied the cable down along the edge of the rack and in through a hole in the back of the cab. It was easy to get to and only needed a generic "L" bracket and a couple of screws to drill it in, however it took a fair bit more cable and had to run through the whole truck to get to where my radio was located. I chose that spot because it was high up and free of obstructions, but then when I go off-roading I have to climb up and unscrew it so it doesn't get trashed by overhead trees.

I later decided to re-install it on the driver's side hood lip. That was another \$20 part

that set it perfectly in place. You'll notice that this is where most emergency vehicles mount theirs, so don't be like me and think that you're smarter than everyone else by putting it that much higher up.

The type of hood bracket you will need will depend on the year and model of your vehicle, and it will also mean having to get the cable through the firewall between the engine compartment and the cab, and if you don't have proper crimping tools for this type of wire then you'll need to drill a hole big enough to get the connector through and then fill and cover it back up. However, if you do this all at the same time you're running your permanent power supply to the battery then just put the antenna connector and wire through first and then the positive and negative leads after, those should fill most of the hole nicely then just hit it with the silicone to seal it up (and zip tie it to nearby things so it doesn't get tugged and pull your silicone plug out).

In my Frontier I had a factory installed utility rail system and so decided to install it to that. With about \$10 worth of big washers and bolts from the hardware store and a right angle bracket I drilled out to fit the antenna I was able to mount it to this utility system.

Note that if you're going to do this—mount it onto the box of your truck somehow—it's worth going further back rather than up against the cab of your truck as the cab is made of metal and will thus interfere with the operation of the radio. I mounted mine down by the tailgate. Plus it makes it look cool like it's an oversized RC vehicle.

## *Portable Radios*

When it comes to portables, there's one name that you will see absolutely EVERYWHERE and that is Baofeng.

Baofeng is a Chinese brand of inexpensive radio transceivers (radios that both transmit and receive). They are sometimes sold as "Pofung" (and other Chinese sounding names) but are made in the same factories and contain pretty much the exact same parts and features with different names stamped on them to get around regulations.

In the amateur radio community Baofeng has been the source of much debate and chagrin, and for good reason: it's put programmable VHF/UHF ("dual band") radio transceivers into the hands of many, many more people than there used to be, and as a result has caused a lot of headaches for licensed operators.

Where a dual band portable transceiver used to cost \$500 or more, you can now buy a pack of EIGHT of them complete with antennas, batteries, chargers, clips, external microphones and programming cable for under \$400. That's right, a programmable dual band portable transceiver with all the accessories for around \$50 a piece.

You can't even take the family out for dinner for that price.

Oh and they're water resistant and have a built in flashlight.

It has changed everything in the radio community. It has put emergency communication capabilities into the hands of the average person. You can throw a pair of them into your "bug-out" kit for under \$100 and if you never use them then it's no big deal, a significantly smaller investment for the "just in case" scenario than upwards of \$1000 for a similar setup of the "name brand" radios.

This also means that there are a lot more unqualified people transmitting in places they ought not to and it's caused a lot of problems - people accidentally (and even intentionally) interfering with all sorts of licensed operations, whether in the HAM bands or with other professionals who use two-way radio communications (like

traffic controllers and courier drivers), emergency operations and so on.

There used to be a pretty high barrier to entry to get a radio that was even capable of broadcasting on these sorts of frequencies after being programmed, let alone being able to just "punch in" any frequency you wanted and start broadcasting. The guy behind the counter at your local radio shack simply would not sell you a HAM radio unless you were able to prove you'd passed the licensing.

Here in Canada they are in a legal grey area: although not technically illegal, if you do not have a license and do not transmit – either an amateur radio operator's (HAM) license or a channel you have paid to license – then you are not allowed to transmit, so ostensibly they are only to be used for LISTENING. Basically as a scanner. Even technically speaking, the license is attached to the radio itself so even using a Baofeng to transmit on a frequency you have licensed for commercial purposes is not actually perfectly legal.

Of course, what good is a walkie talkie if you can't talkie while you're doing a walkie?

The way the law works on radios in Canada is that each radio needs a license to transmit. When you are buying a set of walkie talkies off the shelf at Canadian Tire, those radios have a license from "Innovation, Science and Economic Development of Canada" (ISED), which is the Canadian body which governs radio spectrum management, so you are allowed to transmit legally using them because the radio ITSELF has a license. It has been programmed to have the right frequencies with the appropriate output power and frequency bandwidth to comply with the legislation and that particular piece of hardware has been licensed to do so.

Basically a license is purchased for that specific radio you are holding at the time that it is manufactured.

So the device itself is supposed to have been licensed and therefore even if you have your Amateur Radio license and start broadcasting on an FRS frequency, it's still a contraband transmission (pun intended).

When you buy a Kenwood or Icom radio at your local radio provider, they will program in a frequency for which you have a license. The radios have been certified by ISED to comply with all the technical requirements to ensure the radios don't cause unwanted interference and meet all the requirements of the frequency you are transmitting on.

This was originally started so that electronics enthusiasts couldn't just build their own radio out of parts from Radio Shack (that's how old I am and that's what that store was originally intended for before it started selling video games and went out of business) and start messing up everything in their broadcast radius. If you want to build your own radio and use it, then you need a certain level of qualification to show that you understand the principles and rules surrounding where you can and can not transmit, how powerful your transmission can be depending on where you're transmitting, rules for initiating contacts and so on, and thus became the Amateur ("HAM") Radio Operators.

"Ignorance of the law does not excuse you from it."

Naturally, being Chinese import radios that don't give a hoot about North American regulations, the Baofengs do not have an ISED qualification, and have somehow managed to skirt this qualification issue by placing the burden of licensing onto the operator. The classic "I'm not building the bomb, this is just information on how bombs are built and if someone were to do that, that's on them."

More recent iterations of the Baofeng and Pofung radios have a "-IC" suffix which indicates that they "comply" with the regulations, which also makes them almost useless for what we might want to use them for. If you go to use any of the frequencies outside of the Amateur spectrum - for example, the RR channels - it just beeps and refuses to transmit.

Cool for compliance but also when everything is on fire and you're trying to call the guy over the hill to give important information and your radio just stupidly beeps at you because "that's not compliant with the act of legislation" you can't tell the radio that this is, in fact, an emergency, and you're allowed if it's an emergency.

The reason a HAM license is seemingly so hard to get is because there are a lot of rules surrounding radio transmissions and knowing how to effectively use them while complying with the law requires a pretty significant understanding of both electronics and legislative regulations.

If you put a Baofeng in the hands of someone who doesn't know what they are doing – or worse, DOESN'T CARE – then the entire radio frequency spectrum is in danger of falling into disarray with great consequence to public safety and the usability of services, up to and including emergency services and your household WiFi reliability.

It's really a matter of "with great power comes great responsibility".

With these radios you can just dial in a frequency and start transmitting on it. So for example, someone who doesn't know what they're doing could dial in the frequency that their local ambulance service uses for dispatch and suddenly be interfering with paramedic dispatches. Worse, if they sat on their radio with the transmit button depressed, they could block or interfere with dispatches.

I can not understate how important it is that you not do this.

Even if those services are using tone squelching, if your transmission happens to be more powerful than the official dispatch, you can "squash" their signal and they will be unreachable. And what if that was your wife or daughter that needed the help?

Don't even key up just for one second to say something funny, this is serious business that could cost people their lives and will almost certainly draw the attention of the authorities. In the States they have already made the import, marketing and sale of them illegal because there have been so many problems with untrained, unlicensed, ignorant or downright malicious individuals causing all sorts of problems with things they don't understand.

And it's why, more than any other part of this book, I am likely to take flack from folks "in the know" about such things by advocating the purchase and use of these radios.

But we are dealing with pragmatic realities of emergency situations. Which is why I'm prefacing this all with a background on how serious you need to take this.

So if you decide to go on eBay and pick up a set of these, just be sure you understand what you're getting in to, and know that if you are going to dole these out to members of your family or community or brigade that you are responsible for whatever may happen with them.

### *Keeping Track*

One thing about portables is they have a tendency to grow legs and walk away.

Make sure to label each radio individually; you can use whiteout or a label printer but give each individual unit a unique number. This will help you with tracking where the radios have gone to as well as being able to identify which of them develop problems.

For example, when I got my set I dished a pair of them out to a couple who live up on the hill who were having fire problems every week. Then they had a dramatic breakup and the radios never came back... but at least I knew where the two had disappeared to.

Another went to our committee "supermom" so that she had one on her when an event happened. I tracked where each of these went in a spreadsheet. Later, when one of my radios started having problems with the transmit button, I could see at a glance that it was unit KR03 and then when we got back home and I brought in a handful of radios I didn't have to test them each individually, I just found the one labeled KR03 and set it aside as a problem radio.

What the member who had 16 radios did was each morning when he handed them out he would write down who got what radio and he was always on top of where they had gone. This was especially useful in the days when we had essentially a new crew every single morning. Having that simple tracking system meant accountability and made sure expensive equipment didn't just disappear into the chaos.

## *Communicating by Radio*

Fire scenes are loud – pumps are loud, trucks are loud, heavy equipment is loud, the wind can be loud and a fire can sound like a freight train going right past you. You absolutely need to be able to talk to the rest of your team without tracking them down and grabbing their arms.

You need to be able to call for help if you need it. Your lookout needs to let you know that a spotfire has sprung up by your escape route or that you have two minutes of water remaining in your tank.

For your communications to be useful, you need to make sure that you have them all set up and everyone knows how to use them AHEAD of time. Standing at the fireline is not the time or place to be ordering new radios, troubleshooting comms difficulties, or training on their use.

Make sure that every radio is set to transmit and receive on the correct channel, do a radio-check while you're in the truck handing out the radios on the way to the site so that if difficulties are encountered or adjustments do need to be made they're not being done when you've got a wall of fire in front of you.

Human nature in a crisis is to say “yeah yeah we’ll just do it live” and this is not a time or place where you ought to be just winging it without comms. Make sure it works before deploying.

I am also a licensed amateur radio operator, in addition to being a professional recording engineer, so I have some experience with obtaining the best results of using microphones, and here are some tips for those who may not have much (or any) experience with using radios or “walkie-talkies”:

When communicating, pause for a moment after you push the button. It doesn't have to be long, but a common mistake with beginners is that they push the button “pretty much at the same time” as they start talking, cutting out the beginning of their transmission. Push the button and give it a half second before you start talking.

The way I time it is that I push the PTT (“Push To Talk”) button, and then inhale and then begin talking.

Also, this may seem obvious to some but in case you don’t know, if you are hearing them transmit, they can’t hear you. Your antenna can only listen or transmit at any given time, but not both. In what we call “simplex” (one-way) communication, we have to take turns, and if you start talking during someone else’s turn, not only can they not hear you, but to anyone else listening, what happens is that both sides end up garbled and usually unreadable for either party.

In radio nomenclature we call it “getting stepped on.” Use your best Mr. Rodgers manners and make sure we’re all taking turns.

Be sure that you are speaking slowly and clearly, with the correct distance between your mouth and the speaker. In case you’re wondering what that is, the correct distance is 2-5” away from your mouth, with your breath being pointed perpendicular to the microphone. This is because if you are talking directing into it - what radio operators call “chewing” or “eating” the mic, your transmission will be garbled, and perpendicular because your breath - the “puff” of air at the beginning of your words - will create distortions during certain consonants in your words.

Radio traffic can be difficult to understand even at the best of times, and especially if you are not accustomed to understanding it, it so don't shout, don't babble, keep your messages short and to the point. Literally just communicate what it is exactly that the other end needs to know.

If someone is trying to tell you something over the radio and you do not understand, TELL THEM you do not understand or that you are having difficulty understanding their transmission due to interference if that is the case but never just say you understand if you don't and just shrug your shoulders and say “ok” because if you don’t actually understand and you say ok what you’re really saying is “whatever you said is unimportant” and on a fire line it might be life threatening.

They might be telling you something that could save your life - or theirs.

On the flip side, if you send a transmission and someone asks you to repeat (or “10-9”), don’t get frustrated - they are trying to understand you but are having difficulties. It’s not because they’re stupid or not paying attention - it’s not their fault, and may not even be your own. For whatever reason, the transmission isn’t coming out as clean as it needs to be for them to understand. Try adjusting the

distance your mouth is from the microphone, or the position of the radio. Speak more slowly and more pronounced. Try again. Don't get mad at them, that will make them reluctant to ask you to repeat again even if they still don't understand if that's the case, what is even the point of having the radios if you're not going to effectively use them.

When receiving important information, read them back a summary of the message so both of you know that the right message has been understood.

#1: "Craig to James."

#2: "Go for James."

#1: "Yeah, we've got about five minutes of water left on this tank before we're out so we'll have to kill the pump soon but Terry should be here in ten with his truck so we can hook up to him when he gets here, if you're good just hang tight up there and we'll get you going again when he gets here, I'll stay here while Freddie goes and collects a fresh cube."

#2: "Copy that, got five minutes left in the bottle, ten before Terry gets here with some more. You'll hang out and babysit the other end of my hose until then. Warm my paws by the fire until you get it connected. Send marshmallows."

Notice how in this scenario nobody was left at the fire by themselves. Pump operator Craig stayed behind to keep nozzle operator James company even though there was nothing for them to do but boring old shovel work. At least James wasn't left at the fire by himself when it all of the sudden blew up and he had no one to roast marshmallows with.

If you are familiar with radio codes ("10-codes"), a good practice is to not use them because others may not understand. "What's your 20?" makes sense to me and anyone who used a CB radio back when they were still a thing, but if I said it to my son at the far end of a hose he wouldn't have a clue what I was saying. Calling "10-9" on someone who is already having difficulty using the radios is only going to make a bad situation worse. Be clear and concise.

Do not use your radios in an emergency for chit-chat. If there IS a conversation happening and you need to interrupt to get important information through, wait until the moment they stop transmitting and quickly jump in and say BREAK and then wait for the other party to say "go ahead for break". Or if you need to walk on

someone's long-winded transmission, key up (hold down the button) and say loudly "BREAK BREAK BREAK" and then wait. Anyone who was listening should (hopefully) have heard someone stepping in calling for a break and will give you a "go for break".

Transmitting at the same time as someone else only garbles both of your transmissions, but sometimes you can pick out key words, and if you hear someone "stomping" on another's transmission calling for a break, just say "go ahead for break" - and if you end your transmission and hear someone say "go ahead for break" don't be the idiot that keys back up and says "I wasn't calling for a break" because it means that someone was trying to break in while you were jabbering on.

During long engagements, be sure to check in with your people periodically. The BCWS standard is "at least hourly and more frequently if fire conditions are extreme or there is a change in weather conditions." Do them at least that often and even more so if you feel you need to. It's not just to check in on their physical well being but sometimes firefighters become mentally fatigued and you can hear it in their voice, or are in need of food or water but not wanting to ask for it (or noticing that they need it until they're asked if they're doing OK).

Checking in gives them the opportunity to do a self-assessment and say "getting thirsty over here" or "upon reflection, I need some calories please."

Finally, if something critical happens – that is, if you or someone else becomes injured, lost or trapped - call out "MAYDAY MAYDAY MAYDAY". The "mayday" call is universally known as the magic word that ceases ALL other traffic. If someone else has called mayday, immediately cease talking on the radio and have your leader or whoever is in charge deal with the one who has called it. Be prepared to drop what you are doing to assist.

Maydays are incredibly rare and only ever to be used in a dire situation – again, if you are INJURED and unable to remove yourself from the situation, if you are TRAPPED, or if you are LOST or one of your team is MISSING.

Calling a MAYDAY without just cause is actually a criminal offence.

## *Baofeng Usage*

The fact of pragmatic realities, of needing to communicate with others in emergency situations, and the fact that if you are needing this function then you are very likely quite a distance from anything you could negatively interfere with is the ethical basis I am going to provide some information for the layman to use with the Baofeng radios.

The ethics of Harm Reduction is not limited to illicit drugs.

This information pertains specifically to the UV5R, as it is far and wide the most common of these "renegade" radios, although this information mostly translates to the rest of the line as far as I have seen.

### *The Red "Call" Button*

One of the problems we have run into using Baofengs – and something I've heard from other brigades – is the DAMN STUPID RED BUTTON. You see, right next to the Push-to-Talk (PTT aka "transmit") button is a red button that, if you press it once, cycles between the frequency you have set and FM radio. If you've got someone who doesn't know how to use the radio beyond pushing the button to talk to someone at the other end, they're now off frequency and you can't talk to them. And they can't talk to you.

Worse, 9/10 times I've put one of these radios in someone's hands, that is the first button they press.

What is with people and red buttons anyway?

Although the official manual offers no explanation of this key beyond "SK-side key1/CALL(radio/alarm)", the probable intended use of this button is that if you hold down the PTT button and then hold down the CALL button it transmits a tone that ostensibly could be used for getting someone's attention. An alarm.

In practical use I have never been inclined to use this feature.

If you hold the button down without first depressing the PTT button, it begins flashing the flashlight and sounding an alarm out of its own speaker, the volume of which can be controlled by the volume knob. This is actually a cool feature that could possibly be used in the event of an emergency but it requires a "long press" and to an untrained user the biggest risk is that they'll push themselves off frequency and out of contact.

And, you can't even deprogram the button! Many of the features can be controlled using the "Chirp" software in combination with the USB programming cable, but short of disassembling the radio and cutting the wires to the "Call" button there's no easy way to avoid the problems with this button.

Just... don't push the red button!

### *"VFO/MR"*

Pushing the other red button on the radio, the one on the face just below the screen labeled "VFO/MR" will cycle between Frequency Mode and Channel Mode. This is where programming the radio comes in, because you are going to want to program in the frequencies you are going to be using and label them with easy to understand names rather than numeric frequency identifiers so you don't need to remember that when someone says "let's use RR-17" that RR-17 is 150.680MHz.

Although you technically can program them with the buttons, it's arduous and especially if you are going to be doing a dozen (or more), you will want perfect uniformity that can just be deployed as a template.

So you're going to want to use software, and that's where the "Chirp" I have been referring to all this time comes into play.

### *CHIRP*

To do this you are going to need the USB to external microphone adapter that hopefully came with your radios in the kit, otherwise you will have to order one off of Amazon or eBay (they cost around \$10). Regardless of what software CD comes with it, throw it out and go download "Chirp" from [chirp.danplanet.com](http://chirp.danplanet.com) – it is free and works perfectly on a huge number of radios.

There are plenty of great tutorial videos on how to program your Baofengs using Chirp on YouTube so I will recommend you go there to watch how they set it up and

use it, but there are a couple of use-case specific points I'll make to save you some time and sanity.

First of all, make sure you name your channels things that will make sense to you but which will still fit on the screen. It's just like giving your documents filenames back in the DOS days - eight characters doesn't leave a lot of room to be descriptive.

There's not enough room to put "The UHF channel that Terry's radios work on when they're on channel six" but you could call it "TERRY-6". Experiment by programming it then looking at it on the radio and see what it will look like when you go to use it.

Secondly I suggest you use them in groups sequentially, which means RR channels 1-35 in order. Personally I set mine up with our main VHF channel as the first channel (NUTSFD1) and then Terry's channel then the channel of our neighboring brigade and then the three municipal Fire Department channels, then RR-17 because that's the RR channel in use in my area, and then LADD 1-4, then LD 1-5 and then RR 1-35 (including 17 between 16 and 18 even though I had it on there earlier).

Note about the municipal Fire Department channels: I added them so that when we were working with or near them we could listen in. However, I set those channels in the software to be transmit restricted, which means that we can not transmit on them accidentally or even if we wanted or needed to.

***UNDER NO CIRCUMSTANCES SHOULD YOU EVER  
TRANSMIT ON CHANNELS USED BY EMERGENCY  
AGENCIES.***

Keep an extra radio in your truck if you must so that if you do find yourself working shoulder to shoulder with the professionals then you can give an extra radio with your frequency to the Incident Commander or Task Force Leader or scene Captain.

Set up your Chirp config like a template so that you can upload it to every one of your radios exactly the same. Save it to your computer so that if you get another radio (or ten) or if your neighbor comes over and wants you to put the same config onto their radio you can just load it and squirt it into their radio and they're all the same.

Uniformity is important.

Finally, if you keep having RFI breaking through squelch then you may want to set up tone squelch (as discussed earlier), and this is the way you are going to do it.

Again, YouTube has good tutorials on how to do this and will be much more effective than me describing it in a book, but I will remind you that doing this is also going to cause interoperability issues we described earlier.

If you have someone in the community who wants to get on channel and they go out and buy a radio that you can't program with your cable and they need to get a radio shop to program it for them, then they need some very specific information for it to be set up properly or you're not going to hear them.

Additionally, do not use tone squelch on the RR/LADD/LD channels as there may be others on channel that you can not hear because they are not set up to use the tones, so they do not break through your squelch, but whose broadcasts will interfere with your own (and who you will cause interference with).

This is the exact reason why they stopped using Tone Squelch on the forestry channels.

Tone squelch should really only be used if you have a license for a specific frequency.

### *BAOFENG USE: A/B Button*

Because these radios are dual band and dual channel it means that you can have two channels being monitored simultaneously, even if one is on UHF and the other is VHF. This is a seriously cool feature.

In our use case, our one member who already had 16 radios in the UHF band set up as our channel B, which I've set to monitor simultaneously while channel A is our regular VHF channel. This lets me monitor the channel that they are using on his site while at the same time being able to listen for traffic on our VHF frequency in case someone is on their way and trying to get a hold of us on site.

Again, there are tutorials on YouTube on how to set up dual channel monitoring. What I wanted to caution you about is that although it may be monitoring both channels, you still have to tell it which channel you want to transmit on.

So if I am "on" channel A but am also monitoring channel B and then I hear someone on channel B call me, if I just key up to transmit I will be transmitting on

channel A, thinking that I'm talking to the folks on channel B because I can hear them talking but then they don't get my response (and the people on channel A think I've lost my marbles and am talking to ghosts).

Always be aware of where the little triangle is on the screen, that indicates what channel you are on and therefore what frequency you will transmit to.

Pressing the A/B button cycles between these channels.

The danger is that if there's someone who doesn't understand how to use the radio then they might not understand why, even though they can hear you talking to them, you're not receiving them when they talk back.

This is where training and practicing with your equipment and people is essential. You don't want the first time someone holds one of these radios to be as you're getting out of the truck at a fire scene.

You might think "OK well then I'll just set it to the right configuration and then lock the keypad so they can't do something dumb with the buttons."

Naturally, doing this also locks the A/B button, which means if you want to lock the keypad so users can't accidentally dial in a frequency or switch from channel to frequency mode, it also locks them from being able to switch between the A and B channels. In order to enable them to switch between A and B channels, you have to unlock the whole keypad which opens up the possibility that they can mash the keypad and end up off channel by accident.

As I've stressed before, these radios can be dangerous in the wrong hands.

If you're dealing with someone who really can't understand a radio beyond the transmit button and volume knob, select a single frequency to be used in your operations, set the B frequency to something that isn't going to be used (and therefore confuse them), and then lock the keypad altogether.

This can be done by holding down the "#" button.

## *External Mics and Speakers*

Sometimes these radios come with the bonus external microphone and speaker and sometimes you have to spring the extra \$7 to get them, but definitely get them. It is actually one of the things I have learned is worth paying more for. The cheap speakers can be really hit or miss with quality, and I have personally ripped a couple out of radios in the field and thrown them out on the spot because the audio quality from them was so horrid as to be unreadable.

But, having an external mic/speaker is important. It will allow you to get the radio set up and then clipped into your chest rig (or belt or into a breast pocket) but then you can string the mic up to the collar of your shirt or jacket so that the speaker is close enough that you can hear it when someone calls and you can answer them back without constantly having to pull it out.

It also adds an extra cable onto your radio which makes it harder for you to lose. I've never dropped a radio with an external mic connected to it without noticing it, but on more than one occasion I've been walking through a scene and found one of our radios laying in the black, having slipped out of someone's pocket unnoticed.

## *Range and Repeaters*

Here in BC we have a lot of mountains and hills and no matter how powerful your radio, what brand it is or how big of an antenna you are swinging, if you put an entire mountain of rock between yourself and who you're trying to contact, chances are that you will not be able to reach them.

For little portable radios, it's unlikely you'll even be able to transmit around a corner with any kind of distance.

Think of the radio transmission as light - objects cause shadows and the bigger the object, the bigger the shadow.

Of course this is the same reason so many of us deal with spotty cell phone service and hence the need for wireless radio communications in the first place.

Ultimately if broadcast blackout areas are a problem for you topographically then the long term solution to this would be the design and installation of a repeater network.

### *What Is A Repeater?*

A repeater is just a radio transceiver that is installed high up so that it has a view of the valleys below it. When you "hit" a repeater it hears your transmission on one frequency and then rebroadcasts it onto a different frequency so that someone on the other side of the mountain can receive your transmission. At its heart a repeater is just a dual channel transceiver, and at a simple level you can put one together for as little as a few hundred bucks in your garage.

If you go on eBay you'll find all sorts of used repeaters for under a grand, and chances are good that your local radio service company has one or two sitting on a shelf in the back looking for a new home at around the same price.

However the real cost of repeaters is going to come from where you stage it; the box is the easy part.

Obviously you want it to be at a high point – such as a mountaintop – and even then

it should get well above the mountaintop ground level to get the very best reception and transmission coverage. Unless you have someone who owns a mountaintop that is going to mean getting permission to use it, all the staging necessary to put in a tower (such as concrete pad), licensing to raise a tower (planes need to know it's there don't they), and then, unless they have power up there already (kind of rare on mountaintops), some kind of solar and battery setup to power the remote site.

If your community has the resources and depending on your level of need and the geography of your area then this might be a good option for you. For most, it is not. Here in Knutsford, our area is so geographically huge and there are so many mountains and valleys that to set up and maintain a repeater network with appropriate coverage which would be functional is very challenging.

Not impossible, but certainly above the difficulty level of the novice - it's where you'll definitely be bringing in the professionals who are able to really effectively do it, and it is definitely a “down the road” kind of thing due to the licensing requirements that simply can not be over looked.

Additionally, using a repeater is not the same as just using a regular walkie talkie and so you would need to train your people in the repeater usage, which is quite a bit more complex and if you already have people who struggle with dual-channel radios then the opportunities for error are increased dramatically. It is a perishable skill and will be soon forgotten such that when the need finally arises, the repeater operation knowledge has dissipated.

### *Ad-Hoc Networks*

Alternatively, consider setting up ad-hoc repeater networks on a case by case basis as necessary.

The way this works is let's say you have a fire scene where your crews are working on a fireline using their FRS radios. Those radios are not powerful enough to get out of the small valley they're in, so someone parks up the road where the hills meet and relays information to someone else down the line.

Every time you do it, it will be different; you'll be driving around testing the limits of your broadcast range. Ad-hoc networks tend to arise organically and out of necessity. It's not as convenient as being able to just dial in a repeater and punch out of the valley with a couple of codes but you will do what you have to do when you need to do it.

## *Amateur Club (“HAM”) Repeaters*

There is usually a repeater in your area run by the local Amateur Radio Operator's club, and I would strongly caution you against using it unless you are qualified (and often, unless you are a member).

*Repeaterbook.com* offers a list of repeaters throughout your area, wherever that is, and it can be fun to listen in to them and see how they are used. Remember what we said when talking about the Baofengs - listening is legal, transmitting is not.

HAMs will piously protect their club's equipment and if it's being used in an unauthorized way (which if you don't have a license and are not following the appropriate contact protocols, you are) and that's a sure fire way to draw the eye of the authorities. They are owned by clubs of people who have made the effort to learn and test for and obtain their licenses and outside of an imminent threat to life or property, will take a very dim view of anyone using their equipment without the proper requirements having been met.

If you decide to get some of these radios "just in case" and you start messing around with repeaters, you are not using them for emergencies you're just a pirate station and I can guarantee you that the authorities are going to start looking for you.

Don't think that just because there's no cable or IP address attached to it that they are powerless to find you. We used to triangulate CB radio transmissions as a game back in the 90s and the authorities have much better equipment and software at their disposal now.

# TECHNIQUES

## *A Primer on Technique*

Note that I have called this chapter *Technique* and not “*Training*”.

First of all, you need to understand that there's more to putting out fires than "putting the wet stuff on the red stuff."

Firefighting is a professional career path that includes hundreds of hours of coursework to begin and then more on an ongoing basis because all skills are perishable and, besides, there's always more to learn.

That is not to say that untrained folks are incapable of extinguishing fires – far from it. That's what this entire book is about and what every fire season in British Columbia proves over and over again: that minimally trained rural property dwellers can be an indispensable resource and too often are the only ones left to save properties (and livelihoods).

However, it draws us back to the ever-present liability issue.

As our local Regional District representative told us at our first community meeting, in so many words, "we can't just have a bunch of untrained people running around."

And honestly, that's fair. That was why I made that first Facebook post imploring the community to think deeper about fire preparedness.

It was what drew from me such great alarm after our first couple of fires, to know that we had well-meaning but utterly untrained neighbors running off into the night with no training or equipment or plan or communications.

It's why I wrote this book, and hopefully why you're reading it.

And it's why my first priority when our community started down this road was to get a class of community members trained and qualified, so they could respond to threats more safely and effectively, but also so the powers that be could no longer regard our efforts as coming from the "well meaning but untrained."

In other words, they couldn't dismiss outright us as "rednecks with pickup trucks" because we were thereafter TRAINED WILDLAND FIREFIGHTER rednecks, with pickup trucks.

This distinction is important.

When the Incident Commander for the complex of fires in our region phoned me up, it was the first thing he said: "I am told you have trained members." And ultimately it was the reason he was able to "bring us into the fold" and work together at all.

Although I had previously been trained and had already worked on wildfires for a County Fire Department, I took the class also – as a refresher.

It was not very refreshing, though.

Certification is important politically and there was definitely useful, potentially life saving information, but as I sat there and received the training again - this time through the lens of a ruralite and not as a dedicated semi-professional firefighter - I realized that the problem with firefighter training in general is twofold:

- It is kept very much like sacred knowledge, hidden from the general public behind gatekeepers and those entrusted with the dissemination of the knowledge (for a fee).
- It is most often vocation-specific in how it is directed, meaning that mixed in amongst the most valuable kernels of understanding and technique that the average citizen could genuinely benefit from is a lot of stuff that the average person is not ever likely to need even if they are attending to a wildfire in their back acre.

Possibly half of the S-100 course was directed at vocation-specific training our community would never need or want to use.

For example, ignition operations – as in, how to conduct a backburn (aka "fuel mitigation").

I doubt if a single one of the class would ever even hold a drip torch, let alone need to know that the mixture ratio is 60% diesel to 40% gasoline. We absolutely are not going to do back burns; let the career guys and gals make those decisions (and take on that liability). Yet a significant part of the course was dedicated to it.

Another portion was dedicated to boarding helicopters. Very cool and I myself would jump (with my head ducked) at any opportunity to go for a chopper ride – and

as a matter of fact, some of our folks did get to go for a ride later in the 2023 season as the Rossmore Lake fire was winding down – but the fact of the matter is that your chances of ever being offered a ride in a helicopter by BC Wildfire are exceedingly small.

There was a section dedicated to BC Wildfire radio communications – again, good to have an overview of how they arrange their channels, but as ruralites the chances of ever being permitted to use those channels is exceedingly rare.

Another still was on how to make a "banana roll" with the hose, which is a type of hose roll technique used by wildfire ground crews that are being dispatched to remote locations.

I have butted heads with a few pros on this one. It is my view that the reason a banana roll is rolled like that is because it can be piled up on and draped all over wildfire personnel when they are hiking kilometers into the bush.

We aren't BCWS employees who are going to hike deep into the bush.

You're much more likely to roll up on a problem in your pickup truck than hike 5km into the scrub humping hose.

That's all vocation-specific training that was unnecessary for us to learn, but here we were caught in a conundrum where we recognized that some basic training was necessary but because the Service has long been an Ivory Tower where the sacred knowledge was kept and protected, it was naturally directed at those joining the organization.

This has got to change.

There's no reason that the core of these courses couldn't or shouldn't be taught in high schools and made available as a weekend class at the local YMCA. Basic fire behavior, fire suppression, and entrapment avoidance and survival is something that every single person who lives under the threat of wildfire for half of every year should know.

Now, in 2025 as I edit this, I am glad to say that the provincial government and regional districts and ministries have all done an incredible job of actually changing their policies and working towards a deeper level of community involvement. There is still a long way to go but the fundamental shift from the government "owning the

monopoly on fire protection" to including individual citizens and community groups has been nothing short of miraculous.

It could have gone a lot differently. The relationships could be hostile and combative.

Rather than forcing residents to flee a defensible situation and then forbidding their return or any "unauthorized" resources from coming to help by way of armed agents of the state securing checkpoints, they have the structure to potentially welcome these efforts – under the right circumstances, of course. Once the liability issue is settled, naturally, and that necessarily means having some kind of standardized training for those who are going to stand their ground.

And probably waivers.

In Australia they have adopted a policy essentially called "Stay or Go," which at its core says "if you are unwilling or unable for any reason to fight an approaching fire, leave as soon as possible, don't wait until it's dire – but if you stay then you must be willing and prepared to fight it properly." It has empowered ruralite Aussies to become legitimate firefighters on their properties and there are some fantastic videos on YouTube of homesteaders and ranchers performing amazing feats to protect their homes and families.

One of the last bosses we had on the Rossmore Lake fire was an Aussie and he was perfectly comfortable with working with us. We'd had some leaders who were appalled at our presence, but the Aussies just kind of shrugged and were like "well yeah, of course the locals are gonna be involved why wouldn't they?"

The key to it of course is not just being willing but being PREPARED to do it; that means being trained and having resources established beforehand so that you're not trying to put down a raging wildfire with a shovel and garden hose.

Once you are trained, you will realize that *you* will not be putting down a raging wildfire at all. But you *might* be able to catch a smaller problem *before* it becomes a raging wildfire.

That kind of training can and should be provided by government to anyone willing to take it. It should be free of charge and open to anyone and the certification should be recognized.

We're not there yet. Not quite.

They still don't even teach First Aid in high school, and that's something that almost every single human being could benefit from. Like why is the Heimlich maneuver not taught in grade five? Why isn't CPR something every single civilian is taught and certified in?

Until that day comes (if it ever does), there are things that we can do to improve our chances of success and survival, so I'm going to go over some of the basics with this caveat:

**THIS IS IN NO WAY CONCLUSIVE, SANCTIONED OR TO BE CONSIDERED A SUBSTITUTION FOR ACTUAL IN-PERSON TRAINING FROM A QUALIFIED INSTRUCTOR.**

Honestly, if you intend to take it seriously, if you plan on jumping up and going to help and for every fire season you're going to drive around with a cage tote full of water and pump in the back of your pickup and sit outside watching the lightning storm with the truck running ready to head out as soon as there's a report, then you really must take as much training as possible.

If you've followed all the FireSmart guidelines and made your property defensible and have developed defense systems and intend to stay if a wildfire turns up at your gate, then please, don't just read this book and think you got it down pat.

**GET ALL THE TRAINING YOU CAN POSSIBLY CRAM INTO YOUR HEAD.**

Use this book and the resources it points you towards as the launching pad towards further training – accredited training – and become truly skilled in this area. Watch all the YouTube videos, for sure, but also get accredited training. You might think the difference is bullshit, but the authorities do not, so be able to whip out your wallet and throw twenty certifications in the face of every person who challenges your qualifications.

It will make you more safe, skilled, and effective, in addition to making you more credible when the authorities turn up at your door and tell you that they're pulling out and you should too.

A wise man knows and acknowledges how little he knows in any given subject and accepts input from those that are more experienced and knowledgeable.

Approach every training opportunity, no matter how ridiculous it seems or objectively stupid it is, as a chance to increase your knowledge base and become a better guardian of yourself, your family, and your community.

### *NOTE ON THE OFFICIAL MATERIALS*

The actual manuals used for training BC Wildfire employees are very well produced and rich with information and, sadly, kept secretly in their ivory towers.

In fact, each one begins with a statement on page five expressly forbidding any reproduction in whole or part or even their use as a development guideline. My lawyers say I can't even quote that statement without expecting trouble, Fair Use or no.

So unfortunately I can't give them to you or even give you the direct address to them on BC Forestry's own public website – which by the way are totally publicly facing and accessible without having to login, although not publicly linked to – lest I face the wrath of the government and all its many lawyers, regardless of the morality of keeping potentially life saving information produced with taxpayer money from the taxpayer. You know, the people who paid for its production. You and I, who paid our taxes and those taxes paid for its production and now there's potentially life saving information that you paid for, but they won't let you have it.

That kind of morality issue.

But what I CAN say is that, at least at present, their public web servers are not very secure, and almost all of their training material is on what is called "public facing servers," and they are crawled by search engines, so even though they are not linked in any web page, with a carefully crafted Google search string.

*So, if you go to Google, and click on Advanced Search, and put for example S-100 where it says "Search for all these words", and then below that put "for.gov.bc.ca" in the Site or Domain field and set the File type to .PDF, you will find all the public facing copies of the S-100 manual available for download without having to enter any sort of password.*

There is a list of the course numbers in the back of this book for your convenience.

My suggestion to you is that you go and obtain any and all manuals you can find

from all resources available by whatever means you can while you still can, and then save them for posterity and share them with anyone who is interested in learning about how to protect themselves, their family, and their community.

Knowledge of how things work is not nor can it be nor should it be in and of itself protected by a copyright any more than a recording artist should face an infringement suit for having used the chromatic scale, despite it having been employed by others before them.

It is, in my view, deeply unethical for governments to keep potentially life saving information from its citizens. For them at the same time to claim a monopoly on protection stemming from that ignorance is simply gross, but to then fail to provide that protection is downright evil.

We live in a world where wildfire danger is a reality of life for millions – possibly billions – of people, and anyone who lives under the threat of wildfire ought to understand fire behaviour and entrapment avoidance just like human beings ought to know and be able to recognize the signs of a stroke.

Government absolutely has a duty to protect its citizens, but it does not hold the monopoly on protection. Survivalism will not abide that theory. Before we rely upon our governments or our communities we must rely upon ourselves.

What is particularly confounding – and arguably damning of the concept of a monopoly on protection as a whole – is when those government bodies who are vested with (or at least claim that monopoly) are unable or unwilling to provide that protection, whether by choice or policy or through lack of resources.

They say, “You can not stay and fight the fire, you do not know how” but then at the same time are withholding the information on how, and then when they don’t have enough resources to protect your property throw up their hands and say “our resources are stretched so thin there was nothing else we could do!”

Luckily, in the past couple of years, this has been changing, and BCWS has been working cooperatively with communities like ours. Locals as a resource, rather than a liability. What a change.

So I am going to impart some of the training I have received over the years and share some of the knowledge and understanding I have, and sometimes it will be in the same way that it was imparted to me, with the stern caveat that it is by no means

complete or to be considered official and I am in no way liable for your ability (or inability) to understand the entirety of what I'm attempting to convey.

Consider this a primer on training - what you can read in advance of the real, official training so that when you do get the real, official training, it is not all brand new to you and more of it sticks.

I'm only one man, trying to help out some other humans who – if you're reading this – are looking for help, so take it for what it is. Ultimately, I'm just some guy telling you a bit about what I've learned, just like the guys and gals who trained me were.

## *FireSmart is Actually Your Best Defense*

*FireSmart* is the branding given to a program created by the *Canadian Interagency Forest Fire Center*, designed to teach people and communities how to create a less hospitable environment for wildfires in their communities and on their properties.

I have to admit, when I first heard about it I was skeptical and just kind of rolled my eyes - another nonsense government pamphlet handout that imparts nothing but the illusion of having done something.

We were asking for help with wildfire preparedness and here they were telling us to do landscaping. Pffft.

However... after going through their materials I realized that they had done a very good job and eventually even became a *Local Firesmart Representative* (LFR), and it is why I mention it here, because it is something that every rural inhabiting individual and community should take into consideration.

A big something.

The biggest something.

I very strongly believe that mitigating your threats is by far the most effective kind of fire preparation. Far and above building fire trucks and taking firefighting certifications is preventing the fire from happening in the first place, or at very least mitigating the danger it will pose to your life and property and resources when it does inevitably arrive.

Think about it this way: would you rather spend your time and money trying to put out a fire that's already threatening your house, or would you rather spend that same time and money making it so the fire can't threaten your house in the first place? ‘

It's like the difference between wearing a seatbelt and having really good paramedics standing by.

Depending on where you are, there may be resources or funding available to make

your community "FireSmart Certified" - look it up and see what's available to your area and get your neighbors interested because it's a program that actually works. Even if you don't get the funding, understanding and then employing the principles will help your community by leaps and bounds over running around spraying water at fires.

I am just going to cover some of the very basics here, simply because if you are reading this book then you are seriously looking into fire preparedness and I am not kidding when say that the FireSmart material is so comprehensive and valuable. After you read this, visit [firesmartcanada.ca](http://firesmartcanada.ca) and take the free online course and watch the videos and learn the principles there.

### *The Core Principle: Think Like Fire*

In the simplest possible terms, FireSmart'ing your property or community means to look at what dangers wildfire pose and what you can do to mitigate the risk. This means taking into consideration everything you are going to learn in the next chapter on Fire Behavior and applying it to your property.

My usual approach is to look at the property and think "what if lightning struck right there?" Are there a lot of ground fuels that will smoulder and flare up to ignite the ladder fuels? Are the trees evergreen or deciduous? How close is all of this to the house, how dry will it be in July or August, and based on the topography, how would the fire grow and spread and would it pose a danger to the house or other structures?

One of the biggest threats are the proximity of fuels to a structure and how the structure is constructed. If you have several large evergreens whose canopies are connected overhanging the house and the roof is made of cedar shingles, then it seems pretty obvious that a logical step towards protecting the structure would be to change that scenario.

But it goes much deeper than just the obvious stuff.

### *The Zone System: Defense Layers*

FireSmart uses a zone system that creates layers of protection around your structures, like the layers of an onion (or an Ogre). Each zone has different requirements and serves a different purpose in your overall defense strategy.

### *Zone 1: The Immediate Zone (0-1.5 meters from structures)*

This is your non-combustible zone. Nothing here should be able to catch fire, period. That means no wood decking right up against the house, no firewood stacked against the foundation, no cedar hedges under the windows, and definitely no pine trees whose branches are touching your roof.

I've seen properties where people have beautiful landscaping right up to their house - mulched flower beds, wooden planters, decorative bark chips - and it's like they've built a fuse leading directly to their front door. In this zone, you want gravel, concrete, stone, or other non-combustible and easy to clean materials. If you absolutely must have plants, they should be well-watered, low-growing, and deciduous.

Your gutters need to be clean of debris, and any vents need to be screened with fine mesh to prevent embers from getting inside.

Remember, it's often not the fire itself that gets your house - it's the embers that land on your roof or get sucked into your attic through an unscreened vent.

### *Zone 2: The Intermediate Zone (1.5-10 meters from structures)*

This is where you start to have some flexibility, but you still need to be very strategic. Any trees in this zone should be deciduous if possible, and their canopies should not be connected to each other or to any trees in Zone 1. If you have evergreens here, they need to be pruned up at least 2 meters from the ground to eliminate ladder fuels.

The key concept here is "fuel breaks." You want to create gaps in the fuel so that a fire can't easily jump from one area to another. Think of it like a firebreak in a forest - you're creating spaces where the fire has to slow down or change direction.

Any shrubs or bushes should be well-spaced and kept low. A good rule of thumb is that the space between shrubs should be at least twice the height of the shrub. So if you have a 1-meter tall shrub, there should be at least 2 meters of space before the next one.

### *Zone 3: The Extended Zone (10-30 meters from structures)*

This is where you can start to have more of a "natural" landscape, but you still need to manage it. Trees can be closer together, but you still want to eliminate ladder fuels

by pruning lower branches. This means that you should be able to walk under the branches without your head touching - if your head could touch it, then the tips of flames from a groundfire could spread to the branches and send it up the tree like a ladder.

Dead trees should be removed, especially if they're tall enough to fall on your house.

Any slash piles, wood piles, brush piles, or other concentrated fuel sources should be moved well away from this zone. I've seen properties where people have spent thousands of dollars on Zone 1 and Zone 2 improvements, only to have a massive slash pile sitting 15 meters from their house. That's like putting a bomb in your extended zone.

#### **Zone 4: The Lot Zone (30-100 meters from structures)**

This is where you're looking at broader fuel management. You're not trying to eliminate all the trees and natural vegetation, but you want to reduce the overall fuel load and create natural firebreaks where possible. This might mean thinning dense stands of trees, removing dead and dying vegetation, and creating fuel breaks along natural features like creeks or ridges.

### *Construction Materials: Your House as a Fortress*

The materials your house is built from and the design features it has can make an enormous difference in whether it survives a wildfire. I've seen fires where one house burns to the ground while the one next door doesn't even lose any paint, and the difference often comes down to construction choices.

#### *Roofing Materials*

Cedar shingles are beautiful, but they're basically kindling on your roof. Like, literally kindling - when I bought my house, the previous owner had used them and when we took them down we split them with a hatchet and used them as kindling in the fireplace.

If your roof is made out of kindling, you are definitely asking for wildfire trouble and would be far better off to spend \$15K redoing your roof than spending that same amount on a spare pickup truck you fancy turning into a redneck firetruck.

Same goes with any other combustible roofing material. If you're building new or replacing your roof, metal, tile, or composite shingles should be your only choice. If

you're stuck with cedar for aesthetic or cost reasons, at least make sure it's treated with fire retardant and keep it in good repair.

The other thing about roofs is that they need to be kept clean. Leaves, pine and fir needles, and other debris accumulating in gutters or on the roof itself are just fuel waiting for an ember to land on them.

### *Siding and Exterior Walls*

Log homes are gorgeous - I own one - and they are surprisingly fire resistant. Go ahead and hold a lighter right up to the side of your log house and see how long it takes to catch the rest of the house on fire.

However, the eaves under the edge of your roof are not made of solid log but most often cedar and as a result you will need to be extra vigilant about keeping what is below them clear because fire moves up and that is how a log house will catch fire even if it had a tin roof.

Vinyl siding can melt and burn, and wood siding is obviously combustible, especially in between the slats.

Non-combustible siding like fiber cement, stucco, or metal will give you a much better chance. If you have combustible siding, at least make sure it's in good repair and not weathered or dry-rotted.

### *Windows and Vents*

Single-pane windows can break from radiant heat even before flames arrive, essentially opening up your house to fire. Double-pane windows with one pane being tempered glass are much more resistant.

All vents need to be screened with fine mesh (1/8 inch or smaller) to keep embers out. This includes soffit vents, ridge vents, crawl space vents, and any other openings. The number one way fire gets into houses is through an unscreened vent which then burned from the inside out.

### *Decks and Porches*

Wooden decks and porches are essentially fuel attached to your house. If you have them, they need to be well-maintained and cleared of debris. The space underneath should be screened or enclosed to prevent embers from accumulating there.

This is the hardest part to keep clear, I know, I have that same problem. Debris falls down between the boards and accumulates below, unseen, dry and loosely packed and just waiting for one stray ember to burst into flames.

If you're building new, consider using composite decking materials or other non-combustible options. If you're stuck with wood, at least use pressure-treated lumber and keep it sealed and maintained.

### *Landscaping: Beauty Without the Beast*

One of the biggest misconceptions about FireSmart is that you have to turn your property into a barren wasteland. That's not true at all. You can have beautiful landscaping that's also fire-resistant; you just need to be smart about it.

#### *Plant Selection*

Some plants are naturally more fire-resistant than others. Deciduous trees and shrubs are generally better than evergreens because they don't have the resins and oils that make evergreens so flammable. Plants with high moisture content are better than dry, brittle ones.

Native plants are often a good choice because they're adapted to your local climate and fire regime. They're also more likely to recover quickly after a fire passes through.

Avoid plants that are known to be particularly flammable. This includes things like juniper, cedar, pine, and many ornamental grasses. If you love these plants and don't want to get rid of them, at least keep them well away from your structures and make sure they're well-watered.

As a compromise, you choose go and rip out the one you are reluctant to let go of if it comes to that. This is not "best practices" but it is what it is. I am a LFR and I have a nice cedar at the side of my house that has been well shaped and pruned and is beautiful and I just am not removing it... *yet*. I keep the underside of it cleared and it is well watered and have already decided that if a firestorm broke out, I have that on my list to make short work of with my chainsaw.

This isn't something you want to do much of, but for one or two smaller plants, pragmatically.. Eh, we still have to live and be happy right.

## *Irrigation and Maintenance*

Well-watered, well pruned, well maintained plants are much less likely to ignite than dry ones. This seems obvious, but it's amazing how many people invest in FireSmart landscaping and then let it all dry out during the summer months when fire risk is highest.

Regular maintenance is crucial. Dead branches, dry leaves, and other debris should be cleaned up regularly. Pruning should be done to eliminate ladder fuels and keep vegetation from getting too dense.

## *Fuel Breaks and Firebreaks*

Look for natural features on your property that can serve as firebreaks - things like driveways, sidewalks, creeks, or rock outcroppings. You can enhance these natural breaks by keeping them clear of vegetation and debris.

You can also create artificial firebreaks by installing gravel paths, stone walls, or other non-combustible features that will interrupt the continuity of fuels across your property.

## *Water Systems*

Having a good water system is like having insurance - you hope you never need it, but you're sure glad it's there when you do. Even if you've done everything right with your FireSmart planning, having water available can make the difference between a close call and a total loss.

## *Static Water Sources*

Pools, ponds, and water storage tanks can provide a crucial water source for firefighting efforts. They need to be accessible to fire equipment and have the right fittings for fire hoses.

I have a hot tub. Hot water is still wet water and there is about 500 gallons of it sitting right there, so it is a part of my strategy should we need to face that threat.

If you're planning to install a water storage system specifically for fire protection, consider how it will be used. If nothing else, just having a spare cage tote or two full of water at the side of the house could save your property depending upon where you are.

## *Irrigation Systems*

A good irrigation system can keep your landscaping green and reduce fire risk, but it can also be used for fire suppression in an emergency. Sprinkler systems that can be activated manually or automatically can wet down your structures and immediate surroundings if a fire approaches.

This is where a rooftop sprinkler system like we discussed back in Building a Structure Protection Unit would augment your defense strategy nicely.

## **Community FireSmart: Beyond Your Property Line**

Individual FireSmart efforts are important, but the real power comes when entire communities get involved. Fire doesn't respect property lines, and a neighbor who hasn't done their FireSmart homework can put everyone at risk.

### *Getting Neighbors Involved*

Start by talking to your immediate neighbors about FireSmart. Share what you've learned and offer to help them assess their properties. Sometimes people want to do the right thing but don't know where to start.

Sometimes know what needs to be done but are overwhelmed by the amount of work it might be for one person, or an elderly couple, or a disabled person. We have organized work bees to help out some of our community members that needed a little extra help.

Organize community meetings or workshops. Bring in local fire officials, Local Fire Smart Representatives, or forestry experts to talk about fire risk and FireSmart principles. Sometimes hearing it from an official sources carries more weight than hearing it from a neighbor.

### *Community-Wide Projects*

Some FireSmart projects are too big for individual property owners to tackle alone. Things like fuel reduction in common areas, creating community firebreaks, or improving access for fire equipment are projects that require community-wide cooperation.

Look for grants and funding opportunities that support community FireSmart projects. There may be funding for these kinds of initiatives.

## *Working with Local Government*

Municipal governments and regional districts can implement policies that support FireSmart development. This might include development standards that require FireSmart principles, bylaws that address vegetation management, or zoning that creates appropriate buffers around developments.

If your community is in a high-risk area, consider advocating for stronger FireSmart requirements in local building codes and development standards.

## *The Economics of FireSmart*

Let's talk money, because that's what it often comes down to. FireSmart improvements require an upfront investment, but they can save you enormous amounts of money in the long run.

### *Cost vs. Benefit*

Think about what it would cost to replace your home and everything in it, then compare that to the cost of FireSmart improvements. Even expensive improvements like replacing your roof or installing a sprinkler system are a fraction of what you'd pay in insurance deductibles and increased premiums after a fire loss.

Even if you are insured and *could* get paid out to replace everything you own, just think of what an enormous task that would be, how inconvenient to your life it would be compared to doing some landscaping.

Many insurance companies now offer discounts for properties that have been FireSmart certified. There is still a long way to come in that regard but it is a start. These discounts can add up to significant savings over time.

### *Prioritizing Improvements*

Don't get overwhelmed by it all. Living rurally means we often have huge properties and I know that, at least at my humble little acreage, the *To-Do* list never seems to get any smaller (or more affordable). Try not to try doing everything at once. Prioritize the improvements that will give you the biggest bang for your buck. Zone 1 improvements are usually the most cost-effective because it is the smallest zone, and because they protect your most valuable assets - your structures.

Many of the most important improvements can be done with sweat equity rather than

cash. Cleaning up debris, pruning trees, and creating fuel breaks are all things you can do yourself with basic tools and some time.

### *Increasing Property Value*

FireSmart improvements can actually increase your property value, especially in high-risk areas where buyers are increasingly conscious of fire risk. A home that's obviously been FireSmart'd is going to be more attractive to buyers than one that hasn't.

### *The Reality Check*

Here's the hard truth: FireSmart isn't a magic bullet.

Even a perfectly FireSmart'd property can burn under the right conditions.

It's not perfect, and it's not a guarantee, but it's your best first line of defense against wildfire. Everything else - fire departments, water bombers, evacuation plans - is backup for when FireSmart isn't enough.

So take the course, read the materials, walk your property with a critical eye, and start making the changes that will give you and your community the best chance of surviving the next fire season. Because there will be a next fire season, and the question isn't whether fire will come to your area - it's whether you'll be ready when it does.

## *About The Weather*

I used to love when a big storm would hit.

High winds? Crazy lightning? Sudden torrential downpours?

Hell yes.

I'd turn out all the lights in the house, grab a chair, and head for the porch — whichever side had the most action. I'd just sit there in the dark, soaking in the strobing light, watching nature throw one hell of a party.

Of course, nowadays — after living through over a decade of extreme fire danger — the sight of lightning doesn't bring quite the same giddy excitement.

Not when it's been over 30°C for weeks, the winter was mild, and the countryside is so dry that a single tossed cigarette butt could light up the whole valley like a roman candle. These days, storms don't mean cozy candlelight and cinematic thunder. They mean patrol duty, checking for smoke plumes, watching the wind, and trying to calculate just how bad it could get.

Weather has always been a wild card, but when you're living with the constant threat of wildfire, it becomes one of the most important things to pay attention to.

There's a reason the BC Wildfire Service has a whole certification course dedicated to weather. It's called S-211: Weather & The Fire Environment, and while it's geared toward trained firefighters, the truth is anyone living in the interface zone — where rural properties meet wildland — should know a few key things about how weather affects fire.

Especially if you are going to fancy yourself some kind of wildland firefighter.

Weather doesn't just influence whether or not a fire starts; it determines how fast it spreads, what direction it takes, how hard it is to fight, and whether that small smouldering patch in the woods becomes the next evacuation order.

Let's start with the obvious: *lightning can start fires*.

That part's not exactly breaking news.

But not every lightning strike results in an immediate blaze. In fact, one of the most dangerous kinds of ignition is what's known as a *holdover fire* — when a tree or a patch of ground gets struck, and it smoulders away under the surface for days before flaring up.

We saw this firsthand during the Rossmore Lake fire. The storm that sparked it rolled in on a Tuesday. Lots of noise, plenty of rain, and a whole lot of lightning. We did our rounds afterward — checked for smoke, watched the skies. Everything looked fine. But by Friday afternoon that fire had taken hold. It had been smouldering underground all that time, quietly drying out, waiting for just the right moment to leap back to life.

That's a lesson every brigade and every rural landowner needs to learn: a post-lightning patrol might not be the final word. You might need to go back again two, even three days later. Because what doesn't look like much today when everything is sopping wet can be a roaring crown fire by the weekend.

You'd think rain would be the end of it, right?

But it's not that simple. Rain that falls with lightning might extinguish some ignitions — or it might just give false confidence. A brief downpour can soak the surface but leave the deeper layers untouched. A hot sun the next day can dry things out quicker than you'd expect.

In fact, a big storm with lots of lightning and only light or patchy rainfall is one of the worst combinations. It gives you all the ignition potential with none of the suppressive benefit.

Even when a fire does start during a storm and appears to go out, don't assume it's over. Fires can persist in deep duff layers, under roots, or inside stumps — insulated from moisture — and flare up again when the weather turns dry.

### *Reduced Fire Behavior*

This happened to us a week into Rossmore: there was a little shower, and the weather turned cooler for a couple of days.

We were stood down.

I made quite a fuss at the time. *This is when we should be acting on it!* I posted an open letter to Doug Haughton on the community group calling on him to flex whatever influence he might have.

Today was cooler. To the untrained mind it might even seem like a reprieve, as if maybe it will all blow over soon. It rained last night and periodically throughout the day. In other words, it was the PERFECT day to be in there working on the smouldering ground fires and squashing the little spot fires before they turn into a new fire front. Instead, myself and all the TRAINED WILDLAND FIREFIGHTERS who are itching to return the favour to their community sat on our collective hands and waited and the day was wasted.

Absolutely squandered.

It's July in Knutsford and it's definitely going to get hot again and the plume will rise again, mark my words. And when it does we will all be thinking of what a damn shame it is we weren't allowed to do what needed to be done when it was doable.

For whatever reason, someone up the chain who obviously wasn't too keen to have the locals with their thumbs in the pie took the first opportunity to declare "Mission Accomplished" and stood us down.

Of course, just because someone at the fire center said the danger was over, those of us who had been stuffing our hands into the ashes for the previous week knew better and we kept doing what we could, knowing that as soon as it warmed up again that it would blow up.

And lo and behold, it did.

The next boss who took over called me back up when all hell was breaking loose and basically begged me to get the crew back together. I'm not ashamed to say that I made sure I got the requisite number of *I told you so's* in there in there before I told him that we had never stopped working, and then we got back to work.

### *Wet Springs and Fuel Loads*

Another twist?

**A wet spring isn't necessarily a good thing.**

Sure, the fire risk might feel lower in May and early June. But all that moisture supercharges the growth of grasses, weeds, and shrubs. And when summer inevitably dries out — especially around July — you're left with a lush, continuous carpet of flashy fuels. That makes for easy ignition and fast spread.

In other words, a wet spring is like laying down kindling all over the landscape and then hoping nobody lights a match.

On the flip side, a dry spring means dry fuels early. The fire season starts sooner and might be more intense at the outset, but paradoxically, it might produce less overall fuel depending on vegetation growth. It's a “damned if you do, damned if you don't” situation.

### Wind: The Great Multiplier

If there's one factor that turns a manageable fire into a monster, it's wind. If you need any proof of that, look at what happened to the City of Los Angeles in January 2025: the Santa Ana winds gusted up to 100mph which drove the spread of a complex of urban wildfires, ultimately resulting in the burning of some 57,600 acres, the destruction of over 18,000 structures and 30 confirmed deaths.

Seriously, if you haven't seen some of the footage of this, go to YouTube now and look. You only have to see a split second of the video to know the madness of a high wind firestorm.

Wind supplies oxygen, pushes flames into new fuel, bends trees over so crown fires leapfrog, and sends embers flying. Spot fires — secondary ignitions caused by flying embers — can start *kilometres* ahead of the main fire front under the right wind conditions.

In 2024 fires in West Kelowna blew embers *across Okanagan Lake* and started fires in North Glenmore.

Even moderate wind (say, 20–30 km/h) can dramatically change fire behaviour. Add in gusts, and you're looking at fast-moving, unpredictable runs that make direct attack dangerous or impossible.

Wind also matters when you're planning suppression: it affects *where* to position crews, *how* to build guard lines, and *whether* aircraft can even fly.

For civilians and community brigades, just know this: high winds pose a significant

increase to fire danger.

## *Heat, Humidity, and the Big Picture*

It's not just daily weather that matters — it's *patterns*.

When you've had multiple days over 30°C, low humidity, and no rainfall, even green-looking vegetation can become flammable. This is often referred to as *cumulative drying*. The longer it stays hot and dry, the deeper the moisture evaporates from fuels, and the harder it becomes to suppress fires once they start.

Relative humidity (RH) is also key. Fires burn more aggressively when RH drops below 30%, and when it dips below 20%, watch out. That's explosive territory.

As a general rule:

*High temps + low RH = high fire danger*

Add wind, and it's game on.

## *Fire Weather Indices (And What They Mean)*

The BC Wildfire Service and other agencies use the *Fire Weather Index System (FWI)* to gauge risk.

Here's a crash course in what some of the numbers mean:

- **FFMC (Fine Fuel Moisture Code):** How likely grass and small fuels are to ignite.
- **DMC (Duff Moisture Code):** How dry the medium fuels are (roots, small branches).
- **DC (Drought Code):** Long-term dryness in deep layers — a good predictor of holdover fires.
- **ISI (Initial Spread Index):** How fast a fire will spread if it starts.
- **BUI (Buildup Index):** The total amount of fuel available to burn.
- **FWI (Fire Weather Index):** The grand summary — how bad it would be if a fire started today.

You don't need to memorize the acronyms. But if the *FWI* is high or extreme, **you should be on alert.**

### *Reading the Weather Like a Firefighter*

You don't need to become a meteorologist. You don't need to have an arthritic knee that acts up whenever the weather is going to change.

But there are a few simple things you can watch that'll make you a more aware responder (or homeowner):

- **High clouds flattening out?** Could mean a change in pressure systems — something big might be coming.
- **Cumulus clouds with dark bellies?** Could indicate thunderstorm development and possible lightning.
- **Wind suddenly changes direction or speed?** Be alert — fire behavior can shift rapidly.
- **Tall clouds growing fast with flat tops (anvil-shaped)?** Likely thunderstorm forming — expect erratic winds and maybe lightning.
- **Smoke column leans over or spreads out?** Wind is picking up or changing direction — fire is likely to follow.
- **Smoke that was low starts rising quickly mid-morning?** Inversion is lifting — fire activity will increase.
- **Air feels suddenly drier or cooler, skin feels tight?** Relative humidity is dropping — fuels are drying and fire risk is going up.
- **Grass and weeds snap easily or crumble in your hand?** Fine fuels are dry and very easy to ignite.
- **Morning wind flows uphill, then switches downhill after dark?** Diurnal wind pattern — fire will likely follow the same direction.
- **Everything goes calm and quiet suddenly?** Could be the calm before a cold front — expect gusty, dangerous conditions soon.

Keep an eye on forecasts, but trust your instincts too. If the weather feels volatile,

don't wait for an alert — act early.

### *The Weather Is the Boss*

At the end of the day, weather is the boss out there. We are just sack of bone and guts scrambling around building castles in the sand. You can cut lines, bring gear, coordinate teams — but if the wind decides otherwise, you're just along for the ride.

Understanding how weather shapes fire isn't just useful for firefighters — it's essential knowledge for any rural resident who wants to protect their home, their neighbours, and their land.

And yeah... I still love a good thunderstorm. But these days, I watch it a little differently. I keep a scanner on. The team is all in touch with eachother on Telegram. Trucks are gassed up, totes are full, pumps have been tested, radios are charged.

Prepare for the worst, and then any surprises are pleasant ones.

## *Fire Behavior*

### **Fire Behavior: Understanding the Beast**

Fire is like a living thing: it comes to life, feeds and grows, and eventually it dies. It can be calm or it can be angry depending upon conditions. You can nurture it and help it along or you can kill it.

Understanding fire behavior is absolutely critical if you're going to engage with wildfire in any meaningful way. You need to know what you're dealing with, how it thinks, how it moves, and what it needs to survive. Because make no mistake – fire has its own personality, its own rules, and its own agenda.

### **The Four Stages of Fire**

Being able to identify the stage a fire is in is crucial to understanding how it can be attacked – or whether it should be attacked at all.

#### **1. Incipient Stage**

This is the baby fire. It's just getting started, maybe from a lightning strike, a carelessly discarded cigarette, or a spark from your neighbor's grinder. At this stage, the fire is small, manageable, and relatively cool. It's testing the waters, feeling around for what fuels are available and what the conditions are like.

This is your golden opportunity. A fire in the incipient stage can often be put out with a shovel, a bucket of water, or even stamped out with your boots if you catch it early enough. The key is early detection and rapid response. Every second counts because this stage doesn't last long under the right conditions.

#### **2. Growth Stage**

Once a fire has found its footing and is gaining confidence it enters the Growth Stage. It's consuming available fuels and building heat. The flames are getting taller, the smoke is getting thicker, and the fire is starting to influence its own environment by creating wind patterns and preheating nearby fuels.

This is where things get serious. The fire is still potentially manageable with proper equipment and technique, but it's no longer a job for a garden hose. You need to understand what's feeding it and cut off those fuel sources, or you need to cool it down with significant amounts of water or retardant.

### **3. Fully Developed Stage**

This is the monster. The fire has reached maturity and is consuming everything it can get its hands on. It's creating its own weather patterns, throwing embers hundreds or even thousands of feet ahead of itself, and generating intense heat that can literally cook you from a considerable distance.

At this stage, direct attack is often impossible or extremely dangerous. This is when you see the professionals pull back and start thinking about indirect attack methods – creating firebreaks, backburning, or just getting the hell out of the way and letting it burn until conditions change.

### **4. Decay Stage**

Eventually, every fire runs out of fuel, oxygen, or heat. In the decay stage, the fire is dying down, burning through remaining available fuels and leaving behind a landscape of ash and smoldering debris. But don't be fooled – this stage can be deceptive. Hot spots can remain buried in root systems, peat, or large woody debris for days or even weeks, ready to flare up again when conditions are right.

This is when the tedious work of mop-up begins. You need to find and extinguish every hot spot, every smoldering stump, every buried coal that could reignite and start the whole process over again.

## *WTF: Weather, Terrain, and Fuels*

Professional firefighters use the acronym WTF to remember the three primary factors that influence fire behavior. And trust me, when you're dealing with a wildfire that's not behaving the way you expected, "WTF" is often exactly what you're thinking.

### *Weather*

Weather is the most dynamic and unpredictable factor. Temperature, humidity, wind speed and direction, atmospheric pressure – all of these things are constantly changing and directly affecting how fire behaves.

Hot, dry, windy conditions create the perfect storm for aggressive fire behavior. Low humidity dries out fuels, making them easier to ignite and burn faster. High temperatures preheat fuels ahead of the fire, speeding up the ignition process. Wind provides oxygen to feed the fire and can push flames and embers in unpredictable directions.

But weather can also be your friend. High humidity, cool temperatures, and calm winds can slow a fire down or even stop it entirely. Rain, of course, is the ultimate game-changer, though you can't count on it showing up when you need it most.

Often, rain in the summer comes with fresh lightning strikes and thus new starts.

## *Terrain*

The lay of the land dramatically affects how fire moves and behaves. Fire burns uphill faster than it burns downhill – sometimes dramatically faster. A fire that's creeping along at the bottom of a hill can become a raging monster as it climbs toward the top.

Aspect matters too. South-facing slopes get more sun and tend to be drier due to the fact that they have gotten more sun for thousands of years than the north side of a hill, which are often cooler and moister. Valleys can channel wind and create unpredictable fire behavior. Ridges can act as natural firebreaks or can allow fire to jump to new areas.

Understanding your local terrain is crucial. You need to know which way the hills run, where the natural firebreaks are, and how wind patterns typically behave in your area.

## *Fuels*

This is what the fire eats. Grass, brush, trees, buildings, vehicles – anything that can burn is potential fuel. Different fuels burn at different rates and intensities. Fine fuels like grass and leaves ignite easily and burn fast. Heavy fuels like large logs and tree trunks take longer to ignite but burn longer and hotter.

Often, a fire can flash through an area so hot and so quickly that it never actually ignites the main logs but burns all the branches clean off, leaving a “forest” of black pokers pointed at the sky.

The arrangement of fuels matters. Continuous fuels allow fire to spread easily from

one area to another. Fuel breaks – areas with reduced or no flammable material – can slow or stop a fire's progress. This is why we like to see more deciduous (leafy) trees mixed in amongst the fir and pine - the leaves contain a lot of moisture and don't burn as easily. A forest with a good mix of deciduous trees won't burn as hot or as readily as a monocultured section.

Fuel moisture content is critical. Wet fuels are much harder to ignite and burn much slower than dry fuels. This is why humidity and recent rainfall are so important in fire behavior prediction.

### *The Living Fire*

Wildfire is natural and can be beneficial. Many ecosystems have evolved with fire as a regular part of the cycle. Some plants actually require fire to reproduce, and periodic fires can clear out accumulated dead material and make room for new growth.

But fire in the wrong place at the wrong time can be catastrophic. Understanding fire behavior helps you work with it rather than against it. Sometimes that means fighting it directly, sometimes it means redirecting it, and sometimes it means getting out of its way and letting it do what it's going to do.

The key is respect. Fire is not your enemy, but it's not your friend either. It's a natural force that follows predictable patterns if you understand the rules. Learn those rules, respect the power, and you'll be much better equipped to deal with wildfire when it shows up at your door.

## *Fire Fighting*

Wildland firefighting is really just emergency landscaping.

I put the actual fire fighting after fire behavior because you cannot fight fire unless you understand how it behaves, and once you truly understand how fire behaves then you will understand what needs to be done to "fight" (extinguish) it.

I also encourage you to go on YouTube and watch some of the channels I link you to in the Resources section at the back of this book and then practice with your crew, as it is a subject better demonstrated visually and practiced with the hands and understood through experience than discussed in a book. But this can give you some ideas and motivation to get cracking.

However, there are some important points that you can take with you to your practice that, I hope, will bubble up through your excitement in the moment to help keep you safe.

### **The Priority System**

Fire fighting is the protection of:

1. **Life**
2. **Property**
3. **Resources**

### **IN THAT ORDER!**

You wouldn't try to put out a grass fire in a field if your house is catching, and you should never endanger your life to save a structure.

It's always in that order: protecting life, then property, then resources.

## *Types of Fires*

There are many different kinds of fires to fight:

- Wildland firefighting
- Interior structure firefighting
- Exterior structure firefighting
- Vehicle fires
- Chemical fires

I am not even going to touch on anything but the first of these, as they are their own set of extensive training modules that really do require hands-on training and can be incredibly unsafe to even attempt without proper equipment and training. They are in either case irrelevant to the aims of this book, with the exception of exterior firefighting, which I can summarize in three words: **SURROUND AND DROWN**.

## *Initial Attack*

It's incredibly difficult, but when you are responding to a fire, try to stay calm.

Driving swiftly is necessary to get to the scene as quickly as possible, but don't lead foot it. If you hit the ditch (or someone running away) you're not going to be of any use, and there is a surprising amount of traffic down dirt back roads after dark when there is a fire nearby.

I've had close calls on almost every single incident I was ever responding to, whether it was rounding a corner only to find a huge RV careening towards me as it was fleeing the campground that's in view of a spreading wildfire, or a volunteer hauling a trailer full of horses in a panic.

When you roll up onto the scene, don't just go running at it like a fool.

That's right, I said like a fool, because you would be a fool to just go running at it.

I took a lot of shit for saying this at our first community fire emergency meeting and I stand by this years later:

**Don't be a bunch of fools running around in the dark!**

You're a damn fool if you're just running around in the dark, so don't be one.

This might be the most important part, so I will say it again and again:

### **STOP AND ASSESS.**

My first chief banged this into my brain: "The fire will still be there in another thirty seconds, take the time to size it up."

The fire has already been burning. Adding fifteen seconds or even one minute to stop and assess, to take a look at it and size up the fire and understand your location and make a plan on where you should stage and how you're going to get out is not going to make much of a difference to the fire, but it could very well save your life and the lives of the people on your however ad hoc crew. So do not under any circumstances skip this step.

There's an acronym they teach in some of the training: **S.T.A.R.**

- **S** – Stop
- **T** – Think
- **A** – Assess
- **R** – Respond

Look at professional firefighters – they don't just go running into fires. Even when they're moving quickly, they are not panicked; they are calm and moving with purpose. This kind of zen calm in the face of danger is something that some folks are born with, but it is also something that can be learned if you keep as your mantra:

### **STOP, THINK, ASSESS and then RESPOND.**

#### *What to Assess*

Determine where the fire is burning and what direction it is moving. Remember to never stage or attack from the head of the fire – that means where it is spreading to.

I made this mistake recently, even after decades of experience. I saw a small spot fire and I just jumped up and squirted it with the piss tank I was carrying. I was downwind. It smoked out and I got smoked – it got my eyes and my airway and momentarily I was frozen, blind and unable to breathe, ten kilometers down a dirt

road with only one other person behind a bunch of trees who had even the foggiest idea of where I was. I recovered, and then spanked myself because I didn't follow the first rule. If I would have panicked, I would have died.

Taking a few moments to assess allows you to see how it changes over time, even if it's a short period: How quickly is it moving? If a sudden light breeze picked up, would you become stuck in the middle of this?

**Key questions to ask yourself:**

- How vigorously is it burning? You can tell when a fire is starting to become aggressive – it has a jet engine sound. If you hear the jet engine coming from the brush beyond where you can see, take a step back towards your anchor point.
- Is there wind and if so, is it steady in one direction or is it shifting? Beware shifting winds – a flank can become the head in a moment.
- How hard is it blowing – is it consistent or are there gusts?
- How steep is the terrain it's on?
- How do you get to it, and more importantly, how do you get out?
- Is it a ground fire or is it laddering?
- What are your chances of removing those laddering materials before they take off?
- If it's currently a ground fire, how much readily available fuel is there on the ground – i.e., is the grass long, is there a pile of dead branches, etc. – and how close is it to laddering materials such as brush and low branches on trees?
- How big is it and what is its overall behavior? Once you've been on a few fires, you'll realize that fires have personalities.
- If it is an older fire and has already cooked for a bit, are there trees who have lost their root systems and pose a risk of falling on your people?

*Documentation*

Professionals have forms they fill out on arrival and I encourage you to keep some in

your truck. You will definitely find that it helps with your own assessments as it will remind you of what you need to look for, and going through the process of filling it out will give you a good handle on the fire, whether or not you establish or integrate with a formal Incident Command. Even after many firefights I do this subconsciously, but having the paper to log it and consciously cover what is happening is a huge benefit.

I've included a simple one in the back of this book under "Resources" – feel free to photocopy it and keep some on hand.

After you've done this a few times you'll be able to do it quickly, and the more you do it the better at it you'll become. Chances are good however that you are not going to be sizing up fires every day – remember, you're not a professional firefighter but you're here out of necessity and hopefully you never need to use this information, so don't be too hard on yourself if you have to take a little longer to do this.

This is also why I encourage you to use the paper – even the pros use the paper and they do it day in and day out, so there's no shame in reminding yourself when the moment arises, especially if it's not a part of your daily reality.

And if the pros show up and you can hand them your initial behavior report, you're going to have a lot more credibility when they're deciding whether they let you stay and help or if you're going to be hauled away by the local law enforcement.

Give it a shot. Throw a clipboard and some photocopied incident assessment forms in your truck and take 30 seconds to fill it out when you roll up. You'll feel better prepared and do a better job as a result... and it might actually save your life.

Also, fire is not a static thing – it is like a living thing, constantly moving and growing and changing, so your assessment will necessarily take at least a few seconds. Fifteen seconds of watching a fire is a thousand times more informative than a photograph. Take the time to watch it and see how it's behaving.

Get a feel for its personality. Is it languishing, or is it aggressive?

### *Staging Your Attack*

Select where you're going to attack from – your **ANCHOR POINT**.

Park so that you do not have to go into reverse to get out.

That means take an extra few seconds to back in.

### **ALWAYS POINT TOWARDS SAFETY.**

Take an extra few seconds and do a 30-point turn on the single-file dirt road if need be, grinding your brand new truck's bumper into the ditch if need be, but point that sucker towards safety before you get started.

Far better to do the "Austin Powers turn around" before you need to.

One time I rolled up to where some locals that I hadn't worked with before were working on a fire on their property. They had parked nose-in to the top of a gully.

First of all, don't park at the top of a gully. If the fire started to come up that hill (and it was a very steep hill) it could have been on the truck in a matter of seconds.

Secondly, **ALWAYS POINT TOWARDS SAFETY.** That way if things pop off and you need to bail, you can jump in the truck and high-tail it, dragging your hose behind you if need be. Better to lose a hose and pump off the back of your truck while you're getting out of dodge than to get trapped or try to reverse down a goat path while everything's on fire.

When staging to attack a fire, select a location that is close enough that you can reach it with **HALF** of your attack line – too close and you might not get a chance to get your pump primed and started and the hose deployed before you have to move again, too far and you're going to be trying to make adjustments to reach it and all that is going to cost you time.

If you've done your size-up right and have correctly staged your apparatus at an appropriate distance, deployed your hose and charged the line, now you get to finally **FIGHT FIRE.**

### *Fighting Fire with Water*

Start by opening your nozzle to a wide pattern facing forward (towards the fire) and **THEN** approach the fire at the point you've determined to be most advantageous – upwind usually. Approaching with a wide forward-facing pattern **BEFORE** you arrive at where you intend to begin fighting from will both cool and wet both the air and fuels where you will be standing and starting from. It's easier to breathe and wets down the area you're about to be walking into. Don't worry about getting wet; you're going to get wet.

Remember, **wet fuel doesn't burn, and that includes you.**

If you can avoid it, you should always be standing in either some place wet or some place black – grass fire can move with incredible speed and even a small, momentary shift in wind direction and you can suddenly find yourself standing **IN** the fire line instead of in front of it, but wet fuel doesn't burn.

### *Attack Technique*

Carve yourself out a notch of safe area and work out in a semicircle with your anchor point as the center of the radius. Adjust the nozzle to a tighter pattern to begin putting heavier water directly onto the base of the flames and at greater distance, then back into a wider pattern.

Shake the hose back and forth so that it's making a zig-zag pattern across that area that you're working on.

Be sure not to go too tight at too close of a range or you can kick up flying embers ("firebrands"), spreading spot fires beyond. This is also why you start with the wide pattern – if you start blasting at an ash pit with a laser beam of water you're going to start throwing embers far beyond what's already engaged and make for yourself a bigger problem than you started with.

Before you start going straight at the fire itself, make it wet at the edge of the fire – what's already on fire is already on fire. It can burn, but by making it wet (or removing the fuels, as we'll discuss shortly), you're preventing its spread. It really only takes a couple seconds but it's worth doing.

This is called "Wet Lining".

**Aim at the BASE OF THE FLAMES.** Don't aim at the licks of flame itself but the base. It is the fuel that is on fire, not the air above it.

Although approaching with a wide pattern of mist will help cool the air around the flames, you aren't going to put out a fire by aiming at the tips or body of the flames but rather at the base, where the fuel is combusting.

Besides the base of the flames, be sure to go wide and soak the **UNBURNED** fuel outside of the line. **WET FUEL DOESN'T BURN** so get the area outside of the fire line wet to stop the spread. It's called "wet lining" and we joke about taking a whiz on dry unburned grass as wet lining, but it's a legitimate tactic – once the water stops

flowing, the unburned fuel becomes the next thing a fire wants to burn.

### *Knockdown vs. Extinguishment*

During initial attack you're not looking to completely extinguish the fire right away but rather to "knock it down" so you can quickly contain it. You are really just cooling the area so that you can deal with it in a detailed manner. Fully extinguishing a fire can take a surprisingly long time – sometimes even days or weeks – and it can be done at leisure during mop-up.

During initial attack, you want to knock it down, and that means if you want to have enough water to do that then you're going to have to leave some of it smoldering inside the line, and that's fine. It can smolder all it wants as long as it's not spreading.

But also don't forget about it, because it can smolder underground sometimes an entire season and then come back to life as a ground fire in the spring – this is a real threat.

Most of what you are doing during initial attack is preventing the fire from spreading further.. Further into the grass, further into the ladder materials. Whether wet lining around it, knocking down the activity to lower intensity, digging a guard, containing its spread is really the goal of initial attack and is why IA crews often don't even have water.

Think about it - smoke jumpers that are parachuting into remote areas aren't going to extinguish a fire, they can't carry enough water to put it out, they are just going to contain it and try to keep it small until better tools can get there.

### *Hazards: Traps and White Ash*

Also, when dealing with previously extinguished fires – particularly those characterized by white ash – you have to be aware of "traps."

Let's pause to drill down on this. When I say "white ash" I'm talking about where it's all black and burned and then you can see particularly white ash. This means that it has completely combusted, which is a bit of a slower process.

A "trap" is where the ground fire has moved into the roots and although it looks like ordinary ground, when you step on it, it will collapse because it's actually burned through. There will be networks of traps spreading out from trees, where their roots have burned like a wick underground leaving cavities that are sound until you step

onto them.

I fell into a trap one time working a fire that had a slash pile on it. I almost fell ten feet down a hole that on the surface looked like burned-out ruin but within was a portal to hell. Even at a smaller scale, you take a step and what you thought was ground falls through to be two feet deeper than you thought. Be wary of white ash and old burns – they linger and burn and smolder for a long time after it's been raked over.

### *Strategic Considerations*

If you've sufficiently wet the perimeter then you won't have to worry about the smoldering ashes flaring back up into new fuels and beginning a new spread outside the line – or behind you once you've moved down the line.

Something else to consider is that once something is within the burned area, depending on how well burned the area is, it might be better to let it burn itself out.

Partially combusted fuels can be problematic – they've already had all their natural moisture (and their ability to contain it) cooked out of them, and even if you dumped a swimming pool on them, once the sun gets back on them and they dry out they are already that much closer to combustion conditions once more. All they need is that spark (or a particularly warm summer day and a wind in the right direction).

This goes back to my discussion on why fire is a natural and even beneficial thing under the right circumstances.

If it's already half burned and you can prevent that burning from spreading, if the trees are already toast and there's nothing in there you really want to save, letting it burn out – or at least the easily combustible surface fuels – means you won't have to worry about it catching back on fire.

Going back to the Fire Triangle, if the fuel is exhausted then fire cannot live.

Remember, "the black" is one of the safest places you can be in a fire... assuming it's sufficiently black. It might be warm on your feet but you don't stand a chance of becoming enveloped in flame when you're standing in the black.

### *Secondary Hazards*

One thing that will happen later is that a hot fire will wash through and cook off the

grass and evergreens, but because deciduous ("leafy") trees are fire resistant, the leaves (which contain a lot more moisture and don't ignite as quickly) will not catch fire at first. Under regular circumstances, they act as fire guards, because the leaves don't readily burn.

But what will happen instead is that the trees will die, and the leaves – aspen, maple, etc. – will dry out and then a day or two later a wind will blow by and knock those dead and dry leaves off the trees/brush and land on the smoldering ground fire and catch an ember and next thing you know you have open flame, and then that blows off into grass that hadn't yet burned, and then starts back up.

This is one of the big reasons why having locals patrolling is super important, in Monte Lake in 2021 there were a number of properties that were saved well after the main flame front had moved through and beyond, but while evacuation orders were still being enforced by the RCMP. The folks that stayed behind went mopping those little problems up and kept what was already a tragic situation into a total loss.

### *Tactical Priorities*

Rather than focusing on the biggest parts of the fire, be strategic in where you attack – there may be a tree going in the middle of this grass fire but it's surrounded by grass which is already engaged and spreading out slowly but consistently in its search for new fuel. Maybe give the tree a shot to cool it down and keep it from casting embers to buy yourself some time, but squash that grass before it advances to the adjacent stand of trees.

Every situation will be different and there is no "one size fits all" action item aside from triaging the greatest threats and actioning them first.

Always be re-assessing the situation and adjusting your strategy based on what's most urgent.

Fire is a living thing that grows and changes, moment by moment. Your initial assessment is quickly invalid. Stop and re-assess.

Your primary goal in initial attack is to prevent the fire from spreading further, so whatever is the most imminent threat – to life, property and resources (in that order) – should be your target. Fine ground fuels such as grass, dried leaves and brush are the quickest to knock down and are also the biggest threat to spread (assuming it hasn't ladderred into the crown) because they are the quickest to ignite.

Once there aren't any open flames going, you can take your time properly extinguishing everything.

### *Proper Extinguishment*

Have you ever gone camping, and at bedtime dumped a bucket of water on your campfire, stirred it up and gone to sleep, only to get up in the morning and finding it still smouldering?

Don't just dump a tank of water on a log that's smoking. Kick the log over and get the underside. Scrape it with the back edge of a Pulaski and hit it again. The smoke will tell you where it's still cooking, but don't just endlessly dump water on it – figure out where it's actually hot and get into it.

Get into the ground and stir it up. “Make mud” we say - if you have a mud puddle, it isn't going to burn. Chances are, if it isn't a mud puddle, it might re-ignite anyway.

### *Fighting Fire with Hand Tools*

Most professional wildfire crews don't have any water whatsoever except for what they're going to drink. The perennial tool of the wildland firefighter is a tool called the **Pulaski**.

These are an axe on one side and basically a small, heavy-duty hoe on the other.

The axe side isn't used for chopping down trees, as you might expect, but is most useful for quickly de-limbing trees at their base to clear laddering material.

So for example, you've got a fire that's crept through the grass and is just starting to bubble under a tree when you show up. The flames are going to get into those low branches and it's going to go straight up the fir tree and it's going to candle and then you've got a bigger problem.

You don't need water to at very least delay this problem – grab your Pulaski and start whacking off the lower limbs and pulling them out. Throw them out of the way, either into the black if there is any or well enough away that they're not going to catch.

Now that fire can go ahead and burn there until you can get some water to do mop-up.

## *Pump Operation and Staging*

Running out of water sucks, not only because you now need to weigh anchor and leave the scene you're already working on and run back to the pond and fill back up, but because it's really hard on your pump.

**Don't ever run your pump dry**—this includes running it with the nozzle closed. It uses the water passing through it to cool the pump housing. If it's running dry or if you're idling the pump with the nozzle turned off for too long, you will damage the pump. Feel the pump housing (NOT the engine but the actual pump housing) occasionally to make sure it's not getting too hot. If it's too hot to touch, it's too hot to run—shut it off and let it cool down. This will be the job of the pump operator.

## *Crew Roles and Coordination*

Yes, the pump operator. You should have someone with you whose job it is to run the pump and watch the water level.

You CAN do it yourself while on the hose, but it's really not recommended. If you need to shut the pump down, even a mere 100' is a long way back when it's all dense bush and helter-skelter fallen trees and burned-out pot holes on a massive slope. And especially once you're working on a fire, you're not going to be paying attention to your water levels, if you can even see it from wherever you end up, or how the pump is behaving.

Having three on your crew is even better:

- **One on the pump** - getting it primed and started and running smoothly
- **One running the hose** - deploying it and then working the fire line
- **One behind the wheel** - acting as anchor, monitoring the comms and the situation in general, or else driving so you can "run and gun" or make adjustments to location while you make progress on the fire

Or, if you're staged really well in an area with lots of hot spots, you can have the

driver operate a shovel or Pulaski instead, helping roll over logs and dig in to get the fire cooled.

Believe me, it's not something you want to do by yourself. Train your teenagers, get your neighbors and friends involved, make sure everyone knows how to do every job.

Practice together!

### *Pump Setup and Priming*

Getting the pump started quickly is important. Use rigid, reinforced suction hose—DO NOT try to use fire hose for the suction. Think of trying to suck through a wet paper straw that has been flattened.

Make sure your rigid suction hose has a screen with a foot valve on it. The screen will help keep junk like organic debris, mud and rocks from being sucked up if you're drafting from a pond or creek, which even if you have a trash pump is going to be problematic at the other end of the hose where it meets your nozzle (don't forget to detach your nozzle during maintenance and make sure it's clean inside). You will know if you've got some piece of leaf or grass inside your nozzle because you will be thinking "what is wrong with this pump?"

It is amazing how much a single grain of sand can block up your nozzle, and if you are constantly trying to kink off the hose so you can clear out the nozzle, you will soon appreciate how important clean water is for firefighting.

Something some have done is taken an empty jug of washer fluid and tied it off to the end of their suction line (with baler twine, of course) to help float the suction and keep it from spiking down into the mud when you toss it into whatever body of water you've found to load up from.

The foot valve will prevent backflow, which will help keep your pump primed and also prevent your hose from being sucked dry by the siphon effect when you shut off the pump, depending on how you've got it staged on a hill.

### *The Ram Pump Trick*

The other handy thing about having a foot valve on your suction is that there's a little trick to priming the pump if your suction has a foot valve—the ancient technology of the RAM PUMP.

In short, you take the end and ram it into the water source.

In our cage tote truck situation, that means you've climbed up on top, unscrewed the inspection port and started vigorously stabbing the end of the suction hose down into the water. The force of you pushing it in also pushes water into the line and then the foot valve prevents it from running back out. Do this several times in rapid succession and you can prime your suction very quickly. I always used to keep a couple of washer fluid jugs full of water next to the pump to prime the housing just in case, but I have found that once you get good at this you don't even need to, as once the suction hose is primed, it spills into the housing or down the line if you've got a hose connected.

**Note:** Keep your nozzle turned off so that when you do run water it doesn't just come shooting out. However, not all the way off—leaving it just slightly open allows the air to escape when you do fire it up, without the fear of a "loose hose" situation. If you do ever get a "loose hose" situation where the end of the hose was left on and it is flapping around, DO NOT try to go and catch the end. This is extremely dangerous! Shut down the pump, then go up to the nozzle and close it and start the pump back up. Trying to catch a flopping nozzle under pressure is like trying to catch a hummingbird that can punch your teeth out.

In the event that you can't get back to the pump quickly, to catch a loose hose you start further back, kneel on the line, and then crawl towards the end while pushing the line to the earth. This way you can "tame it" without waving your arms around trying to catch a crazed nozzle.

All that being said, it's good to leave the outlet disconnected from the pump while you are priming the line. If your hose operator has taken the other end and is deploying it, stand on the end you are going to couple to your outlet so it doesn't get "doinked." The reason for this is that you will be able to tell the housing is full when water begins spilling out the outlet, at which point you can make the connection and know that the pump is properly primed prior to starting it.

This is MUCH faster than unscrewing the "priming port" on the top of the pump housing.

## *Pump Operation*

Every pump is different so I won't go into too much detail about pump operation besides to say that you and anyone who might be assigned the task of pump operator

needs to know how to use it... and that there's not really a whole lot of variation between the trash pump designs. Whether it's a Honda or a Power Fist, there's a starter, turtle means slow and rabbit means fast, there's a choke, a place to put oil in, a place to put gasoline in, water inlet and water outlet.

And there's also a "fuel off" switch, which is separate from the "ON/OFF" switch... and it's not always in the most obvious location.

It's not terribly complicated, but even I have had the (repeated) experience of cranking with growing frustration on the engine while cursing it for not starting only to realize that besides the fuel switch there is also an "ON/OFF" switch that had been set to the OFF position. It seems dumb but it's the kind of thing you might forget about if you're not too familiar with the unit, especially when you have adrenaline pumping before the pump does.

Once you've got it going, climb back up and look down into the tank to where the bottom of the suction ends up to make sure that it is actually pointing into the lowest corner of the tank, which will depend upon what kind of angle you're parked on. Make sure it is not curled around and sticking up halfway up the tank, as I have previously learned the hard way.

### *Pump Speed Management*

One more thing—I personally don't recommend running the pump at full rabbit when in use. I don't know of any 4-stroke machine that likes to be run at top RPMs consistently. Once we've got it up and running I'll bump it up to max and then just down a step. If we're just running a single line of econo line, it can reasonably be run at full turtle with just as much effectiveness, plus your water will last much longer.

It's easier on your pump and there's still plenty of pressure—I can run my pump at around 80% with 100' of 1.5" line and still fire a stream about 50' from the end of a generic Hansen nozzle, which is absolutely sufficient for almost any operations you should be considering actioning.

### *Communication is Critical*

This is where comms become really important. If you've got one of your team 100' down a line, and you're standing next to a running pump, and you've got someone else in the cab of the truck, you will not be able to communicate. Period. You will each be completely oblivious as to what the others are thinking or doing.

I'll go over what you need for radios in the section on communications, but this is where using them is important.

**Don't start the pump until your nozzle person is ready and reports to you that they're ready** (again, comms). Charging a line on someone when they're not expecting it can be extremely dangerous. Like it can kill someone if an open line gets charged and the nozzle bonks them in the head, and killing our team is the opposite of what we are wanting to do here.

### *Radio Protocol*

The pump operator will need to communicate with the nozzle operator to let them know that the pump is primed and ready to be started. The nozzle operator will need to report that they are ready for the line to be charged. If the truck needs to be moved to advance on the fire line, the driver needs to be in on the loop as well and not attempting to do it while the pump operator is climbed up on top of the cage tote trying to see where the foot valve is seated.

The pump operator also needs to make regular reports on the status of the water reserves—i.e., "it's at 50%" or "we've got about fifteen minutes left"—and when it needs to be shut down.

### *Line Management and Hose Tactics*

When the line is charging, the nozzle operator should open it up a little to allow air to escape—far better to do this before it's fully charged and under contained pressure. Just think of how your kitchen sink sputters after you've turned off the water and drained the supply lines to do plumbing work and then turned it back on, now imagine that with more direct pressure and three times the diameter.

If the pump operator is close enough to any kinks they can go and kick them out so the line curves rather than pinches; each kink reduces the flow at the end.

Try to stretch out the excess hose in a rolling "S" shape.

This is where having that fourth hand helps:

1. **Driver/lookout**
2. **Pump operator**

### 3. **Nozzle operator**

### 4. **Hose help/hand tools**

Running around fixing kinks or bindings in the hose and then once it's running good, this person should have a Pulaski and/or a shovel and be up at the line stirring up what you've laid down, digging a line and generally helping out the nozzle operator as you can't do much else when you've got a charged fire line in your hands and water's flowing.

## *Hose Diameter Strategy*

Another thing to consider is hose diameter.

Blasting out of 1.5" hose is great fun but you will find that your huge water cube gets depleted incredibly quickly. Like, about five minutes and you're empty. As well, 1.5" line gets really heavy and cumbersome and honestly it's overkill for most of what you're likely to ever be doing. We've talked about this before but I'm here to remind you—you're not likely to be blasting a candling tree, but your grind work will often be pretty casual cruising around extinguishing smouldering ground fire and hot spots.

This is where the 5/8" "econo line" line comes in. With a single cube of water and a twisty forestry nozzle I can put down and "make soup" out of an acre or more of smouldering hillside, complete with burned-out stump holes. We can run for about an hour blasting high pressure, laser cutting under burn into a paste that ends the fire's smoulder. I could also blast it for five minutes with full 1.5" hose and it would feel really awesome but come back the next day and everything is still a Rank 2 ground fire.

This is owing to how water flowing over a ground fire creates "umbrellas" where roots and other subterranean materials can continue to smoulder despite a torrential downpour—or, say, 250 gallons of water from a cube on the back of a Redneck Fire Truck.

## *Multiple Line Tactics*

One thing you can do if you're really well resourced is throw out a length or two of 1.5" hose but attach a "water thief" between each of the lengths, and then a 100' length of the 5/8" econo line off each thief. With two econo line lines running on a

single 250-gallon tank you ought to be able to run for a half hour to 45 minutes and you will be literally ten times as effective as just roaring up and shooting your shot out the end of a 1.5" nozzle.

It's just not as sexy.

### *Water Management and Refill Strategy*

If you run out of water before you're done but still like your staging area and everything is nice and tame Rank 2, pop the hose off the pump and run back to fill up while leaving the hoses where they are. While you're gone getting water, the rest of your team can start scraping out the hot spots, digging lines and piling the hot materials into the middle of the black and creating a nice hard earth border around them. When you get back, just hook up and they can return to turning those piles of hot embers into mud.

## *Fire Entrapment Avoidance*

Not much has changed in terms of firefighting in the last 10,000 years; most of the training has to do with how not to become dead in the course of putting wet stuff on the red stuff.

In BC this is a course called S-185 "Fire Entrapment Avoidance" and it is almost always taught right alongside the S-100 ("Basic Fire Suppression and Safety"), although they should really be one course because fire entrapment avoidance is necessarily part of fire suppression and safety. Stranger still is that the S-100 requires yearly re-certification with the S-100A "refresher" course, but the S-185 is only ever required once.

In our crew we have chosen to require our people to renew the S-185 every year, because surviving your engagement is obviously much more important than fighting the fire.

The principles of the S-185 are based around a system to ensure you don't become entrapped and what to do in case you do.

So much of this is planning and we've gone over it elsewhere in this book – don't go running in, have a plan, know your escape route, working comms, all that stuff.

Ultimately what it all comes down to is approaching any fire situation with a "safety first" attitude. There's a place for cowboy but it isn't when you're rolling up on a growing fire situation.

You need to recognize what factors go into making hazardous fire situations and take them into account. Just like the fire behavior pyramid, there are three main factors that contribute to hazardous fire situations:

1. Hazardous Fuels
2. Hazardous Weather
3. Hazardous Topography

## *HAZARDOUS FUELS*

Hazardous fuels are fuels that can spread fire quickly – that can mean a can of gas or a propane bottle, but more often in a wildland situation it means dry, readily burnable vegetation.

Think back to Fire Behavior and how fire spreads. Dry fuels are hazardous because they are closer to ignition conditions – their moisture has already been removed, so all that is left is for their temperatures to raise to ignition levels. Dead grass, brown leaves, red needles, old sticks, wood piles.

Hazardous fuels can spread a fire more quickly than you can move, creating an entrapment situation. For example, a wide open field covered in knee-high dried grass can shift in a moment, produce ten-foot flames and travel faster than you can drive in your truck, let alone run.

An ongoing problem we encounter is the underlay of the forest and wildland, what is called "duff". In the wild, it is not all flat and paved. It is filled with all the trees that have fallen over with the passage of time, piles of sticks and brush and weeds that have gone through repeated growing and then dying off cycles with not enough moisture to begin composting, accumulating over time so that the entirety of the forest floor is a flammable substance.

"The Earth itself is on fire."

Fighting this is challenging because in order to stop it you have to dig down to mineral earth – that is, not the fluffy loamy organic materials rich soil but down to hard clay and sand. It can sometimes be feet deep, and even if it has just been a slow smolder it creates new hazards where ash pits have been carved out stealthily, waiting for you to fall into them.

However, in entrapment avoidance we are mostly talking about having a hazardous fuel load cut off your routes of egress.

## *HAZARDOUS WEATHER*

Wind, heat dome, drought and thunderstorms. Just keep going back to your Fire Behavior lesson: if it is unbearably hot outside then that means the air temperature is high and that means the fuels are starting their journey that much closer to ignition temperature.

If the wind is blowing hard or shifting directions then a tiny spark or firebrand can easily be fanned into flames quickly. And needless to say, thunderstorms are hazardous for the lightning they can deliver – either to fuels or to yourself, standing out in a field or perhaps by a nice tall tree.

The wind can blow an ember behind you and start a new fire that blocks your escape route.

## *HAZARDOUS TOPOGRAPHY*

Steep terrain is on its own difficult to walk up, and can make "running away" more dangerous even when you're going downhill. Rocky terrain and deep duff will be difficult to navigate quickly and there is an ever present risk of stepping wrong and twisting your ankle or falling over and getting skewered by an up-facing stick.

When there's a fire on a slope there's the significantly more difficult problem of how fire behaves on a slope.

Even if you've remembered your Fire Behavior lessons and have stayed downslope of the fire, steep terrain can cause flaming debris to roll downhill below your position and cut you off from your crew and escape. Ground fire loosens topsoil and can release rocks or logs (or entire standing trees) which were otherwise inert but which are soon to be tumbling injury traps. Rocks that have been sitting on an ash pit for a week can suddenly come loose and even if they miss someone working below them, they can then ignite dried grass below by virtue of their stored temperature.

I've often sprayed rocks that were so hot that even after a minute or two of continuous spraying they were still so hot that the water just evaporated on contact.

ASPECT refers to the direction a hill is facing. In particular, south-facing ASPECTS are more prone to fire danger because they tend to receive the most sunlight. For thousands of years a hill has faced south, so that side of the hill is going to be that much drier and sun-warmed, with fuels dried out.

Other topographical features you have to look out for are chimneys, gullies, canyons, cliffs and holes. Not only because of how they will affect the fire behavior but because they can interfere with any hopes you have of escaping.

One of our ranchers has a few "exploratory holes" that have been drilled around their property by mining companies. They are wide enough for a person to fall into and

deep enough that you can't see the bottom when you're standing at the edge. These types of hazards exist out there, and nobody knows these things better than your local rancher, so take it into consideration.

Ultimately you are responsible for your own safety. Everyone is responsible for their own safety. Even if you were employed with the public wildfire service and had a supervisor who was responsible for your safety, YOU are ultimately still responsible for your own safety. If you see something, say something. Make sure that everyone knows about the particular hazards of a site when you arrive on location and keep in touch with each other.

Don't let the cowboy next to you get you killed. If you have a really bad feeling about something, go with your gut and get out of there and make sure everyone else does.

Our crew has an all or nothing policy - if one of the team feels that we shouldn't be going some place, then none of us do. Nobody is going to get called "a pussy" and told to stay back if they're so scared... if someone is alarmed enough about a circumstance that they don't want to go, then we all stay behind.

I've said it before but I'll say it again: no hillside, barn, stand of trees or house is worth dying over.

### **L.A.A.C.E.S**

L – Lookout

A – Anchor Point

A – Awareness

C – Communications

E – Escape Routes

S – Safety Zone

The L.A.A.C.E.S. system is something that's been taught in wildfire training for decades but which has evolved over time from L.C.E.S. to include the two extra A's. Our American friends still teach it as L.C.E.S. but I personally feel that the extra two A's make good sense.

It's the main components of your plan when you roll up on a fire – who is going to look out for us and where are they going to be watching from, where is our anchor point, always keep your situational awareness active, ensure lines of communication

are working, know your escape route and where are you going to go to safety if the SHTF.

It's probably the most important part of the S-100 training that BC Wildfire Firefighters receive because if you follow these steps properly you should come out alive. My own S-100/S-185 instructor put it on the back of our cards so we'd always have it on us to refer to.

Keep in mind that it is designed for wildfire crews that are dispatched to attack often incredibly large wildfires, however for the purposes here it still contains important points that you will need to keep in mind when you are addressing fires of all sizes in your area.

## *THE LOOKOUT*

First and foremost is the Lookout, which is a designated person who keeps back from the fireline and, as the name suggests, is on the "lookout" for hazards. In the Wildfire service this person is more highly trained in and experienced with understanding and anticipating wildfire behavior and the factors that contribute to it such as weather and terrain, but in community practice it's often the person with the bad knee or not as athletically equipped who is standing back a bit and watching whatever is going on around them so that they can update everyone as to what is actually happening outside of their tunnel vision.

This person can be stationary or roving so long as they can see both the firefighters and potential hazards that may be present, which usually means the fire, but can include other factors present at the site that could pose a hazard to firefighters such as weather or other equipment arriving on the scene.

When you are standing at the fireline, you have a tendency to focus on what's right in front of you – you're fighting the fire and looking at how you're going to advance on it, you may not notice that flaming debris has rolled down the hill or that embers have blown behind you and ignited a spot fire, or that trees on the other side have started to candle.

This is why having a lookout is important. Ideally (and according to the official training), the Lookout is solely focused on their overwatch duties and can have no other tasks. In pragmatic reality, if you are a one truck crew of volunteers in your own neighborhood trying to get a jump on a new start then you are unlikely to have the extra hand to spare to stand back and watch and this job will fall on the driver as

that is the person with the fewest responsibilities at the time a fire is being actioned.

In pragmatic reality, that role is often filled by your one friend with the bad knees, or the wife of one of the guys, who's sitting shotgun in the truck while there's a dozen pickups running water on a scene that's going crazy, shouting over the radio that things on "the left side" are going up.

The important thing is that you have SOMEONE who knows how to recognize hazards and who is designated to be on the lookout – everyone should always be on the lookout, but someone who has been assigned the responsibility in their role to be on the lookout.

This is why in volunteer Fire Departments the Chief is usually standing back, because they have the most experience and can spot a hazard that a newer recruit might not recognize.

"No, you aren't the actor now, you are the director."

The lookout is watching not just for direct hazards at the fireline but at your escape route and all around you including things like weather and approaching equipment.

### *ANCHOR POINT*

The Anchor Point is the point from which you begin your attack, chosen when you're doing your fire size up, the place from which you will advance.

Think of it like you're a ship, dropping an anchor and you are going to extend from it in a line that you can pull on to get back to safety. You should never allow a fire to get between you and your anchor point because that is the same point that you are going to escape from. If it does, you are officially in an entrapment situation. Congrats.

An Anchor Point needs to be a relatively safe space, which means that it's free from unburned heavy fuels, so don't select a point in the middle of the bush surrounded by trees to be your anchor point just because it's closer to the fire. Instead choose a clearing or a road or a creek or a break you've built with machinery or an already burned out area ("the black") or some other kind of firebreak.

The idea is that it's a place where the fire can't get back behind you while you're working on your advance.

## AWARENESS

Situational Awareness. I would say that above all else, it is this that will keep you alive and everything else are just tools toward that end.

Every firefighter needs to keep total situational awareness at all times. My own adult son, trained and certified in S-100 and S-185 though he was, got caught with his headphones in on his very first deployment into a red zone while attempting to open a farmer's fence. It was far enough from immediate danger that he didn't get slapped, but he still got a big talking to and it's unlikely that he will make that mistake again.

Firefighters can lose their situational awareness through a variety of means – boredom, dehydration, fatigue, blood-sugar levels, distraction, feeling overwhelmed, or missing important information.

It is important to have a designated lookout and to have escape plans and everything, but every single person in the truck and on the line needs to keep AWARE of what's going on and where it's going, otherwise you can find yourself in a heap of trouble.

If you are working around heavy equipment, always be aware of where that equipment is and whether or not the operator knows you are there – NEVER assume they see you. If you're standing behind a Cat D6 then get away from the back, go to a place where you can make eye contact with the operator. It's incredibly hard to see from the cab of this kind of machinery and they can move surprisingly quick and if you want to get into a shoving contest with a piece of heavy tractor equipment you're certainly going to lose every single time.

Besides becoming dead, you will make the operator feel really bad, and who wants to make someone else feel bad like that.

Going back to my personal story about dumping 10,000 gallons of water on a slash burn, even though my Captain was acting as lookout from the pump, he couldn't tell what was going on under my feet and I hadn't kept enough situational awareness to think about the content of what I was walking around on.

This can happen in the wildland setting as well, where root systems can become involved and as the fire cooks off the light organic materials that make up topsoil and duff, they end up creating underground caverns of burning root systems.

## *COMMUNICATIONS*

We've covered this in several places in this book but the importance of being able to communicate with the rest of your team cannot be understated.

If you do not have enough radios for every single person on site, then work in pairs where at least one of the pair has a radio and DO NOT separate and wander off.

## *ESCAPE ROUTES*

Also known as "egress" if you want to sound fancy.

Part of having your plan when you roll up is knowing how you are going to get out of there if it all goes sideways. You may be staging at the foot of the blaze but what happens if the wind suddenly picks up and reverses direction and you find yourself at the head of a fast moving grass fire? What happens if firebrands start two dozen spot fires all around you or a gust of wind blows a tree down across the road you came in on?

Your escape routes are not just something you decide on at the beginning. As you progress along a fireline you need to be constantly thinking about which way you're going to go if it turns on you. Usually it is back the way you came, along the fireline you have already put down.

They're also probably the hardest part to really decide on because their effectiveness hinges upon the absence of unexpected events, which is exactly what you need the escape route for. Which is why I pluralized the title of this section.

Don't settle for just one route – the official training specifies that you must have at least two routes, but I would say come up with at least two and then as many more as you can. Have a plan and a backup plan, and a backup plan for the backup plan because Murphy must have been a firefighter. Just ask any old timer and they'll have a thousand stories about how "things went wrong" on this fire or that.

In war they say the best plans never survive first engagement.

An escape route needs to be able to be walked, so don't select a route that goes over impassable slash piles or over cliffs. As a general rule of thumb, you should also try to make them facing downhill as you should not be actioning a fire from above (again, see Fire Behavior).

And yes, that's WALKED not "run". If you've waited until you need to run before you start looking for escape, you've waited too long. Running people make mistakes. They trip and impale themselves on branches or twist their ankles or stumble off a path into dense brush or over a cliff. Unless something completely unexpected happens and you have no choice, don't run. Base your plans around the fact that you will be WALKING AWAY and leave with enough time that you can do so.

When wildfire crews are actioning a fire, they actually flag the routes through the brush and go all the way to timing how long an escape route takes and are constantly checking on the effectiveness of the different routes during the operational period. For our purposes, you likely won't have the resources to dedicate to having someone walk and time an escape route and honestly you shouldn't be working a fire long enough to need to flag and time an egress – remember, the name of our game is getting small fires out quick, or at least controlling them until the cavalry can arrive.

You do not have the resources or training to be attacking big fires so don't put yourself or your crew into that situation.

### *SAFETY ZONE*

This is where you are going to bug out to if things get ugly. The Safety Zone is a location you select where ALL of your team can seek refuge if it all gets out of hand and you need to bail.

It needs to be big enough for everyone to fit and take shelter from smoke, heat, debris, timber and any kind of hazard the fireline is producing for you.

A lake could be a safety zone but you must consider the danger of radiant heat. Chances are very good that you will only ever need to be exposed to one really big fire before you forever consider the dangers of radiant heat because it is absolutely gobsmacking how impressively a fire can heat you from a distance through the wonders of radiant heat.

If there are mature but diseased fir trees right up to the water line and a crown fire rolls in, you might cook in the water like a lobster just from the radiant heat – think of how much heat a campfire with a couple of logs throws and then imagine that times one hundred thousand. An active crown fire can be dangerously hot even from a distance of a few hundred meters, so don't assume that because you jump into the water you'll be safe.

The official training states that the minimum distance between firefighters and a Safety Zone needs to be a distance of FOUR TIMES the maximum flame height. Consider how far that is if you've got a crown fire in trees that are a hundred feet high, how much higher the flames jump from the tippy tops of those trees.

Large, open rocky areas are a good choice because rocks don't combust. Downslope from the fire is also a natural selection due to the physics of how flames rise, but also be aware of rolling debris.

Avoid choosing a Safety Zone that is uphill or downwind from a fire, in a chimney or saddle or canyon or is otherwise difficult to get to. There were twenty firefighters killed in a fire in California a few years ago because their escape route to the Safety Zone was uphill and difficult to get to when the situation turned ugly on them and they all perished.

A tragedy that has become a teaching point in every single wildfire training seminar.

One that you may not think of but which is absolutely valid is an already burned-over area, otherwise known as "The Black". Remember, spent fuel can no longer burn. Ashes don't burn.

There may be hotspots but given the choice between an active rank 3 fire and a large black patch where most of the fuels have been clean burned but there's still spots that are kind of smoking, guess which one I'm going to choose to take my crew to until it blows over?

Another area that might not be immediately apparent but is still completely valid is a stand of deciduous trees – that is to say, leafy rather than evergreen trees. These trees are known as firebreaks because of the high moisture content of their materials. A ground fire might rip through the area but the trees themselves – and their leaves – do not combust readily.

Not at first anyway. What ends up happening is a couple of days after a fire has torn through a deciduous stand the leaves get blown off onto hot spots which then ignite and are blown off into new areas. But in an entrapment situation, as long as there aren't a lot of free fuels under them, a deciduous tree stand is better than a pine or fir tree stand.

If you cannot locate or decide on a Safety Zone you should not engage with the fire from where you are. Instead relocate and anchor to where it is possible.

## *Surviving Entrapment*

If you haven't been successful in Entrapment Avoidance then you have graduated to Entrapment Survival.

This is the ugly stuff. This is the "last resort" stuff. Worst Case Scenario. I genuinely hope that you never find yourself in a fire entrapment survival situation, but if you do then you need to remember a few simple things. I am going to make this section in particular simple so you can drill it into your head.

### **MOVE FAST**

Decide if getting to your Safety Zone is even possible and decide QUICKLY. If the fire is moving too fast or if circumstances have changed and you can't use your established Escape Routes then you need to decide if the fire intensity will permit you to quickly jump through.

If the fire intensity is low enough you can (when properly outfitted with PPE) briefly pass through some direct flames and smoke. For example, if there is just a finger of fireline a couple of feet wide blocking the route and the fire behavior is not very intense then this might be an option. If you still have water available to you, wetting yourself down will delay the effects of radiant and direct heat on your body, possibly long enough to get through the flame front and to your safety zone.

Remember when dealing with direct heat to PROTECT YOUR AIRWAY, from both heat and smoke. A single lungful of superheated air or dense smoke can send even the toughest man directly to the floor, and there isn't really recovering from that even if you do manage to not die on the spot. So take a good deep breath from whatever good air you can find and hold it in before you jump through the gauntlet.

If the intensity or density of the flame front makes this option untenable then you need to shift further still into immediate survival mode.

### **DROP EVERYTHING EXCEPT YOUR PULASKI**

The official training from the S-100 course says to drop all your tools as well, but my trainer taught us that you should keep your Pulaski because if you need to quickly dig yourself a trench to lay in, it is a lot easier with a tool than with your hands.

Think of it as "digging your own grave" – and it is only slightly a joke because if it doesn't work then that's exactly what you're doing.

You are now at your SURVIVAL ZONE.

## **DON'T PANIC**

Go back to your training: Stop and assess.

Move quickly – not panicking but with purpose and always towards the goal of your plan. All your other plans have gone to pot so now you are into your Survival Zone plan.

This is different from your Safety Zone. Your Safety Zone was pre-planned with requirements. The Survival Zone is where you make your last stand and it is necessarily going to be impromptu.

If you were with a government crew this is the point where your supervisor would call in the entrapment to the Emergency Operation Center and they could hopefully deploy some resources, whether a retardant or water drop to try to help until you can get extricated. Since you don't have the capacity to call in an air strike, you're going to have to survive this the old fashioned way, but you should at least try to let someone on the outside know where you are, who is with you and what the situation is.

If your radio does have the channels the pros are using on it, this would be an OK time to go ahead and break the rules.

This is where our discussion on PPE comes back up, specifically the difference between bunker gear and woodland outfits and coveralls. If you happen to have turnout gear then this would be significantly better at this point than thin coveralls regardless of how fire resistant they are, as you'll want as much thermal mass as possible to protect you from radiant heat. Turnout gear is designed for firefighters to have close encounters with fire and although it gets incredibly hot and sweaty inside the gear when you are in direct contact with flames, the thermal mass provided is

much better than a few millimeters of clothing, however flame retardant it might be.

If you have heavy equipment like CATs behind the line with you then use it to dig a guard or at least scratch out a fuel-free area or trench capable of fitting your crew. Make it as big as possible.

The operator station of a CAT doesn't give you the same kind of shelter from extreme heat and smoke that a truck will – regardless of whether they're enclosed or open – because it is much higher off the ground than a vehicle.

There are still a few things you can do to give yourself and your crew the best chances of survival under the circumstances.

After you have cleared the fuels away and dug a trench, park the equipment parallel to the flames so that the tracks and main body of the unit is broadside to the strongest front. Put the blade or any implements or attachments you have down on the ground and shut off the engine.

Sheltering under the equipment might be preferable – remember we're looking for protection from radiant heat which means mass between you and the flames.

If possible, dig down a trench with your hand tools and then shelter under or behind the equipment, depending on the situation.

Otherwise, if you don't have any equipment, start creating a fuel-free area by tossing any sticks or other fuels away from where you are and then, depending on how much time you have, it is time to dig yourself a grave.

Use your Pulaski to dig as deep as you can in the time you have to maintain as low a profile as possible – this helps protect you from radiant heat. Work together with your team to help bury each other with the material you have dug out of your hole to provide further insulation (except for the face, obviously).

Spray yourself and the area around you with whatever water you have remaining.

If you do happen to have a lot of water with you, you can open the nozzle to a wide pattern and lay on your back with the spray broadcast over you like a water curtain. Chances are, you won't have enough water to do so.

Dig it as deep as you can in the time you have but if you are at this point you probably don't have much time.

Lay face down in the dirt with your tool at your side, handle up by your waist so that the tool edge is at your feet – this is so it can't possibly be bumped into your face and cause injury there.

Use your hands to claw out a deeper depression or well for your mouth and nose so that you can protect your airway and then use them to shield the sides of your face and ears.

Take shallow breaths as close to the ground as you can.

And that's it.

It will either be the longest or the last minutes of your life.

You will either survive, or you will not.

In either case, if you've followed all this then you will either die knowing that you did everything you could and it was just your time, or else you will have one awesome story to tell for the rest of your life.

But, if you have paid attention to everything we have said up to this point, you really shouldn't ever find yourself in a situation where you are attempting entrapment survival. You should have been long gone by the time it got even remotely close to needing this kind of information. Nevertheless, it is provided here "just in case".

## *Surviving Vehicle Entrapment*

There aren't any good videos of crews digging a ditch and laying face down in a grave they dug themselves because when it gets to that point, nobody has time to pull out their phones and record it. But there are some pretty amazing videos of vehicle entrapment you can find on YouTube and I suggest you look them up. Specifically, look up "Beaver Fire Entrapment FLA" to get an idea of what you might be facing in a situation like that.

Vehicle entrapment is a scary scenario and should only be undertaken as a last resort.

Your vehicle has the capacity to get you to safety, but it is also limited in maneuverability and could end up being your tomb. A tree across a road is easily negotiated on foot but will block almost any kind of vehicle.

If your vehicle is still working and you can get to some place safer, then do so.

If, however, you find yourself in a vehicle in a good, defensible location, then stay put. Don't drive out of a field into a fuel-dense wildfire just because there is a road there – you might end up getting stuck along that road in a much worse situation, surrounded by heavy fuels, than in a field surrounded by fire.

Your vehicle may die suddenly from heavy smoke entering the engine air intake. To try to prevent this in heavy smoke, idle the engine high; this will help it power through rather than sputtering and choking at a low idle.

If it does quit, don't bother wasting much time trying to get it going again – it probably won't. Use that time for preparation instead.

Make sure your lights are on. This is to make yourself more visible rather than to light your way, as driving in dense smoke is much like driving in dense fog. Driving in very dense smoke can be difficult or impossible – if you cannot see where you are going, don't just start driving blind! Ending up off the road when the fire arrives is far less preferable to meeting it on a dirt roadway.

As with exterior fire entrapment, radiant heat is going to be the big problem so try to find a spot that is the farthest from dense fuels and overhead vegetation, and keep away from powerlines – even if the lines are no longer charged they are thick, heavy cables and can do serious injury when they come down.

Also, if your tires melt you lose the insulating benefit provided by being in a vehicle with downed lines upon you.

Your vehicle is now your Survival Zone.

If there is time before the flame front arrives, get out and clear as much vegetation away from your vehicle as you can. As with when you're digging a guard, be sure not to fuel load the fire line. Keep an eye out for potential secondary Survival Zones in the event that your vehicle's windows blow out and the interior becomes on fire – a ditch on the uphill side of the road is a good start, and if you've still got time dig it down even deeper with room enough for all of you.

If you have water available, set it to a fog pattern over the cab but DO NOT attempt to take a hose into the cab with you. You're far better off to keep the vehicle sealed than to have a crack in the door or window.

Set the parking brake and leave the lights on – if your vehicle has "automatic" lights then manually turn them on so that if the ignition gets shut off, they remain on. If you have flashers, turn or keep them on and if you don't, at least turn on the hazards ("four way" flashers).

If you have any extra blankets, sunshades or turnout coats, hang them over the windows facing the fire, but do NOT try wetting yourself down inside the cabin as it is a sealed environment and the interior could get up to 95°C, which will boil off the water and create dangerous humidity. The essence of vehicle entrapment survival is very much like earthquakes: get low and face away from the windows.

Take any floor mats and extra PPE or equipment you might have and pile them on top of yourself and each other. Thermal mass. Whatever you can put between the source of radiant heat and your body.

Ensure your windows are closed and the vents are set to "recirculate." If your air conditioner is still working, turn it on full cold for as long as it will run to try to cool and filter the air into the cab. When burning in light fuels the smoke will be dense and will still find its way into the cabin and if the fuels are heavy then the heat will

be higher and the interior of the vehicle will melt and will gas off toxic fumes – in either case creating a toxic respiratory environment.

Everything inside a vehicle is plastic. This is one of the biggest threats municipal firefighters encounter when dealing with vehicle incidents – the toxic smoke generated by melting plastics.

I can spend weeks in a major wildfire inhaling wildfire smoke and ultimately be just fine, but a couple of good deep breaths of melted plastic will make you cough like you're trying to throw up your lungs and in the long run probably give you cancer.

### **PROTECT YOUR AIRWAY!**

Just like survival outside, within you need to keep your breathing as low to the floor as possible and use your hands on the sides of your face to protect your airway as much as possible.

Breathe shallowly if the air becomes smoky as deeper breathing is more likely to trigger uncontrollable coughing fits which will only introduce more smoke and heat to your airway.

But no matter what, do not open the door until after it has passed. However bad it gets in there, it is going to be worse outside. Your vehicle is now a submarine in a deeply hostile sea, so think of it like that – opening the hatch at depth will only surely be yours and your team's drowning.

At least in here you have a chance of survival.

However, if the windows blow out then you must leave before it's past because the materials inside will ignite and the design of a cabin will create a chimney effect which will burn even more intensely than forest fuels.

If you must leave before it has passed, exit from the side with the less intense heat, using the vehicle itself as a shield if possible and head straight for the ditch you hopefully had time to prepare earlier (or at least noted).

Keep low to the ground, using a prone crawl as even a few inches of elevation can translate into extreme temperature differences. **PROTECT YOUR AIRWAY!**

Once you're back outside, follow the same steps outlined in the outdoor entrapment instructions above.

## *Surviving Homestead Entrapment*

Whether you find yourself helping a neighbour or are standing your ground at your own property, you may find yourself entrapped behind a fireline with only a structure to shelter in.

I put this section after vehicle entrapment because being inside a structure during a wildfire has very much the same dangers and benefits as being in a vehicle - it might be better to be inside when the front arrives and necessary to get out once it's passed.

Hopefully by this point you have followed the FireSmart guidelines and made of your homestead a defensible position - that means having cleared fuels from around your home and created a fire guard to prevent the arriving front from coming into direct contact with your structure. If you have done this thoroughly, then you may not even need to shelter in the home but can instead be outside attending to the exterior defense.

If you have truly prepared and have an exterior defense plan which includes rooftop sprinklers and firefighting apparatus, then the time to engage is well before the fire arrives at the structure itself.

Soak down the area surrounding your house and any other structures you intend to defend - remember, wet fuel does not burn. If you have an endless supply of water, then for days prior to the flame front's arrival you should be soaking the entire area. Drain your pond into the brush and grass, so long as you still have water for the sprinklers and hoses. Make it a swamp.

Make sure any cisterns or totes or tanks or barrels you have are full and test that your apparatus are functioning correctly.

In the time leading up there may be certain bushes or other plant life you have identified as being too close to the house or otherwise a fire hazard but have refrained from removing as it was aesthetically pleasing. If you've got a wildfire headed for you for certain, then the time to re-assess your decision to keep it is in the days leading up to the arrival. Hack it out and get it as far away from your home as

possible.

I'm looking at you, junipers and cedars...

Take into consideration what direction the fire is coming from and try not to fuel load what will become the fireline.

"Fuel loading the fireline" means stripping fuel from what you're trying to protect but then feeding the fuel to the fire as it arrives, which results in a hotter and more intense fire, increasing its reach.

If you have a pile of organic waste, try to chip or mulch it and then soak the resulting product down and/or bury it with dirt.

Make sure any propane tanks and gas cans are moved inside and into the basement as far as possible from potential flame or heat ignition.

This might seem counter-intuitive, putting "the flammable stuff inside" but stop and think about it - a jerry can or propane bottle in an out building or under your deck has a much better chance of catching and setting your house on fire than if it's down in the darkest corner of your basement.

If the fire gets down there, you've already lost.

Take anything like lawn chairs and cushions inside - many homes with adequate firebreaks have been ignited even well after the front has passed by a chair cushion on a deck that caught a flying ember and smouldered until it ignited and caught the eaves.

If you have a garage, back your vehicle into it and close the door as you will need it after. Be sure that you back in so that if you need to you can just put it in drive and skedaddle.

If you do not have a garage, try to park your vehicles (facing out) in the safest place possible. Even if you plan on taking "the truck" and not the wife's BMW, stage all of your vehicles correctly so that if one of them burns or won't start or otherwise becomes disabled and not the other - as fire has been known to do - you are prepared to take it.

For this same reason, try not to park the vehicles right next to each other. If you have two vehicles, park one on one side of the house and the other on the other.

Just as in earthquake and zombie apocalypse survival scenarios, fill every sink and bathtub and bucket and pot you can with water so that it's readily available to you even if the taps stop running. Keep empty sour cream or margarine containers floating in them so that if you need to use the water you have something right there without having to go looking.

Once the front arrives, get everyone to their stations. Make sure your comms are working and stay together if possible and if not, stay in regular contact. Conserve your water for spot fires if water resources are limited.

Do everything you can to keep your structure from becoming engaged - it is now your Survival Zone.

All of this having been said, if you find yourself in a firestorm scenario where active exterior defense is not possible, it may be necessary to retreat into the structure.

Stay on the ground floor. Going to an upper floor risks becoming trapped and having to jump if the structure catches, and going into the basement risks having it come down on you.

Make sure you have your fire extinguishers and hand tank pumps ("piss tanks") and towels and cloths out and ready to use.

Go and remove any curtains from around the windows and put them away in a closet. Take any textiles like bedding, couches, clothes, pillows, curtains, throw rugs - anything flammable (and you will find that almost everything in a house is flammable) - and move them as far away as possible from the windows, inside a closet or interior hallway if possible. Just be sure to not congest the hallway.

The next move is circumstantial so you'll have to decide based upon your specific situation whether you're going to patrol outside or hunker down inside, or a combination of both.

Once you've prepared every room in this way, isolate each room from the rest of the house by closing the doors and stuffing a wetted towel under the edge of it. Seal the edge of the door with duct tape. Seal off vents with aluminum foil and duct tape as the fire can spread through the vents as well.

Ensure all exterior doors and windows are closed but not locked - the lock isn't going to keep the fire out but if things get too hairy inside and you need to evacuate, you

may in a panic (or a smoke-filled atmosphere) not be able to disengage the lock.

If you suspect a fire has broken out in a part of the house behind a door that is already closed, you use the same technique employed if you are trying to escape a burning building: feel the door with the back of your hand, or feel the door knob. If it's hot, don't open it. You will only be feeding the fire fresh oxygen and releasing the smoke into the rest of your house.

If it's hot, you know that the room has caught and that your structure is now engaged.

If it gets to this point you are just trying to keep it as contained as possible until it is safer to be outside.

They say the Fire Code is written in blood. Commercial buildings are required to have heavy doors sectioning off areas of the structure so that if a fire does break out, it doesn't spread as quickly through the building. But just because it's closed off does not mean you are safe - the fire will spread into the ceiling and through the walls, eventually, and how long only depends on how "to code" your structure was constructed.

I have personally walked around in a building long after it appeared to have been extinguished only to use the laser thermometer to detect the fire still burning inside the walls - axing the wall open revealed it.

Even if it is relatively contained, the interior of a structure that is on fire is an incredibly hostile place, even more so than being at the foot of a wildfire. Smoke and extreme heat becomes trapped inside and fills the available space, quickly turning it into a smoky oven.

And structure fire smoke is incredibly noxious. Everything we put in our homes these days is made of plastic and composite materials and absolutely spew carcinogens when introduced to higher temperatures. Many municipal fire departments store their bunker gear in separate, ventilated and filtered rooms now because of the toxins that gas-off their kit when they come back from a structure fire.

That's why you want to wet a towel and stuff it under the door. Tape off the edges of the doorway if possible with duct tape or tuck tape.

But beyond the toxic smoke in a confined space, radiant heat is another major problem.

I once attended a fire at a house that we managed to extinguish before it left the living room, but still found that the tube of the television (yes this was a few years ago) at the far end of the house in a bedroom had exploded from the heat. That's how much heat can fill an area in a short span of time.

It has nowhere to go, so like an oven it starts filling up from the top and settling down and cooking.

Cooking you, in the oven of your house.

And also, the kitchen is on fire.

This is why you want to defend your home, because this is that worst case scenario.

As with any other kind of entrapment scenario, **PROTECT YOUR AIRWAY**. You can damp a cloth and then hold it over your mouth and nose to help filter the air while you remain close to the ground. Having all this ready **AHEAD OF TIME** is going to be helpful because as your available breathing oxygen disappears you will find it hard to think straight, no matter how well you are trained, and you will be amazed at how quickly you become panicked when you can't breathe.

In a matter of seconds, it can be all over.

If you can keep a fire that has found its way inside contained to one room, even for a few minutes, you may be able to ride it out long enough to get out once the front has passed. You may manage to survive.

In the old days they said you had an average of 17 minutes from the time a smoke alarm went off to safely exit a house, but thanks to the modern materials that average is now down to around three minutes.

## *Vehicle and Structure Fires*

Notice I put this section *after* surviving entrapment.

I want you to take a deep breath and repeat after me:

**“We are not going inside.”**

Say it again.

This is one of the hardest truths to hammer into the heads of people with that brave - and sometimes foolhardy - run-towards-the-flames energy that if you are reading this you probably vibe with. But it's vital.

Structure fires and vehicle fires are not our job—not in the way you're probably imagining it.

Sure, we respond. Sure, we show up. Sure, we try to help.

But unless your crew has full NFPA structural certification, SCBA training, the right gear, and has practiced moving through zero-visibility hellscape with 60 pounds of turnout kit on your back, **you do not go in.**

A smoke filled atmosphere is a terrifying place, second only perhaps on this Earth to active warzones.

I'll tell you an little anecdote from my own training:

Even when in the light of day with a plastic garbage bag taped over our masks to simulate the visibility of a smoke filled atmosphere - which by the way is surprisingly realistic - one of the guys in my training class panicked just a few feet into the simulated burning structure (it was not on fire, it was day time at our fire hall and he just had a bag over his head), tore off his mask and ran from the building.

Had that been a real incident, he would be dead.

You can't see where you are going. You can fall through floors. You can have floors fall on you.

Here's another story.

I remember attending a residential structure fire when I was with *Beaverlodge Fire Rescue*, and a frantic woman met us outside as we rolled up. She was hysterical, to the point that she was on the road shrieking at us, blocking our truck from pulling up enough to stage the pump and get started so we had to yell at the RCMP to grab her and "get her out of here!"

But it seemed that she was trying to say something about something inside, downstairs.

A baby?

Super nightmare stuff.

That gets your blood pumping, your "hero" circuits activated.

*We gotta get in there!*

First of all, just to add to the stress and frustration, it was about -20C that afternoon and we had trouble tying into the hydrant. Even though the valve is supposed to be below the frost line, it had been a particularly cold and miserable northern Alberta winter and getting the water started took me leveraging off the hydrant with my entire body strength to crack it open with the key.

The snow leading up to the hydrant was deep from having been plowed off the road but then crusted over in the way that late winter snow piles get. Crunching through it in a full loadout of turnout gear was like trying to move swiftly through a half frozen swamp. And we had barely enough crew to run the truck since it was the middle of a weekday and many of our people were at their day jobs in Grande Prairie.

Then, to top it all off, the front door was barricaded.

So we made our way around the side to the back, where we made entry.

It was not the first time I had been in a burning structure, but it was the first time it felt so urgent, like there was genuinely life hanging in the balance.

Myself and my nozzle man, Myro, were crawling through a densely smoke filled

atmosphere doing a left handed search and I am drawing a mental map of the room's shape and size as I poke about with the handle of my axe to determine the perimeter. There was shit everywhere - young children's toys, laundry.

It has already been said but it bears repeating: a smoke filled atmosphere is a *terrifying* place.

From within a breathing apparatus, it is like scuba diving in some muddy pond where the mud is too light and everything is too hot. The beam of your flashlight makes everything seem like it is swimming out towards you. From out of the murk I start seeing these white strings dangling from above. What on earth? You can only see things a few inches out from your mask, and I paw at it with my thick leather gloves. It's like... gum being stretched between finger and teeth.

Or some kind of giant spider web.

I was all too aware of that feeling of being "trapped", but as a young father myself all I could think about was that woman's child was in here somewhere and we had to find our way downstairs because if we quit, a young life would surely perish.

We chased the smoke down the stairs and around the corner into a dingy bedroom. This is where the fire was, the air cleared and the flames of a well engaged queen sized mattress in the middle of the room became visible. Myro opened the nozzle and within a couple of seconds it was extinguished.

I started looking around for a child.

Myro busted the window and started flowing water out it to help ventilate the room, which had become impenetrable with smoke again once the fire was out. As the smoke cleared, I began to see shapes familiar to my own life: piles of blankets, and laundry... dolls and toys...

A playpen.

I stared at it, daring the child-sized lump in the middle of it to move.

This part I still see in my head, like a scene from a movie I can never unsee: my gloved hand reaching out through the thinning smoke, clumsily pressing down on the body-shaped lump, grabbing it around the torso with my thick leather fire gloves, and pulling it and the blanket it was wrapped in up to the face of my mask.

Breathing heavily I was staring right into the dead eyes of ...

A doll.

It was just a doll.

And I have never been more simultaneously relieved and also furious in my life, before or since.

I wanted to punch that woman in the face, but it was our own fault.

We had risked our lives to try to rescue her baby, and instead risked our lives to save a doll that was going to need to go into the trash anyway.

It turned out that what she had *actually* been trying to say was that her baby had knocked over the candle onto the bed downstairs and it had taken off before she could stop it. She had run out of the house to the neighbors, and left the baby with them when we showed up so she could try to tell us the backstory, but she was amigdala hijacked and couldn't get her words straight.

It also turns out that she had put a couch against the front door, and the mess and confusion in the house was just a result of being a busy mom who knew she should clean up but was so exhausted. To this day, when my kids let the mess in their rooms get to a certain level I start ranting at them about how if there was a structure fire they'd die tripping over their own junk.

Incidentally, the white "gum" hanging from the ceiling turned out to be what happens to decorative plastic pins that get tacked into the corners of the ceiling tiles when they get exposed to extreme heat and melt.

Everything in a burning structure is hostile and unfamiliar.

This is happened in 2008 and despite being 17 years later the trauma of looking out of my BA and down through the smoke at what appeared to be a dead baby still haunts me.

I include it here so you understand: **do not enter structure fires.**

Not for the cat.

Not for the wedding photos.

Not even if someone says they "might have seen someone inside."

It's harsh. But it's real. Our first job is to keep ourselves alive.

### **Modern Buildings Are Deathtraps**

Modern homes are made of flammable garbage.

Furniture that looks like wood is just resin-glued particle board. Sofas are filled with polyurethane foam, wrapped in oil-based fabric. Drywall is paper-faced. Trim is plastic. The insulation is plastic. The flooring is plastic. The pipes are plastic.

Beyond just the normal “modern living in a home” stuff, I want you to think about the kinds of surprises you might have stacked, tucked, buried or otherwise improperly stored inside of your own structures. Spam cans of ammo? A box of old phones and lithium batteries you keep meaning to take to recycling? An entire corner of the basement dedicated to paint and solvents and rusty old propane tanks?

And when that stuff gets hot, it doesn't just go straight to combustion—it **off-gasses**. It releases vapors and gases and volatile chemicals even without visible flames and turns the confined space they are in (and the area it vents to) into a toxic stew of hydrogen cyanide, carbon monoxide, phosgene, and a dozen other words that sound like World War I chemical weapons (and some of which were).

Even if the structure has plenty of time left before it collapses, even if the fire is at the other end of the house and you won't be exposed to direct flames.

Just like how the most common danger you face at a wildfire fireline isn't the fire itself but the trees that might fall on you, a structure fire poses more of a risk than just getting BBQ'd.

You won't just burn—you'll choke, convulse, and die with your lungs full of superheated gas and molten death vapors and carcinogenic particulate smoke.

If you're lucky.

If you aren't lucky then you get to spend the rest of your life with COPD before the cancer finally finishes you.

And what are you wearing?

Maybe Nomex coveralls and leather yardwork gloves from Costco?

This isn't a movie. You're not walking out of that building with soot on your face and a baby in your arms. One breath of the wrong air and you're dead and then you have just turned a property tragedy into a life tragedy.

So we don't go in.

We **surround and drown**.

We protect exposures.

We keep it from spreading.

We manage the hazard.

That's the job, not because we're cowards but because we are smart.

### **Preserving the Scene**

Here's the other reason we don't barge into burning buildings:

#### **Evidence.**

Structure fires are crime scenes more often than you'd think. Insurance fraud. Arson. Fatal overdoes. Domestic disputes. Foul play by a thousand different imaginings.

You tromp through a place with a hose and a boots and you are almost certain to destroy important evidence.

Our job is to stabilize the scene, keep it from spreading, and preserve evidence as much as possible.

Let the RCMP and the investigators do their work.

Don't become the reason it's inconclusive.

### *Vehicle Fires: Rolling Crime Scenes Full of Cancer*

Most vehicle fires in the rural world aren't from crashes. They're crimes.

Someone steals a car, uses it for a job, then drives it out into the bush or down a logging road and sets it on fire to destroy evidence. Yes, even in smaller cities like Kamloops. Here in Knutsford, we get a few of these every year.

Even if you roll up on an SUV with no plates, the dash half-melted, airbags deployed, tires cooking, every window blown out from the heat and it looks like it has burned itself out... it's not out.

## **That smoke is not regular smoke.**

That's burning foam, wire insulation, seatbelt tensioners, lithium batteries, composite body panels, plastic dashboards, refrigerant, rubber, and adhesives—all off-gassing and combusting into a low hanging, greasy cloud of hot chemical hell.

It's not “bad for you.” It's *engineered death*. You would be hard pressed to design something more toxic to be used as a weapon.

And it's directional. Unlike structure fire smoke, which rises, vehicle fire smoke hugs the ground and drifts. If you're standing downwind, you're breathing in murder gas.

It will stick to your clothes and your hair and keep on poisoning you after you have left. You will take it home and poison your family with it.

## **Never stand in the smoke.**

### **Never approach from downwind.**

And above all: **do not spray water directly on a burning vehicle**—especially if you're just trying to “cool it off.”

Here's why:

- You can **spread burning fluids** if the gas tank is breached.
- You can cause a **steam explosion** if water hits magnesium or overheated metal.
- You might **trigger a BLEVE** (Boiling Liquid Expanding Vapor Explosion) if a pressurized tank is exposed and then rapidly cooled.
- You might cause a **battery fire flare-up**, especially with lithium-ion or hybrid EV packs.
- You could **rupture a tire**, which can blow with the force of a small grenade.
- You might **accidentally detonate an airbag**, even after ignition.

There are a thousand clever ways that a vehicle fire will try to kill a first responder, either now or ten years from now, so unless you are properly trained and equipped,

*then stay the hell back.*

All that being said, once you are organized and have been doing training and practice and responding to emergencies, chances are that you will eventually get called to a vehicle fire.

So here is how you do it safely.

### **Tactical Response for Vehicle Fires**

1. **Park upwind.**
2. **Size it up.** Is it isolated or threatening to spread?
3. **Establish a wet line** around it—your job is to stop it from igniting the grass, brush, or trees.
4. **Remove nearby fuels**, but only if it is safe to do so.
5. **Don't approach unless you have to**, and never from the downhill or downwind side.
6. **If it's contained? *Let it burn.***
7. **Preserve the scene** for RCMP or fire investigators.

You're not putting out a vehicle fire, you're preventing a wildfire.

## *Mop Up (Make Soup)*

If you're satisfied that it's combusted the fine ground fuels but don't want it to burn down into the subsoil and root systems, then it's time to really put it out and that means stirring it up. "Make soup" is what I was taught and is what I'm always thinking about when I do this step of the process.

Use an eco-nozzle for this. Heck, even the humble garden hose is perfect as it's not so much how much water you put on it but how you use it. My half ton with a 55-gallon tank in the back put out hundreds of little spot fires using just some skinny garden hose on a reel and an electric pump plugged into my inverter.

Too much water and it just runs off. Set the pattern to a tight jet stream so that it can penetrate into the ground. Have your tool operator digging and stirring.

If you want to get really fancy, you can make a tool especially for this by taking a garden hose nozzle and attaching it to a shovel pointing down at the tip of the spade with the hose strapped up the handle so you're not tripping on it.

The key is to really stir it up. Make soup.

Consider the campfire that has a bucket of water poured on it. Anyone who's ever tried to put out a campfire knows that this will be inadequate – the undersides of the logs will not get any of the water and will continue to smoulder until they cook off the water you've poured on the top half and then it will re-ignite.

Anyone who's gone camping will have had the experience of thinking the campfire was adequately extinguished at bed time only to get up in the morning and see it still smoking.

We were once called out to a slash fire when I was in Alberta. Well, actually we were called out to it three times. The same fire. We thought we'd had it out after dumping the entire contents of our 4,000-gallon water tender onto it, left and filled the truck back up, parked the truck, got changed and went home and back to bed only to get paged back out to it an hour later. It was less than a half acre in size!

So we suited back up and got in the truck and drove it back out there and dumped a second tank load onto it – 2.5" hoses, just absolutely unleashed the great deluge on it. We'd drowned any small ungulates that had survived the flames, surely it's out now.

Well, rinse and repeat. By the time we got the third call-out for it we were done messing around, so here I am out walking through the middle of this smoking heap of ash at around 3am, nozzle on full focus like a laser beam blasting into the ground when I take a step and the ground falls away before me. It just opens up into an orange flaming cavern that must have been about ten feet deep. All that had kept me from falling into it was one half-charred branch of a tree.

It was like staring into the gates of hell.

If I would have fallen in there, there is no doubt in my mind that I would have died in that hole, a hole into hell that still existed even after we had put over ten thousand gallons of water onto this tiny patch of Earth. We ended up standing by and just letting it burn itself out.

The moral of the story is two-fold: first of all, watch your step and know what you're walking in, and secondly putting water ON to a pile of burning fuels isn't necessarily going to extinguish it, no matter how much water you put on it. Sometimes letting it burn itself out is the best move.

And this is how major wildfires are often managed. Often times, letting a fire consume the fuels in certain areas is the wise course of action. Just let them be consumed in a manageable way.

Consider how you water your garden, and how little water gets below the surface. This was me trying to teach my kids how to water the garden so that when I was away overnight everything didn't just die. You can spray water all over the surface so that it looks really wet, but give it a minute and then dig your finger into the ground and see how deep you go before you find dry dirt... not very deep. Penetration of water takes time and much of the water you put on a surface runs off before it's had a chance to penetrate the surface down to the roots, or in a fire situation, where there may still be smouldering.

Remember that the way a fire spreads – whether as flames or as smouldering ground fires – is by beginning to heat the materials next to what is actively combusting, raising the temperature of the fuel and cooking off the moisture until it, too, achieves combustion conditions.

The way to really know for sure if it's out - the old-school way the loggers were taught and what is still taught in the official S-100 course, the only way to be really sure, is to COLD TRAIL.

This means, taking off your gloves and getting down on your hands and knees and feeling under the surface of the ground with your bare hands to see if it is still warm under there. If you're not confident enough to stick your bare hands into it, then you're not confident it's out. But start by holding your hand up to it and seeing if you feel radiant heat. Sometimes, a good clue is if there are small winged insects flying around it - they're attracted to heat. Spiders will build webs over ash pots for this very reason. Seeing spider webs doesn't necessarily mean that a fire is out, contrary to how you might think that spiders might want to be away from a fire. A smouldering ground fire might be best identified by a spider web around a hole... the hole is heated and attracts the bugs, the bugs attract the spider.

Ultimately, I never trust a fire is out until I touch the ashes with my hand. You can tell right away.... If it's cold, you know it. If it's still warm, then you still have work to do.

It's filthy, time consuming work, but it is also deeply personal and if you really want to be sure it's not going to flare back up on you in a day or two (or next spring), then the only way to know is to do this. Just be careful if you are in rattlesnake country like we are, their burrows can go deep and they might be a little ornery at having first fire and then water at their front door. Even after you're really certain it's out, make sure to check in on it periodically over the next few days. Or months.

I keep saying this because it is true: fire is like a living thing. It is persistent and has a will to survive and given enough time and the right conditions the tiniest piece of it can get a foothold and suddenly blossom. The mighty oak grows from a penny-sized acorn and some of the biggest wildfires in recorded history started as a mere spark cast by a chain dragging behind a truck bouncing off of gravel. Re-visit your fire sites in the afternoon after the sun has gotten going on it to see if anything is thinking of getting going along with the heat of the day. Revisit the spots where smouldering ground fire got well established months later and see if anything is still puffing along.

Just after dark is another good time to visit your recent fire sites also, as it can sometimes be hard to see in the daylight when the air already has an ever-present layer of smoke hanging through it as it does here in the BC Interior by August.

Obviously look for any glowing spots but the dark has another advantage - take a powerful flashlight and shine it across the burned areas at around ground level, looking for tiny pillars of rising smoke to discover hotspots you might have missed.

## *PACKING UP*

Once you are satisfied that the fire is at very least not going to spread, or if you've been relieved by the professionals, it's time to pack up.

Be sure you collect any gear that you might have brought – hoses, nozzles, shovels and pulaskis and fittings. If it's late or if you're being relieved of duty by professionals or other volunteers you may just want to get out of there and go to sleep, and that's fair enough you can deal with the maintenance issues in the morning but make sure you leave with your equipment as trying to track it down after you leave will prove to be very difficult.

One thing that is commonly lost on fire scenes are portable (handheld) radios, so make sure that each member of your team hands in their radio when they get back into the truck. It's not uncommon to find a radio laying in the dirt when you visit a fire scene the day after. Lay your hoses out to dry before wrapping or laying them again, putting them away wet will significantly reduce their serviceable life (and will make them smell bad).

When we are working fire day in and day out, our hoses never get a chance to dry because they are constantly being used. But if things are calming down, be sure to lay them out and let them dry before you roll them up for storage. Be sure to cover any inlets/outlets on your pump so dust and debris doesn't get in there and then drain the pump housing by unscrewing the drain hole in the bottom of it.

You may be tempted to just leave it like that so that it's "always primed" but go ahead and leave it primed for a couple of weeks and then look at the color of the water that comes out of it when you prime the suction hose. That's the impeller and pump housing internals rusting. Just drain it, it will get primed again when you ram pump the primer hose (or open the valve if you have a semi-permanent stand attached to the bottom valve).

Be sure to fuel up the truck so you always have a full tank and then fill your bucket back up. Charge your portables and any battery operated devices you have. Fires like to pick the most inopportune times to start, so always be ready.

## *First Aid*

You definitely should have first aid training. Everyone you're going to meet up with at a fire should have it. Everyone in our society should have it. Why they don't teach it in most high schools is beyond defense. Polynomials can be useful but first aid absolutely will, at some point in your life you are without a doubt going to need it, especially if you live rurally.

All that being said, first aid training is well beyond the scope of this book. There are many, many manuals on it and classes taught by Red Cross and St. John's Ambulance besides the industrial first aid qualifications and all else I will say on it is that nobody ever regretted knowing how to save a life.

Obtain the highest possible level of training you can afford or spare the time to do.

## *Incident Command System (ICS)*

Here's the thing about the Incident Command System - it's brilliant in theory and absolutely essential when you're dealing with a major incident, but it can also be the biggest pain in the ass bureaucratic nightmare you've ever encountered if you're not careful about how you brush up against it.

ICS was developed after a series of wildfire disasters in California in the 1970s where multiple agencies showed up to help and ended up stepping all over each other like a bunch of headless chickens. Fire departments, police, military, forestry services, volunteers - everyone had their own radio frequencies, their own chain of command, their own ideas about how things should be done and who was *really* in charge. The result was chaos, and people died because of it.

So they came up with this system where everyone, no matter what agency they're from or what color their uniform is, operates under one unified command structure. Sounds great, right? And it is, when it works.

The basic idea is simple: one person is in charge - the Incident Commander. Everyone else reports up through a clear chain of command. You've got your Operations section (the people actually fighting the fire), your Planning section (the people figuring out what to do next), your Logistics section (the people making sure everyone has what they need), and your Finance/Administration section (the people keeping track of costs and paperwork).

Now, if you're dealing with a grass fire behind your neighbor's barn, you don't need all this. You're probably going to be the Incident Commander, the Operations Chief, the Planning Section Chief, the Logistics Coordinator, and the guy making soup all at the same time. That's fine. ICS is scalable - it grows with the size of your incident.

But here's where it gets tricky for rural folks. The minute any official agency shows up - and I mean the minute - they're going to want to take over command. And, they probably should. But practically speaking, you might know more about the local terrain, the wind patterns, where the farmer keeps his diesel tank, and which access

roads are actually passable than the incident commander who just drove in from the city.

This is why you need to understand ICS before you need it. Because when “the red shirts” roll up, you need to know how to communicate with them and where you fit into their system.

The key is to make yourself useful within their structure rather than being a hindrance to it. When the IC asks "What do you know about this area?" you better have your answer ready. When they ask "What resources do you have available?" you better know exactly what you can provide.

I've seen too many situations where well-meaning locals get in the way because they don't understand the system. They keep trying to freelance, running around doing their own thing, making their own decisions.

This is what us country folk tend to do, and this drives professional firefighters absolutely mental. Rightly so, because freelancers get people killed.

For example, there was a group of freelancers going at an arm of this fire and there was a lot of aerial equipment moving around. I noticed that one of the choppers was kind of lingering around where the freelancers were, and when I checked the radio on the channel where the air ops were communicating, I could hear them saying that they wanted to drop in that area but they could see that there were people in the way.

This is why Incident Commanders will order an evacuation - just get people out of the way and let the pros do their jobs. Although these folks were well intentioned, because they were outside of the Incident Command System, nobody had a way to tell them to move because the chopper wanted to go at it.

In a major incident, good intentions aren't enough. You need coordination, communication, and a clear chain of command.

So how do you make this work as a rural fire brigade? First, learn the system. Take the ICS courses - they're available online and they're practically free. The last year, our regional districts were offering coupon codes to do the courses for free, and trainers were also offering the course to community groups.

ICS-100 and ICS-200 are the basic ones everyone should know. Get your people trained so when the professionals show up, you don't look like a bunch of yokels and

you can integrate seamlessly into their operation.

Second, establish your own ICS structure from the get-go, even for small incidents. Get in the habit of designating an IC, even if it's just you. Use proper terminology on the radio. Keep track of your resources. Document what you're doing. This stuff becomes second nature with practice, and when the big one hits, you'll be ready. This also means having a command structure for your Ops team.

Third, when professional agencies arrive, make contact with the IC immediately. Don't wait for them to find you. Walk up to the command post, introduce yourself, and ask how you can help. Be specific about what you can offer: "We've got six trained people, two brush trucks, and intimate knowledge of the local area. We're all trained with S100 and 185 and ICS and first aid and have been organized for three years. How can we best support your operation?"

The professional IC will love you for this. They'll know exactly where to plug you into their operation, and they'll trust you to follow orders and communicate properly. Over time you could find yourself in charge of large swaths of major events. There were times, at night, where I was the only active firefighter on a 12,000 hectare fire.

Here's the thing about ICS that drives some people crazy: it's not a democracy. When you're operating under ICS, you don't get to vote on the strategy. You don't get to argue with orders. You don't get to freelance. You do your job, you follow the chain of command, and you trust that the people above you have the bigger picture. This can be hard for independent-minded rural folks who are used to making their own decisions. But remember - this system was designed in blood. It is activated in crises and it exists because people died when everyone was doing their own thing.

That said, information flows upward in ICS. If you have critical local knowledge, if you see something the IC needs to know, if you have concerns about safety, you communicate that up the chain. But you do it properly, through your immediate supervisor, using established protocols.

The bottom line is this: ICS isn't just for the big agencies. It's a tool that can make your rural fire brigade more effective, more professional, and safer. Even if there's only three of you. Learn it, practice it, and when the time comes, you'll be ready to work alongside anyone who shows up to help.

Because at the end of the day, we're all trying to do the same thing - save lives and property. ICS just makes sure we're all pulling in the same direction.

## *Night Ops*

Working a fire at night is a whole different beast.

On the one hand, it's easier to spot flame on seek-and-destroy missions and the cooler temperatures offer reduced intensity of fire behavior, perfect for mop up. Especially at the height of the August heat, working at night is quite a bit more comfortable than chewing dust and smoke in 40 degree heat.

On the other, it's like working in a cave: you can only see what's right in front of you.

There have been fire guards that I have run dozens of times and could draw an accurate map to scale by memory by day, but at night are disorienting.

Furthermore, fire is much more dramatic at night - what appears to be a massive flare up deep in a pit of medium fuels just about to blow up turns out to be an old rotten stump that's being fanned by a light wind and is completely in the black, but which happens to have an island of grass some meters away between you and it.

Distances are deceiving at night as well. Sometimes it looks like that flame is "just over there" and after hiking a hundred meters into the brush it doesn't seem to be any closer. As we've discussed, everything is a hazard inside a big fire, and at night those hazards are only more compounded. Trees are less visible and you must rely on directional light to illuminate them and whatever hazards they might pose when revealed. Ash pits are all the more concealed and easy to stumble into. Half burned out bushes provide little spikes sticking out of the dirt and ash to trip on and for your hose to become tangled in. The contours of the landscape shift with your own locomotion and trick your senses of up and down. When sprayed with water, fires billow out huge volumes of steam and airborne ash and smoke smoke and when illuminated by your flashlight will completely conceal your target for extended periods of time.

One technique I will employ on night shift seek-and-destroy missions is a combination of helmet lamp and LED flashlight. My helmet angle can be adjusted so

that it's looking right where I am looking or to be pointed slightly up by adjusting the aspect of my helmet, while also using the handheld flashlight to get a second angle on what I'm looking at. This helps deal with the difficulties of understanding dimension when shadows are cast from single sources - hold the flashlight out to your side and illuminate your target from another angle to help your depth perception.

Another trick you can try is to cover your flashlight momentarily to see what's glowing, and then flash the light over it again briefly to see where the smoke is before covering it again. This helps dial in your eyes to really understand what's happening in front of you.

As much as possible, try to protect your night vision! If you are working with several others, be sure to tip your helmet upwards when you're face-to-face so as to preserve each other's night vision. Every time you get flashed it will take some number of seconds before you re-adapt to the darkness. You will need to use the flashlight to check your footing to ensure you're not going to fall into an ash pit or trip over a pile of sticks, but flash the light directly down at your feet rather than ahead of you so you can still see where you are going without having to really flash your pupils.

LED lights are in everything now and they are great because they provide really bright light with low power consumption, but be aware that they can actually be damaging to your eyesight on a permanent basis, especially when you are adapted to the darkness.

If you spare your sight from being "flashed" you will probably find that you can see very well in the dark without flashlights. Even if you're like me and can walk around in the darkness nearly as well as you can in the light once you've adapted, be sure to always have light with you for when you really do need to see in detail what is going on.

Even following all these guidelines, night ops are inherently more dangerous than daytime firefighting so if you're going to do it there's some principles I hope you will follow so that you don't make orphans of your children.

As always, the best rule is to always work as a team. Remember your LACES!

During the Rossmore Lake fire I ended up being the only firefighter on a 12000 hectare fire after around 6PM until 4AM. I would go on patrol and knowing the fire intimately as I did, I knew where to look and when I saw stuff I could action with my

little 55-gallon half-ton apparatus I would do so. But I always did so in the safest way possible.

Every two hours I would check in with the Kamloops Fire Center dispatch. This was part of our working relationship with BC Wildfire - some basic accountability. I'm going to do my thing, but just in case something awful happened - a tree fell on me, I fell in an ash pit, heck it could be something as dumb as I just drove off the road because I was working 12-18 hour days every single day for a month straight - then there was somebody (with resources) who would come looking for me. So I'd call in every two hours just to do my check in. "Hey it's James in Knutsford on K22024 just checking in. Currently working in U13 but will be heading up Hwy5A and then camping out around AA28. Check back in another 2 hours." Sixty second calls that were tricky to make when you've hardly got any cell service but an important step in protecting yourself.

Another factor was a lookout.

I came to be The Nightwatchman on this fire when resources ran thin following the worst fire season on record - everyone else had been re-assigned or had timed out and the Task Force Leader phoned me and darn near begged me to build a crew to do nights because otherwise there would literally be nobody else watching out for something popping off on the entire fire.

Most people can't handle a graveyard shift. I used to be a DJ and even before that I was naturally nocturnal, so I volunteered and flipped my circadian rhythm over the course of a couple of nights to being up by around noon, "off to work" by 3ish and then solely responsible for the entire fire until 4 in the morning. Although I missed the extra action that my day shift brothers were getting, I enjoy the solitude and the knowledge that when residents see my truck go by in the middle of the night with the flashing amber that means that there's somebody scurrying around keeping an eye out for them so they don't need to worry about it all of the sudden blowing up while nobody is looking. We lose sleep so they can get some.

I would still get the two or so hours from the time that I went on around 3-4PM until 6-7PM when everyone else either timed out or simply ran out of steam, checking out what they had been up to throughout the day, meeting with mucky-mucks, helping out on the line, and otherwise getting my bearings on what had been happening or was about to happen. Then they'd all bugger off to have a beer or sleep and I would crack a Red Bull and go about my shift.

Personally, I could go weeks without speaking to anyone. It's not that I'm antisocial, I'm just extremely comfortable in my own company. Maybe talking to my dog, but still, solitude doesn't bother me in the least. But the safety factor is important, and so when I explained what I had to do to my then-partner she simply said "ok" and turned her schedule upside down as well. Now we were the night shift.

She kept me accountable. Beyond my bi-hourly check-ins with the Fire Center, it was someone who was right there with me who was going to call me out if I was going too deep, a second set of eyes to spot trouble brewing, and someone who was watching me right there so that if something did happen I didn't have to wait hours for the cavalry.

I've pitched it before but hi-vis PPE is even more important at night. Like, I'm going to draw a line in the sand and say that you're a damn fool if you don't wear it at least at night.

Night operations require a different mindset than daytime firefighting. You move slower, you check twice, and you never assume anything. The darkness hides dangers but it also hides opportunities - that smoldering stump that looked like a raging inferno might just need a quick hit with the hose to put it down for good. The key is learning to read what the fire is telling you through the limited information your senses can gather in the dark.

If you're going to work nights, respect the darkness. It's not just about seeing - it's about understanding that everything takes longer, everything is more dangerous, and backup is further away. But done right, night ops can be some of the most effective firefighting you'll ever do. The fire slows down, you can see exactly where the hotspots are, and you've got the cooler temperatures working in your favor.

One thing I would do is take a photo of a hot spot that I could see off in the bushes that was too far for me to safely get to. When I went back the next day, I would grab some guys from my crew and go to the location that the photo's metadata said it was taken at. This way we could find fires that were perhaps not noticeable during the day without having to go marching a few hundred meters into the scrub on my own to action.

Just make sure somebody knows where you are and when you'll be back. The night shift is lonely enough without adding unnecessary risk to the equation.

## *Facebook Posts*

### *A Note on Facebook Posts*

I have decided to include three of the posts that I made to our community Facebook group, at the beginning of it all back in 2021, right after Rossmore Lake started up and we were brought into the battle, and then at the end.

These were posts made to our private community group and they generated a lot of really great discussion. However, because it is discussion that was made with the expectation that it was being held privately within our group, I have decided not to include any of the subsequent comments.

*July 3, 2021*

Good morning everyone. We need to talk about fire protection.

It's going to be a bit of a read so I thank you for slogging through it.

I was already thinking about this again yesterday morning after the Great Dry Lightening Storm of 2021 but then the incident up at Edith Lake last night really put a nail on it.

No one here needs to be reminded that the same rolling vistas that make for such lovely photos are also what make our community so vulnerable to fire. The firewatch that has sprung up on this page in the past week is a testament to our awareness of the threat and our vigilance against it.

We got lucky last night. I don't usually go on Facebook but I happened to be looking at marketplace when I got the post notification, jumped up and grabbed my shovel, flashlight and water and took off up Long Lake Road and by the time I got there the forestry guys were already on site.

But let's be honest: a Facebook community group is not adequate fire watch and having whoever happens to be online grab their garden shovel and go flailing off into the hills in the dark is not adequate fire protection.

We are still very early in the fire season right now. Later in the season when there are more simultaneous incidents we may be waiting hours for a response, and we all know what a difference minutes can make in a wildfire situation.

Which got me thinking: we need to be more organized. I'm proud of how our community and especially certain members have come together and taken the lead in looking out for each other, but I think we can do better. I for one don't use Facebook besides popping in to the community page here or checking marketplace, and I know

I'm not the only one. And, just being anchored to Facebook for fear of life and property 24/7 for the next 4 months isn't going to be good for anyone's mental health.

So I'm starting this discussion. Five of the biggest fire seasons on record have happened in the last eleven years, I think we can all agree that bad fire seasons are no longer an anomaly but the norm, and for the years going forward we can expect at least more of the same - if not escalating - fire danger.

We need to come up with something better organized, so that we can respond to threats effectively and warn our neighbors to get out of the way faster.

My mother mentioned that in years past we've used a phone tree, where certain people were each responsible to call a certain number of other people. That's a possibility, although I think given that it's 2021 there must surely be a more efficient method of broadcasting notifications – I'm thinking along the lines of the autodialers that the schools use to tell us when our kids were late to class or announce PAC meetings.

Something else to consider is that 85% of Canada is protected by volunteer fire departments and myself having been a firefighter with Beaverlodge Fire Rescue (County of Grande Prairie) it always struck me as crazy that we didn't have SOMETHING.

Setting up a full fledged rural volunteer fire department is no small undertaking. At a bare minimum we would need a fire hall, a pumper, a tanker and a bush truck, and then all the equipment that goes along with it and ongoing training for the volunteers who would have to be willing and able to respond at all hours of the day and night. On an ongoing basis – equipment has a serviceable life and is required under NFPA standards to be tested and retired at regular intervals, and knowledge and skills are perishable.

Despite my time with BLFR it was over a decade ago and I damn well know I'm rusty, all my certs are expired and I would be neither confident nor qualified to enter a structure fire, for example. Firefighters are constantly training and keeping those skills and equipment fresh, whereas I've spent the last decade gardening, recording music, selling photocopiers and raising children. Hardly the skillset needed to honestly call myself a firefighter anymore.

There's a tremendous amount of work that would need to be done in the community as well as in coordination with both the City and the TNRD to even get started and it

would likely take around five years before we could come into regular operation.

I'm not even sure it's feasible given our community size. But we need to discuss it. Something I've learned is that the time will pass anyway and one day you look back on go "oh, if I'd started that back then I'd be done it by now."

The obvious benefit would be protection of life and property. If we were to go all the way and have a certified department, it would also have the effect of reducing property insurance, but with the added caveat that it would necessitate increased taxation to fund it.

There are many resources available to volunteer departments and funding available for training and capital expenditures, but that itself would require a lot of admin work before we even really got started and then even more on an ongoing basis.

So, here I am starting the conversation. Is there even interest in founding a volunteer fire department, and if so, would we be willing to do the work and fund it to make it happen?

Regardless of how far down that path we go, I really feel very strongly that we do need something better than Facebook for initial response. Having the contact information for the properties in our community in a central place, as well as a list of who can be called upon to respond to threats, what their skillsets are and some basic equipment would be a start.

What are your thoughts?

*August 3, 2023*

I wanted to share with you some perspective on fire behavior, and I hope that it helps ease the anxiety everyone is feeling seeing trees candling at night given where we are at this stage of the fire.

Fire is a natural part of a forest life cycle. Forests shed needles and branches and trees fall over and die, either from damage or disease or pest, and fire helps cleanse that. It releases the carbon that is trapped in those "heavy fuels" that can't just mulch and returns it to the Earth so the next generation can have a turn.

We're all just borrowing matter for the adventure. Fire, for a forest, is what recycles it.

Whatever burns this year will be the greenest next.

It also helps as a natural balance against pests and disease - the mountain pine beetle epidemic, for example, was at least in part caused by not letting fires run their course.

I've been in this community for almost a decade now, but it's only in the past couple of weeks that I really feel like I've really gotten close to the land here.

I thought I was before, but it's a new level of intimacy to be hiking through the scrub and digging your hand into the ashes and under the roots of standing trees, meeting trees as individuals and assessing how they're standing and understanding a specific gully - and then meeting and recognizing it later, as it has grown and changed in the time between, like old friends... understanding what's still holding them up. It's deeply personal. I'm sure the cowboys among us can relate.

And I can tell you, from having intimately hiked and crawled and wriggled my way through the dense Knutsford scrub, up crazy grades and tripping over layers of half burned out deadfall and then picking the bugs who climbed onto me for escape out of my hair (and bed, even after showering) at night that not only is this area primed for a fire, but it's something that actually needs to happen.

I saw Doug Haughton comment on a before picture the other day, saying "Looks like it needs to burn" and he's right.

We are due. We were overdue. We all knew it, looking around even those among us with no fire knowledge whatsoever understood it instinctively with our primal monkey brains that fire would rip right through it, given the chance.

Now it's got it's chance. So look at it this way: accepting that what needs to burn, needs to burn, and it will make us safer in the future, and it's already happening anyway, and we have all the resources here now to help it happen in the safest possible way.

No structures are threatened. Everyone is safe. It's just some timber.

All this is to prepare you for the understanding that the Earth itself is on fire in there.

There are ash pots, root holes that are 3' or more deep with smouldering cinders. Everywhere. You'll walk across a grassy patch and look behind you and your footsteps are on fire because where you've pressed the dried grass down into the ground they then reach combustion temperature and come alight. My feet or permanently hot from walking around on fire all day. Terry needs to buy new boots tomorrow because the soles have melted.

We'll walk out into a stand and you can look and see little smoke volcanoes erupting every 20-50 feet because the fire is UNDER the ground, travelling laterally in the root layer.... FOR MILES. I've been tracking it with my GPS watch and after we've cut way down a road I'll hike down into a gully to see what the smoke that's showing is and then look at the watch and it turns out that it's just a continuation of the "spot fires" we were chasing to the end of our hose from the last access we were working on.

It's a fire-based whack-a-mole. We knock down a section and move on to the next and the more you see the more you see that there is to see and every time you turn around the things you'd already dealt with are back on fire again.

We'll start trying to dig a little guard and you have to keep digging and digging because it goes down a foot or more because it's just layers of deadfall, floofy loam and organic mass that will smoulder for months.

All this underburn makes all the trees unstable. There is a saying: "every tree is a

danger tree until a danger tree assessor has declared that it is not." But seriously, I do a walk through before we start every engagement and almost every tree poses some kind of danger, some imminent and some eventually. Their roots are burned. The earth around them has disintegrated into powdered ash. They are leaning on each other and pose collective threats. Some are only standing on sticks.

Some are literally suspended in the air by their branches in the canopy alone.

We all just keep saying to each other "We'll be at this for months." The truth is that we'll be at it for months, and then again next spring, because just about whatever we put down now has the opportunity to catch again later.

At this point, we're basically trying to keep the ignitions at a manageable level. Some of the better equipped trees will survive - there's one particular spectacular Douglas Fir I remember seeing Andrew look at and say "you're going to be Ok aren't you?"

And it will.

Life will carry on.

But all this dead shit... it really needs to burn.

That makes it smoky, and sometimes flamey, and all that organic mass ("fuel") burning off is pretty dramatic. Sometimes when it flares up we squash it, and sometimes we drag the hot stuff into the middle of an already burned out spot to let it burn off safely. But at this point in the game trying to "put the fire out" is impossible.

We could dump Edith Lake all at once on the North Flank and after this weekend's temperatures there will be hotspots that survived re-igniting unburned fuels next week.

All we can do is manage it.

A major fire like this is like a war.

For those of us going into the black every day, it's almost become like a day job. Veterans describe this of war. You pick your battles and slog through the engagements inch by inch, but you also know that there's a larger war that's taking place outside of your little fox hole and you hope that the Generals are making wise decisions.

For the average Knutsfordian, this is the point in the war where you need accept that there are going to be gunshots in the night, and that's OK because they're not at your doorstep.

Please recognize that the big picture is that life and property are protected.

So far nobody has lost their homes, and based on my engagement with the command structure at BC Wildfire over the past week since we've been "brought into the fold" I can say that I'm confident that they're doing a fine job managing it and that if things continue on course, nobody's homes or lives will be lost.

These are really professional folks who are well resourced. I entered into the agreement skeptical but they have earned my trust and if my word means anything to you, I hope you believe me when I say that I trust them.

There have been some spicy moments, but overall I would say that the command structure is working. The other night Nat was passing me reports from a resident. I relayed those to our CO and she hopped in a helicopter and then resourced a couple of overnight crews to manage it. Within an hour. It's working!

Sure beats calling \*5555

We all need to understand that we're going to be seeing smoke and even flames. Trees are going to candle. The Earth itself is on fire and there's no putting it out, all that can be done is dozens of men and women scrambling around in the dirt and the ash, meeting the land intimately, trying to manage it so that life and property are protected and that at the end there's less of a danger for the years to come.

And, if you've read all the way down here, I want to take a moment to point out that I am not the only or even the hardest working firefighter in there by far. There are dozens.. as I said to Gordon yesterday, "I'm just the one with all the Facebook words." Big shout out to all the volunteers, stat hires, BCWS personnel and residents who are working through a crisis with grace.

And to all the donors and helpers with the food and supplies. I can't tell you how great it is to have awesome food covering the calorie deficit for this middle aged dude hiking through the flaming woods for ten hours a day and I know that my friends who are even older than me are like schoolboys when they get their "mommy school snack packs" and tasty sammiches and wraps.

We're getting through this, and we'll get through this, and by the looks of things the worst that is going to happen is we get some cool photos of trees burning and anxiety nightmares so, I'd say that we're done a damn fine job.

Try to get some sleep.

*September 13, 2023*

“They were filthy, and they were lousy, and they stunk, and I loved them.”

- General Douglas MacArthur

A big wildfire is like a war - there are active flanks where the battle is at a fevered pitch, and there are flanks that are being held. “All quiet on the western front.” The battlegrounds move and shift with the winds and the resources. Sometimes you lead the charge and other days you have to retreat, giving up the ground you had thought you’d already won, and draw new lines.... with bulldozers and Pulaskis when necessary.

A big wildfire event like what we had in K22024 isn’t one great big fire, it’s more like 10,000 smaller fires. And like a war, there isn’t any one story of the war but rather a thousand personal stories of different battles, each told through the lens of those who lived them.

My mind reels with the events of the past six weeks. Where to even begin? I’ve got a thousand stories swirling around my head, of hastily commandeering D7’s to cut guards in the night as the fire crept through the woods towards the Epps to sitting quietly at 3am in the middle of the hot zone surrounded on all sides by fire, babysitting enormous god damned slash piles that scored anxiety into all of our minds... if those things had gone up, you’d have seen the mushroom cloud from Kelowna and it would probably have thrown embers clear out to Westsyde.

A thousand stories just in my own mind, and my crew played but one humble part in the machine that eventually put that fire down.

Two days ago we were stood down, and today the fire is officially considered “Being Held.”

As we all take a collective breathe and blink the smoke and ash out of our weary

eyes, all I can keep saying to myself is that what took place here this summer was miraculous.

We somehow managed to wriggle our way out of being excluded from an evacuation order zone and having to smuggle people and supplies through the checkpoints to eventually ordering chopper drops and commanding heavy equipment. Over the course of six weeks we became an invaluable resource to BCWS - we were sometimes the only firefighters on the entire 12,000 hectare fire. Sometimes, like when I was doing night shift, I was the solitary one.

I can't give the proper shoutout to everyone who contributed because I simply don't know. The donations of time, money, food and equipment were far too numerous for me to ever keep track of, I know my mom did and there needs to be a separate glow up for that. My days were long and I was standing on coals with four active radio channels squawking from my chest rig and I honestly had no idea most of the time where any of the stuff we were being provided was coming from, all I knew was that we were grateful.

But I do know about these five men.

My brothers.

This is the core crew who showed up almost every single day for 12-20 hours a day for around six weeks. Over the course of the fire we had other help that came and put in hard work too - and like the lunches, I'll have to circle back to that to keep from leaving anyone out because they deserve to be recognized as well. The Stobbes, Nathan, Karl, Ryan, Colin, Jim, I'm sorry if my tired brain has overlooked anyone.

These boys though... I've never been more proud to call a group of guys my friends than these ones right here, and honestly they were mostly strangers to me a few months ago. Heck, Freddie ("Digger") only moved here a couple months before it all kicked off, and yet I think if we tallied up all the hours, Fred probably logged more than any of us.

My watch says I hiked over 200km in the first three weeks of August, and that's all rough terrain through thick duff and deadfall, breathing smoke, uphill both ways kind of thing, and sometimes I felt like these guys were running circles around me. I'd show up and be drenched in sweat in the first hour, and then 14 hours later they'd still be scrambling around like we'd just had our morning coffee.

It was a kind of consistent, sustained effort I had never seen before, and I used to work up north in the oil patch where guys make a contest of who can work the longest and hardest.

It's truly the stuff of legends.

So, there's more appreciation that needs to be spread for the other thousand stories that I didn't get to see - I know Andy's crew in the North had some exciting times, as did Froeleks in the south, and Peter Philips was like the local Yeti, I'd always spot him in the woods going this way and that, putting out a thousand fires himself. "Do you ever sleep Pete?" I'm sure he was getting tired of me asking. I'm sure he's still out there finding smouldering ash pots.

But for today, with the order being lifted and the fire being held and then I looked at the photos Nat shot in the last fifteen minutes of our last day before being stood down, moments after we squashed one last spot fire, I wanted to share my appreciation for this Band of Brothers I was so privileged to have found myself amongst.

We won.



## *Glossary Of Terms*

### **A**

**Anchor Point** - A secure position from which to start building a fireline. Natural barriers like roads, streams, or rock outcroppings make good anchor points.

**Attack Line** - The primary hose line used to directly attack the fire at its source.

**Aspect** - The direction a slope faces (north, south, east, west), which affects fire behavior due to sun exposure and wind patterns.

### **B**

**Backfire** - A fire intentionally set to burn toward the main fire to eliminate fuel in its path.

**Blackline** - A fireline that has been burned out, creating a barrier of burned ground.

**Brush Truck** - A specialized firefighting vehicle designed for wildland fires, typically with 4WD capability and water tank.

**Burnout** - The process of burning unburned fuel inside the fireline to strengthen the line.

### **C**

**Chain** - A unit of measurement equal to 66 feet, commonly used in wildland firefighting.

**Cold Trail** - To patrol a fire's edge to ensure no heat or sparks remain after suppression.

**Command Post (CP)** - The location where the Incident Commander operates and coordinates the incident response.

**Containment** - The status of a wildfire when a control line has been completed around the fire but mop-up operations are still needed.

**Control** - The completion of control line around a fire, any spot fires, and any interior islands to be saved.

**Control Line** - A comprehensive term for all constructed or natural fire barriers used to control a fire.

**Crew Boss** - The person responsible for supervising and directing the activities of a firefighting crew.

## **D**

**Dead Fuel** - Vegetation that no longer contains living tissue, such as fallen logs, branches, and dried grass.

**Deployment** - The last-resort survival procedure where firefighters get into their fire shelters.

**Direct Attack** - Suppression action taken directly against the flames at the burning edge of a fire.

**Dozer Line** - A fireline constructed by bulldozer, creating a mineral soil barrier.

**Drip Torch** - A handheld device used to ignite fires for prescribed burning or tactical operations.

## **E**

**Escape Route** - A predetermined path firefighters can take to move to a safety zone or other low-risk area.

**Exposure** - People, structures, or resources that could be damaged or destroyed by fire.

## **F**

**Fire Behavior** - The manner in which a fire reacts to the influences of fuel, weather, and topography.

**Fire Danger** - A general term used to express an assessment of fixed and variable factors that determine whether fires will start, spread, and do damage.

**Fire Line** - The part of a control line that has been scraped or dug down to mineral

soil.

**Fire Shelter** - A personal protective device carried by wildland firefighters as emergency equipment.

**Fire Triangle** - The three elements needed for fire: heat, fuel, and oxygen.

**Fire Weather** - Weather conditions that influence fire ignition, behavior, and suppression.

**Foam** - A fire suppressant agent that reduces the surface tension of water, making it more effective.

**Fuel** - Any combustible material that can carry fire, including vegetation, structures, and slash.

**Fuel Break** - A strategically placed area where fuel has been reduced or modified to slow or stop fire spread.

**Fuel Load** - The amount of fuel present in a given area, usually expressed in tons per acre.

**Fuel Moisture** - The amount of water in fuel, expressed as a percentage of the fuel's dry weight.

## **G**

**GPS** - Global Positioning System, used for navigation and mapping fire perimeters.

**Ground Fuel** - Combustible material lying on or partially buried in the ground.

## **H**

**Hand Line** - A fireline built with hand tools, typically 18 inches to 3 feet wide.

**Head** - The most rapidly spreading portion of a fire's perimeter.

**Heat Index** - A measure of how hot it feels when relative humidity is factored in with actual air temperature.

**Helicopter Bucket** - A collapsible bucket suspended beneath a helicopter for water drops.

**Hose Lay** - The arrangement of connected lengths of fire hose from the water source to the point of attack.

**Hot Shot Crew** - A highly trained, organized, and mobile 20-person wildland firefighting crew.

**Hotline** - The active fire edge that requires immediate suppression action.

## I

**IC** - Incident Commander, the person responsible for overall management of the incident.

**ICS** - Incident Command System, the standardized emergency management system used for command and control.

**Indirect Attack** - Suppression action taken at a distance from the fire's active edge.

**Initial Attack** - The first suppression action taken on a wildfire.

**Infrared (IR)** - Heat-sensing technology used to detect fire activity and hot spots.

## J

**Jump Spot** - A selected area where smokejumpers land to attack a fire.

## K

**Knock Down** - To reduce the flame or heat on the most vigorously burning parts of a fire.

## L

**Ladder Fuels** - Vegetation that allows fire to climb from ground level into tree crowns.

**Live Fuel** - Living vegetation that contains moisture and can burn under certain conditions.

**Lookout** - A person designated to observe fire behavior and weather changes and warn firefighters of danger.

**LCES** - Lookouts, Communications, Escape Routes, and Safety Zones - the

foundation of firefighter safety.

## **M**

**Mop-up** - The act of making a fire safe after it has been controlled, extinguishing hot spots and potential ignition sources.

**Mutual Aid** - Assistance provided by neighboring fire departments or agencies during emergencies.

## **N**

**NFPA** - National Fire Protection Association, which develops fire safety standards and codes.

**NIFC** - National Interagency Fire Center, the national coordination center for wildfire management.

**Nomex** - Fire-resistant fabric used in wildland firefighting clothing.

## **O**

**Operations** - The ICS functional area responsible for tactical operations to meet incident objectives.

**Oxygen** - One of the three elements of the fire triangle, essential for combustion.

## **P**

**Patrol** - To travel a fireline to detect and suppress spot fires or other threats.

**Perimeter** - The entire outer boundary of a fire.

**Planning** - The ICS functional area responsible for collecting and analyzing information.

**PPE** - Personal Protective Equipment, including helmet, gloves, boots, and fire-resistant clothing.

**Prescribed Fire** - A fire ignited by management under specific conditions to achieve resource objectives.

**Pulaski** - A firefighting tool combining an axe and an adze (hoe) on one handle.

## Q

**Quick Response** - Rapid initial attack on a fire while it's still small and manageable.

## R

**Radio** - Primary communication device for coordination and safety in wildfire operations.

**Red Flag Warning** - A weather forecast indicating critical fire weather conditions.

**Rehab** - The process of providing rest, rehydration, and medical attention to firefighters.

**Relative Humidity** - The amount of moisture in the air compared to the maximum it can hold at that temperature.

**Retardant** - A fire suppressant chemical, typically dropped from aircraft, that slows fire spread.

**Rural Fire Department** - A fire department serving sparsely populated areas, often with volunteer firefighters.

## S

**Safety Zone** - An area cleared of flammable materials where firefighters can survive without fire shelters.

**Scratch Line** - A preliminary fireline scraped down to mineral soil, typically 6-18 inches wide.

**Size-up** - The ongoing process of evaluating factors that influence fire behavior and suppression tactics.

**Slopovert** - A fire that crosses a control line but is still close to it.

**Smokejumper** - A specially trained firefighter who parachutes to remote fire locations.

**Snag** - A standing dead tree that can fall and create hazards for firefighters.

**Spot Fire** - A fire ignited outside the main fire perimeter by flying sparks or embers.

**Structure Protection** - Defensive actions taken to protect buildings from wildfire.

**Suppression** - All work done to extinguish or contain a fire.

## **T**

**Tactical Radio** - Short-range radio used for crew-to-crew communication on the fireline.

**Tanker** - An aircraft equipped with tanks for dropping water or retardant on fires.

**Torching** - The ignition and rapid combustion of the crown of a single tree or small group of trees.

**Type 1, 2, 3** - Classification system for incident complexity and resource capabilities.

## **U**

**Unified Command** - An ICS structure where multiple agencies share command authority.

**Unburned Island** - An area of unburned fuel inside the fire perimeter.

## **V**

**VHF** - Very High Frequency radio, commonly used for fire communications.

**Volunteer Fire Department** - A fire department staffed primarily by unpaid volunteers.

## **W**

**Water Tender** - A vehicle designed primarily for transporting water to supply firefighting operations.

**Weather** - Atmospheric conditions that significantly influence fire behavior and suppression activities.

**Wet Line** - A line of water or foam sprayed on the ground to slow or stop fire spread.

**Wind** - Moving air that affects fire behavior by supplying oxygen and pushing

flames.

**Wildland Fire** - Any fire occurring in vegetation outside of urban areas.

**Wildland-Urban Interface (WUI)** - The area where structures and wildland vegetation meet.

**X**

**XTN** - Extension, referring to fire spread beyond the original perimeter.

**Y**

**Year-round Fire Season** - The reality that wildfire can occur in any season due to changing climate conditions.

**Z**

**Zone** - A geographical area established for tactical purposes during incident management.

## *S-Series Courses*

- S-100 Basic Fire Suppression and Safety (2005)
- S-100A Basic Fire Suppression and Safety Annual Recurrency (also known as S-10A)
- S-185 Fire Entrapment Avoidance & Safety (2006)
- S-212 Communications (2005)
- S-213 Use of Bulldozers (2005)
- S-230 Single Resource Leader (2005)
- S-235 Ignition Operations (2005)
- S-241 Fire Assessment (2005)
- S-271 Helipad

## *Society Constitution and Bylaws*

Here's a cleaned-up version of the Knutsford Community Response Society Bylaws you are welcome to use as a template for adapting to your own usecase:

### **Bylaws of Knutsford Community Response Society (the "Society")**

#### **PART 1 - DEFINITIONS AND INTERPRETATION**

##### **Definitions**

1.1 In these Bylaws: "Act" means the Societies Act of British Columbia as amended from time to time; "Board" means the directors of the Society; "Bylaws" means these Bylaws as altered from time to time.

##### **Definitions in Act apply**

1.2 The definitions in the Act apply to these Bylaws.

##### **Conflict with Act or regulations**

1.3 If there is a conflict between these Bylaws and the Act or the regulations under the Act, the Act or the regulations, as the case may be, prevail.

#### **PART 2 - MEMBERS**

##### **Application for membership**

2.1 An application for membership must be made in a form and manner, and on payment of any application fee, determined by the Board.

##### **Duties of members**

2.2 Every member must uphold the constitution of the Society and must comply with these Bylaws.

##### **Amount of membership dues**

2.3 The amount of the annual membership dues, if any, must be determined by the Board.

**Member not in good standing**

2.4 A member is not in good standing if the member fails to pay the member's annual membership dues, if any, and the member is not in good standing for so long as those dues remain unpaid.

**Member not in good standing may not vote**

2.5 A voting member who is not in good standing: (a) may not vote at a general meeting, and (b) is deemed not to be a voting member for the purpose of consenting to a resolution of the voting members.

**Termination of membership if member not in good standing**

2.6 A person's membership in the Society is terminated if the person is not in good standing for 6 consecutive months.

**PART 3 - GENERAL MEETINGS OF MEMBERS**

**Time and place of general meeting**

3.1 A general meeting must be held at the time and place the Board determines.

**Ordinary business at general meeting**

3.2 At a general meeting, the following business is ordinary business: (a) adoption of rules of order; (b) consideration of any financial statements of the Society presented to the meeting; (c) consideration of the reports, if any, of the directors or auditor; (d) election or appointment of directors; (e) appointment of an auditor, if any; (f) business arising out of a report of the directors not requiring the passing of a special resolution.

**Notice of special business**

3.3 A notice of a general meeting must state the nature of any business, other than ordinary business, to be transacted at the meeting in sufficient detail to permit a member receiving the notice to form a reasoned judgment concerning that business. A notice of general meeting may be sent to members by way of email for members providing an email address, and may be sent by mail, fax, or delivery to any member

who does not provide an email address.

### **Chair of general meeting**

3.4 The following individual is entitled to preside as the chair of a general meeting: (a) the individual, if any, appointed by the Board to preside as the chair; (b) if the Board has not appointed an individual to preside as the chair or the individual appointed by the Board is unable to preside as the chair: (i) the president, (ii) the vice-president, if the president is unable to preside as the chair, or (iii) one of the other directors in attendance at the meeting, if both the president and vice-president are unable to preside as the chair.

### **Alternate chair of general meeting**

3.5 If there is no individual entitled under these Bylaws who is able to preside as the chair of a general meeting within 15 minutes from the time set for holding the meeting, the voting members who are in attendance must elect an individual present at the meeting to preside as the chair.

### **Quorum required**

3.6 Business, other than the election of the chair of the meeting and the adjournment or termination of the meeting, must not be transacted at a general meeting unless a quorum of voting members is in attendance.

### **Quorum for general meetings**

3.7 The quorum for the transaction of business at a general meeting is 3 voting members.

### **Lack of quorum at commencement of meeting**

3.8 If, within 30 minutes from the time set for holding a general meeting, a quorum of voting members is not in attendance: (a) in the case of a meeting convened on the requisition of members, the meeting is terminated, and (b) in any other case, the meeting stands adjourned to the same day in the next week, at the same time and place, and if, at the adjourned meeting, a quorum is not in attendance within 30 minutes from the time set for holding the adjourned meeting, the voting members who are present constitute a quorum for that meeting.

### **If quorum ceases to be present**

3.9 If, at any time during a general meeting, there ceases to be a quorum of voting members present, business then in progress must be suspended until there is a quorum in attendance or until the meeting is adjourned or terminated.

### **Adjournments by chair**

3.10 The chair of a general meeting may, or, if so directed by the voting members at the meeting, must, adjourn the meeting from time to time, but no business may be transacted at the continuation of the adjourned meeting other than business left unfinished at the adjourned meeting.

### **Notice of continuation of adjourned general meeting**

3.11 It is not necessary to give notice of a continuation of an adjourned general meeting or of the business to be transacted at a continuation of an adjourned general meeting except that, when a general meeting is adjourned for 30 days or more, notice of the continuation of the adjourned meeting must be given.

### **Order of business at general meeting**

3.12 The order of business at a general meeting is as follows: (a) elect an individual to chair the meeting, if necessary; (b) determine that there is a quorum; (c) approve the agenda; (d) approve the minutes from the last general meeting; (e) deal with unfinished business from the last general meeting; (f) if the meeting is an annual general meeting, (i) receive the directors' report on the financial statements of the Society for the previous financial year, and the auditor's report, if any, on those statements, (ii) receive any other reports of directors' activities and decisions since the previous annual general meeting, (iii) elect or appoint directors, and (iv) appoint an auditor, if any; (g) deal with new business, including any matters about which notice has been given to the members in the notice of meeting; (h) terminate the meeting.

### **Methods of voting**

3.13 At a general meeting, voting must be by a show of hands, an oral vote or other method that adequately discloses the intention of the voting members, except that if, before or after such a vote, 2 or more voting members request a secret ballot or a secret ballot is directed by the chair of the meeting, voting must be by a secret ballot.

### **Announcement of result**

3.14 The chair of a general meeting must announce the outcome of each vote and that outcome must be recorded in the minutes of the meeting.

### **Proxy voting not permitted**

3.15 Voting by proxy is not permitted.

### **Matters decided at general meeting by ordinary resolution**

3.16 A matter to be decided at a general meeting must be decided by ordinary resolution unless the matter is required by the Act or these Bylaws to be decided by special resolution or by another resolution having a higher voting threshold than the threshold for an ordinary resolution.

## **PART 4 - DIRECTORS**

### **Number of directors on Board**

4.1 The Society must have no fewer than 3 and no more than 9 directors.

### **Election or appointment of directors**

4.2 At each annual general meeting, the voting members entitled to vote for the election or appointment of directors must elect or appoint directors to the Board. Two [2] of the first directors shall be appointed for a 3 year term, two [2] of the first directors shall be appointed for a 2 year term, and one [1] of the first directors shall be appointed for a 1 year term. Thereafter, at each annual general meeting, new directors shall be elected for a 3 year term, except where an election is held to fill the unexpired portion of a term. It is the intention of this Bylaw 4.2 that only one-third (1/3) of the directors shall be elected at each annual general meeting.

### **Directors may fill casual vacancy on Board**

4.3 The Board may, at any time, appoint a member as a director to fill a vacancy that arises on the Board as a result of the resignation, death or incapacity of a director during the director's term of office.

### **Term of appointment of director filling casual vacancy**

4.4 A director appointed by the Board to fill a vacancy ceases to be a director at the end of the unexpired portion of the term of office of the individual whose departure from office created the vacancy.

## **Removal of director**

4.5 A director may be removed as set out in the Act.

## **PART 5 - DIRECTORS' MEETINGS**

### **Calling directors' meeting**

5.1 A directors' meeting may be called by the president or by any 2 other directors.

### **Notice of directors' meeting**

5.2 At least 2 days' notice of a directors' meeting must be given unless all the directors agree to a shorter notice period.

### **Proceedings valid despite omission to give notice**

5.3 The accidental omission to give notice of a directors' meeting to a director, or the non-receipt of a notice by a director, does not invalidate proceedings at the meeting.

### **Conduct of directors' meetings**

5.4 The directors may regulate their meetings and proceedings as they think fit.

### **Quorum of directors**

5.5 The quorum for the transaction of business at a directors' meeting is a majority of the directors.

## **PART 6 - BOARD POSITIONS**

### **Election or appointment to Board positions**

6.1 At each annual general meeting, the directors must be elected or appointed to the following positions on the Board: (a) president; (b) vice-president; (c) secretary; (d) treasurer.

### **Directors at large**

6.2 Directors who are elected or appointed to positions on the Board in addition to the positions described in these Bylaws are elected or appointed as directors at large.

### **Role of president**

6.3 The president is the chair of the Board and is responsible for supervising the other directors in the execution of their duties.

#### **Role of vice-president**

6.4 The vice-president is the vice-chair of the Board and is responsible for carrying out the duties of the president if the president is unable to act.

#### **Role of secretary**

6.5 The secretary is responsible for doing, or making the necessary arrangements for, the following: (a) issuing notices of general meetings and directors' meetings; (b) taking minutes of general meetings and directors' meetings; (c) keeping the records of the Society in accordance with the Act; (d) conducting the correspondence of the Board; (e) filing the annual report of the Society and making any other filing with the registrar under the Act.

#### **Absence of secretary from meeting**

6.6 In the absence of the secretary from a meeting, the Board must appoint another individual to act as secretary at the meeting.

#### **Role of treasurer**

6.7 The treasurer is responsible for doing or making the necessary arrangements for the following: (a) receiving and banking monies collected from the members or other sources; (b) keeping accounting records in respect of the Society's financial transactions; (c) preparing the Society's financial statements; (d) making the Society's filings respecting taxes.

#### **Auditor**

6.8 The members may, at an annual general meeting, appoint an auditor to hold office until he or she is reappointed or his or her successor is appointed at the next following annual general meeting.

6.9 An auditor may be removed by ordinary resolution and shall be promptly informed in writing of his or her appointment or removal.

6.10 The auditor may attend the annual general meeting and other general meetings and shall provide a report to the members at the annual general meeting about the

results of the auditor's audit.

## **PART 7 - REMUNERATION OF DIRECTORS AND SIGNING AUTHORITY**

### **Remuneration of directors**

7.1 These Bylaws do not permit the Society to pay to a director remuneration for being a director, but the Society may, subject to the Act, pay remuneration to a director for services provided by the director to the Society in another capacity.

### **Signing authority**

7.2 A contract or other record to be signed by the Society must be signed on behalf of the Society: (a) by the president, together with one other director, (b) if the president is unable to provide a signature, by the vice-president together with one other director, (c) if the president and vice-president are both unable to provide signatures, by any 2 other directors, or (d) in any case, by one or more individuals authorized by the Board to sign the record on behalf of the Society.

## **PART 8 - SPECIAL PROVISIONS**

8.1 The activities of the Society shall be carried on without purpose of gain for its members and any income, profits or other accretions to the Society shall be used in promoting the purposes of the Society. This paragraph is alterable only by unanimous approval of the members attending an annual general meeting or a special general meeting of which notice of the motion to amend this paragraph has been given as for a special resolution.

8.2 Upon the winding up or dissolution of the Society, the funds and property remaining after the payment of all costs, charges and expenses properly incurred in the winding-up or dissolution, including the remuneration of a liquidator, and after payment to employees of the Society of any arrears of salaries or wages, and after payment of any debts of the Society, shall be distributed to such charities, registered under the provisions of the Income Tax Act (Canada) as shall be designated by the Board. This paragraph is alterable only by unanimous approval of the members attending an annual general meeting or a special general meeting of which notice of the motion to amend this paragraph has been given as for a special resolution.

### *FRS/GMRS Frequencies*

FRS/GMRS Channel	Frequency	FRS Power	FRS Bandwidth
1	462.5625	2 W	12.5 kHz
2	462.5875	2 W	12.5 kHz
3	462.6125	2 W	12.5 kHz
4	462.6375	2 W	12.5 kHz
5	462.6625	2 W	12.5 kHz
6	462.6875	2 W	12.5 kHz
7	462.7125	2 W	12.5 kHz
8	467.5625	0.5 W	12.5 kHz
9	467.5875	0.5 W	12.5 kHz
10	467.6125	0.5 W	12.5 kHz
11	467.6375	0.5 W	12.5 kHz
12	467.6625	0.5 W	12.5 kHz
13	467.6875	0.5 W	12.5 kHz
14	467.7125	0.5 W	12.5 kHz
15	462.552 W	12.5 kHz	50 W
16	462.575	2 W	12.5 kHz
17	462.6	2 W	12.5 kHz
18	462.625	2 W	12.5 kHz
19	462.652 W	12.5 kHz	50 W
20	462.675	2 W	12.5 kHz
21	462.7	2 W	12.5 kHz
22	462.725	2 W	12.5 kHz

*Tactical Plan*

# Emergency Preparedness In Knutsford (EPIK)

Tactical Plan

**Including Safety concerns/challenges,**

**Actions and Action Plans**

*26 August 2021*

Prepared by: Emergency Preparedness in Knutsford (EPIK)

Submitted to: Rose Hill Farmers Institute Board of Directors

Date Approved:

## *Purpose Statement*

The Emergency Preparedness in Knutsford (EPIK) purpose is to keep our area safe.

## *Vision, Mission and Values*

**Vision:** Knutsford area is a safe community to live and work.

**Mission:** Drive solutions to keep the community safe including information

gathering, communication, and emergency preparedness.

**Values:** “Care for Community”

- Safety
- Organized
- Collaboration
- Teamwork
- Learning

Our community needs to be organized and prepared with the correct knowledge, training and tools to effectively respond to an emergency incident. Being prepared and knowing what to do can reduce fear and anxiety, thereby reducing losses that may result from such an event.

To this end our committee will do the following:

- Identify community challenges and safety concerns
- Establish safety programs
- Train and educate community members
- Hold and update emergency preparedness knowledge capital in our community
- Fundraise to support committee’s objectives
- Purchase Equipment
- Develop a Communication System
- Help establish a fire society

*Objective: Identify community challenges and safety concerns.*

Strategies

- The community has a document identifying challenges and safety concerns.
- No fire coverage

- Isolated properties within our community
- Communication - cell phone dead zones - Example: Napier Lake Fire.
- Google maps incorrect (First responders unable to find addresses) Identification of properties - unable to see address signs
- Rough roads - washboard and potholes
- Dealing with "red tape" - example: water truck stopped on road by KFR at 3.5 km Goose Lake Road and was unable to get to fire at 10 km Goose Lake Road.
- Inability to find the location of a fire example: Edith Hill - the fire was not visible from the road and using local knowledge to describe the fire's location "near the straw house"
- Panic - incorrect information being relayed on Facebook
- Lack of training in emergency preparedness, Firesmart, evacuation planning and emergency response
- Lack of correct tools
- Properties not in line with "Firesmart"
- Logistics of moving animals/livestock
- Multiple fires restricting evacuation areas and limited feed.
- Grazing pastures lost to fire and drought.
- Limited egress - highways or roadways closed or blocked
- Contacting the community by email or phone quickly
- Limited hours of EOC and Cattleman's Association

*Objective: Train and educate community members.*

#### Strategies

- Provide training and education for emergency preparedness and administration.

- Share Firesmart website and encourage community members to take online course Firesmart 101
- Create handouts with online resource and ideas for go bag, evacuation planning, and ranch evacuation planning (line up haulers and evacuation locations, review weekly)
- Host Wildland Fire S100/S185 Courses
- Host Incident Command Course
- Ensure Facebook page has resources listed
- Email community with information
- Hold community awareness sessions. Bring specialists in to talk to our community ie: Firesmart, EOC, RCMP, Fire, Emergency Preparedness specialists, BC Cattleman's (permit how to's), Mental Health Professionals (dealing with anxiety)
- Provide a list of online resources/videos to community members. Provide information via Facebook, email and in person (addresses, sprinklers, how to report a fire, GPS, list of useful tools, how to build a skid deck water pump etc.).
- Liaise with regional and provincial government authorities, businesses, and industry to ensure training needs are met.
- Conduct Community Wildfire Roundtable with Regional and Provincial representatives (BC Parks, BC Wildfire Service, EPIK, TNRD, RCMP, Ministry of Forests, Lands, Natural Resource Operations and Rural Development, Grasslands, BC Cattleman's)

### *Objective: Establish Safety Programs*

#### Strategies

- The community develops or implements programs to help mitigate challenges and safety concerns
- Fire watch
- Lightning Watch

- Broadcast alert
- Sprinkler set ups
- Firesmart
- Identify and participate in the planning and evaluation of local mitigation projects such as wildfire fuel reduction, and local development controls.
- Follow up with Julie Maxwell, Fire and Fuel Management Officer, BC Wildfire Service Ministry of Forests, Lands, Natural Resources Operations & Rural Development
- Follow up with TNRD, EOC, local fire experts
- Liaise with regional and provincial government, and emergency preparedness resources to ensure community needs are met.
- Conduct Community Wildfire Roundtable with Regional and Provincial representatives (BC Parks, BC Wildfire Service, EPIK, TNRD, RCMP, Ministry of Forests, Lands, Natural Resource Operations and Rural Development, Grasslands, BC Cattlemans)

*Objective: Hold and update emergency preparedness knowledge capital in our community*

#### Strategies

- Define EPIK's geographic area - created interactive map from Google form submissions
- Develop a comprehensive list of community members their addresses, phone numbers and resources - Google form, google sheet, interactive map and telephone broadcast alert.
- Develop an interactive map - update yearly.
- Create list of haulers and evacuation sites

*Objective: Fundraise to support committee objectives*

#### Strategies

- Identify Fundraising initiatives
- Go Fund Me
- Sprinklers
- T-shirts and other merchandise
- Cowboy calendar
- Spaghetti dinner

*Objective: Coordinate the purchase and tracking of all equipment, materials and supplies*

Strategies

- Identify and purchase equipment for emergency preparedness and individual response
- Purchase and itemize equipment including: piss tanks, fire bozz, skid decks, Pulaski's, bunker gear.
- Purchase sea-can for storage
- Maintain equipment, conduct equipment checks quarterly and conduct exhaustive check in March/April (weather dependant)
- Set up equipment sign out system - sheet in trailer - plan a day to hand out equipment - people that are Wildfire trained will be given priority.

*Objective: Develop a communication system*

Strategies

- Create a social media page for our community
  - Facebook
- Establish a telephone alert broadcast system
  - Completed

- Purchase handheld radios for volunteers may be handed out at a scene for self identified volunteers (We have some radios that were purchased by members of the community.)
- Lobby to Improve cell coverage in our area
- Purchase repeaters - cells much better idea as it's hilly
- Identify cellular 'dead spots' and identify Wi-Fi spots in those areas - identify houses and wifi password
- Use GPS for accurate location detection

*Objective: Help Establish a Fire Society*

Strategies

- Nominate Fire Society Board of Directors.
- Complete and submit Constitution and ByLaws after fire season is over.

Respectfully submitted by Natalie Anfield on behalf of EPIK. EPIK Committee members: Natalie Anfield, Cris Stobbe, James Bethell, Marney Bethell and Amy Bethell

### *About the Author*

James Bethell is a father of four, a lifelong tinkerer, hacker, and thinker with roots in both Philosophy and English from the days when Thompson Rivers University was still the University College of the Cariboo. Equally at home dissecting complex systems or composing soundscapes, he's a composer and producer with over 400 original tracks to his name. James is passionate about self-sufficiency and community resilience, and continues to serve as a director for the Knutsford Community Response Society and Captain for the Knutsford Initial Response Team.

When he's not responding to wildfires and helping overthrow archaic government emergency response policies, you might find him playing music, riding his mountain bike down one of Kamloops many awesome trails, digging in the garden, geeking out, or cooking up something bold. He loves live music, dogs, snorkeling, trails, and the kind of conversations that linger long after the fire dies down.