

Aquifer and Wellhead Protection Plan

White River First Nation Community Wells - Beaver Creek, YT

Our Water Supply...

...Comes From Groundwater...

Our groundwater flows from the Klondike Plateau upland areas to the west and southwest of the Town of Beaver Creek and flows north and northeast discharging into the Beaver Creek Drainage. Our groundwater comes from rain and melted snow that infiltrates into the ground which fills up pore spaces in soils and sediments.

...Up Through Wells...

Our community water was at one point provided to each residence from individual wells and several community wells (Well #1, 2 and 5). Soon, our community water will be provided to residences and facilities from two Community Wells (New Well #1, and Well #2). Some residential wells will still be used.

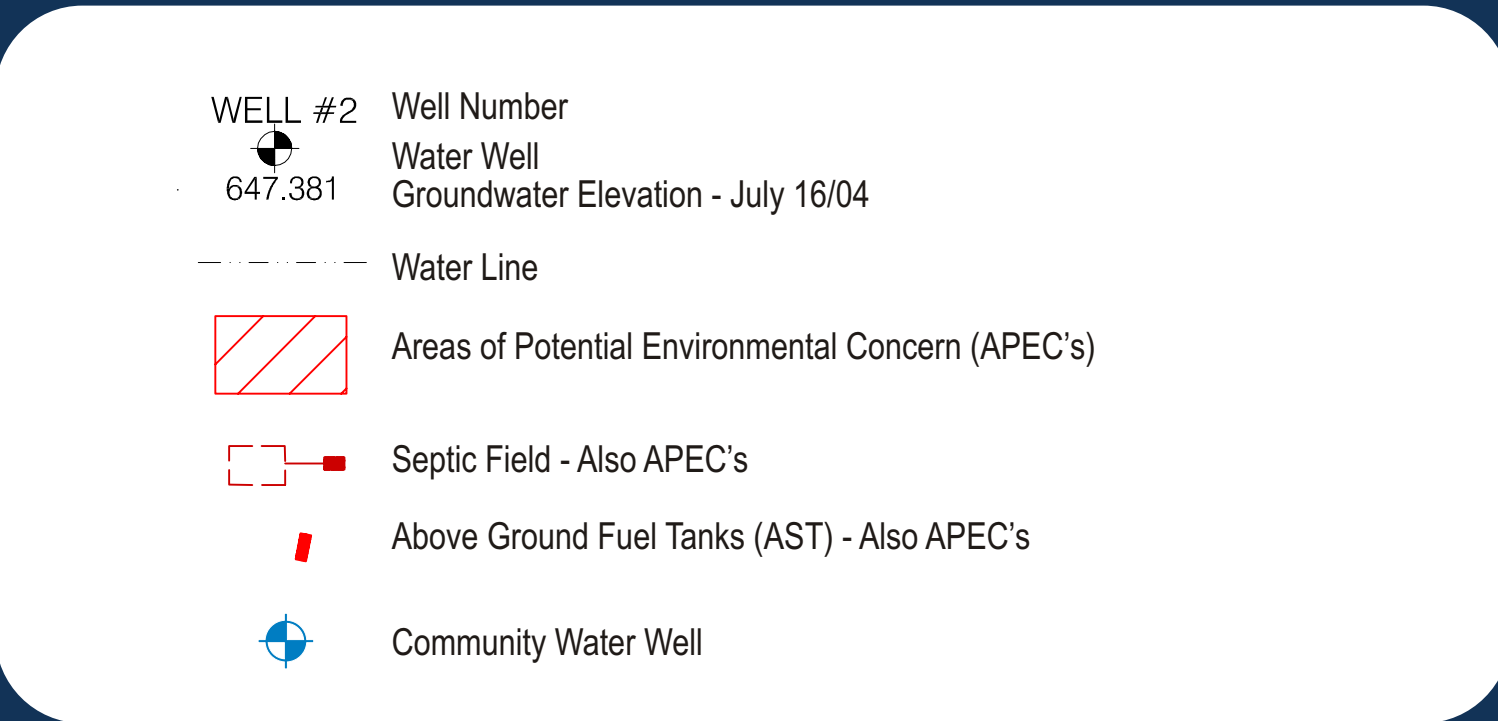
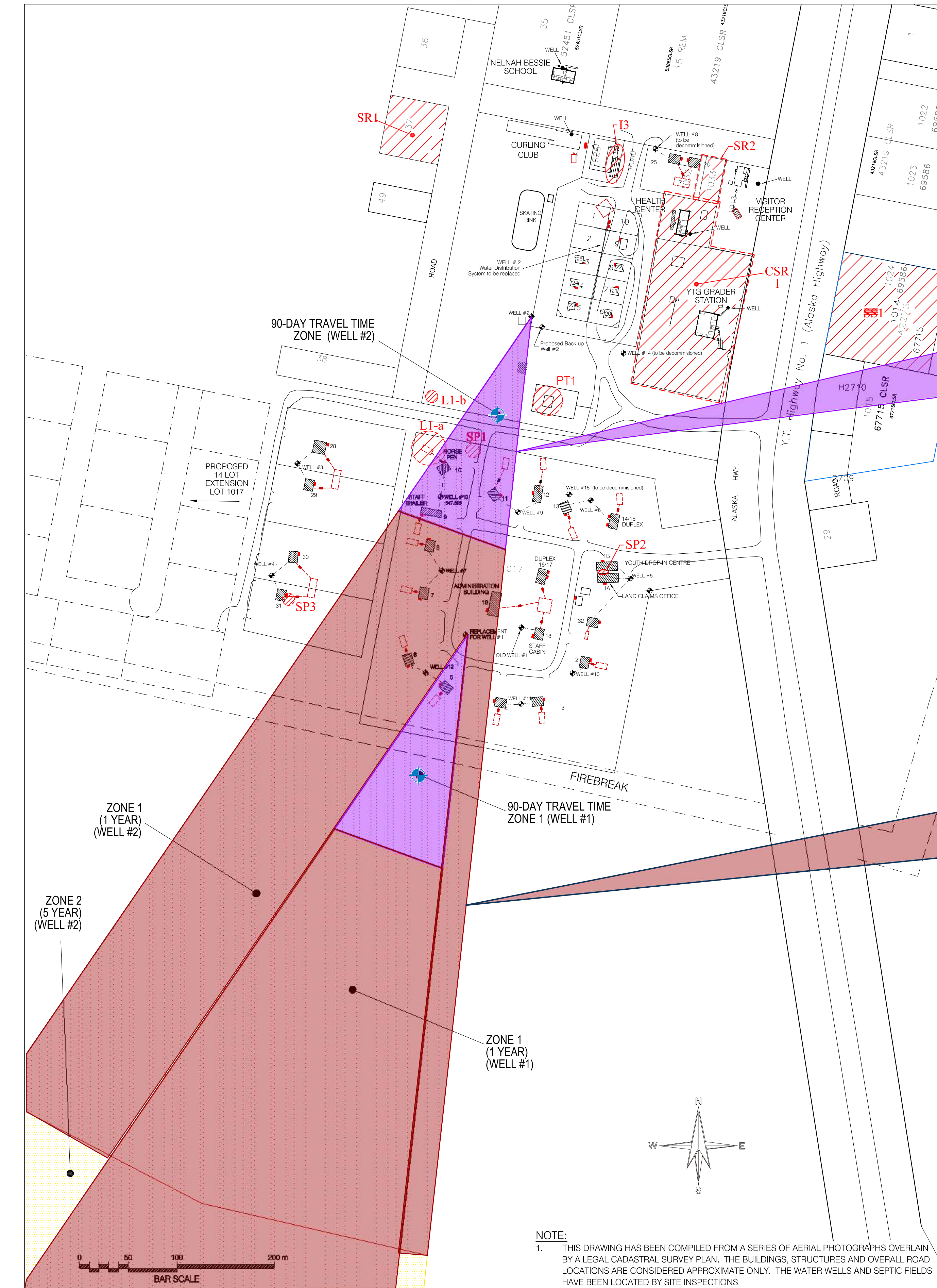
...Is Treated...

To disinfect the water by removing bacteria, viruses and protoza (such as Beaver Fever) the Community Cells, New Well # 1 and Well # 2 will have filtration and chlorination as part of the water treatment system.

...And Delivered to Our Homes. ...

Safe drinking water from New Well # 1 and Well # 2 will be delivered to our homes through a water distribution system. Water pumped from New Well # 1 will provide drinking water to the Administration Building, Youth Drop in Centre, Land Claims office and many residences, and Well # 2 supplies water to several residences.

White River First Nation Community 1 Year Capture Zone



Aquifer Zone Classification

Groundwater drawn from the aquifer reaches the well at different times which can be mapped into Zones.

- The sanitary protection zone and 90 day travel time zone;
- The 1-year travel time zone (Zone 1)
- The 5-year travel time zone (Zone 2)
- The 10-year travel time zone (Zone 3)

These different zones help to define the level of control required to safeguard and management your groundwater.



Our Groundwater comes from a semi-confined Aquifer ...

This means that the soil in this area consists of coarse sands and gravels with pockets of frozen ground which help to protect our aquifer. However, there is a potential for surface sources of contamination to impact water supply wells.

Protective And Preventative Management Strategies

RISK AND CONTROL FOR HIGHEST LEVEL OF RISK: Sanitary and 90 day Travel Time ZONE

Potential Dangers	Tampering/sabotage of the wells; Spills near wellhead or in pump houses; Failure of improperly constructed septic systems leading to improper renovation/treatment; Disposal of hazardous chemicals and/or pharmaceuticals to septic fields; Spills/leaks from ASTs, vehicles, etc. within the capture zones; Infiltration of leachate from manure piles or horse pens; Migration of contaminants into the aquifer through improperly abandoned, sealed or constructed wells Impact from industrial activity and pesticide use on the Firebreak line.
Action	Lock wells and pump houses; Fence around wellhead and pump house; Review construction details for all septic systems and confirm adequate construction; Implement septic system monitoring program; Conduct water quality monitoring on all Community Wells to include chloride, nitrate, nitrite, ammonia, phosphate, and coliforms; Install secondary containment around ASTs and install flex transfer lines for ASTs; Re-locate livestock pens and manure pile storage; Retrofit surface sanitary seals or properly decommission abandoned wells; and, Prepare and make readily available a spill contingency plan and contact list; and, Post signs around well field.
Management	Educate maintenance staff and community members regarding risks; Incorporate AWHP into WRFN Community Development Plan; NO new septic systems; NO residential, commercial and industrial development; NO installation of USTs; NO installation of ASTs without secondary containment and flex transfer lines; NO livestock operations and manure pile storage; NO landfills or sewage lagoons; NO storage of commercial and industrial chemicals (fertilizers, pesticides, salt, cleaning products, fuels, lubricants, etc); NO storage of contaminated soils and/or water; Minimize commercial and industrial activity along firebreak line; and, Minimize or restrict pesticide and herbicide use.

RISK AND CONTROL FOR HIGH LEVEL OF RISK: ZONE 1 (90 day to 1 Year Travel Time)

Potential Dangers	Failure of improperly constructed septic systems leading to improper renovation/treatment; Disposal of hazardous chemicals and/or pharmaceuticals to septic fields; Spills/leaks from ASTs, vehicles, etc. within the capture zones; Migration of contaminants into the aquifer through improperly abandoned, sealed or constructed wells; and, Impact from industrial activity and pesticide use on the Firebreak line.
Action	Review construction details for all septic systems and confirm adequate construction; Implement septic system monitoring program; Conduct water quality monitoring on all Community Wells to include chloride, nitrate, nitrite, ammonia, phosphate, and coliforms; Install secondary containment around ASTs and install flex transfer lines for ASTs; Retrofit surface sanitary seals or properly decommission abandoned wells; and, Prepare and make readily available a spill contingency plan and contact list.
Management	Educate maintenance staff and community members regarding risks; Incorporate AWHP into WRFN Community Development Plan; NO new septic systems; NO residential, commercial and industrial development; NO installation of USTs; NO installation of ASTs without secondary containment and flex transfer lines; NO livestock operations and manure pile storage; NO landfills or sewage lagoons; NO storage of commercial and industrial chemicals (fertilizers, pesticides, salt, cleaning products, fuels, lubricants, etc); NO storage of contaminated soils and/or water; Minimize commercial and industrial activity along firebreak line; and, Minimize or restrict pesticide and herbicide use.

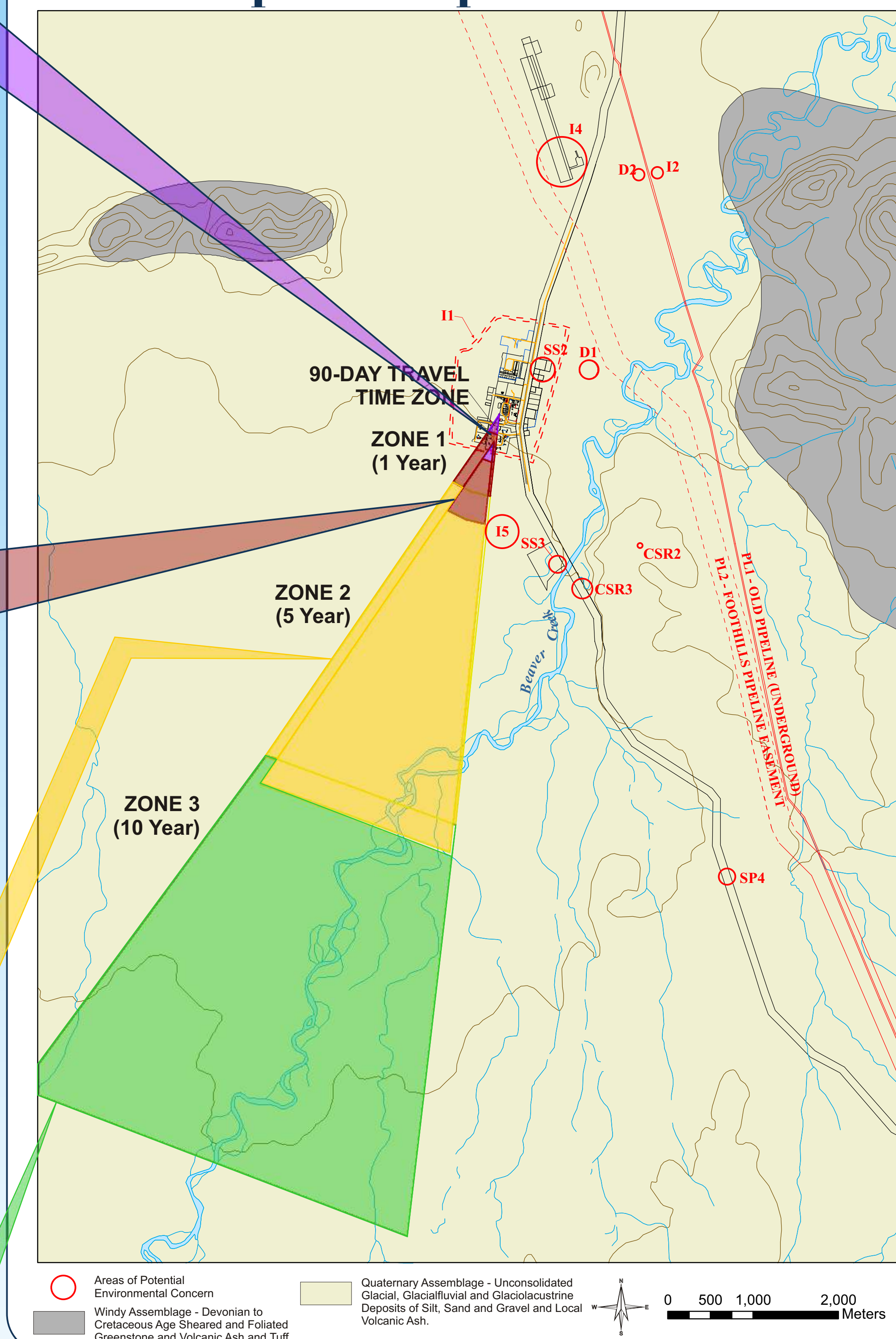
RISK AND CONTROL FOR MODERATE LEVEL OF RISK ZONE 2 (1 to 5 Year Travel Time)

Potential Dangers	Impact from potential commercial and industrial activity.
Action	Prepare and make readily available a spill contingency plan and contact list.
Management	Educate maintenance staff and community members regarding risks; Incorporate AWHP into WRFN Community Development Plan; NO commercial and industrial development; NO installation of USTs; NO installation of ASTs without secondary containment and flex transfer lines; NO livestock operations and manure pile storage; NO landfills or sewage lagoons; NO storage of commercial and industrial chemicals (fertilizers, pesticides, salt, cleaning products, fuels, lubricants, etc); NO storage of contaminated soils and/or water; Minimize commercial and industrial; and, Minimize or restrict pesticide and herbicide use.

RISK AND CONTROL FOR LOW LEVEL RISK ZONE 3 (5 to 10 Year Travel Time)

Potential Dangers	Impact from potential industrial activity.
Action	Prepare and make readily available a spill contingency plan and contact list.
Management	Educate maintenance staff and community members regarding risks; Incorporate AWHP into WRFN Community Development Plan; NO industrial development; NO installation of USTs; NO installation of ASTs without secondary containment and flex transfer lines; NO livestock operations and manure pile storage; NO landfills or sewage lagoons; NO storage of commercial and industrial chemicals (fertilizers, pesticides, salt, cleaning products, fuels, lubricants, etc); NO storage of contaminated soils and/or water; Minimize commercial and industrial; and, Minimize or restrict pesticide and herbicide use.

Aquifer Capture Zones



Our Groundwater Could Become Contaminated By...

Solid Waste Disposal Sites - Chemical and bacteriological (Leachate)



Livestock - Fecal matter from animals



Service Stations - Spills or leaks of fuels and oils



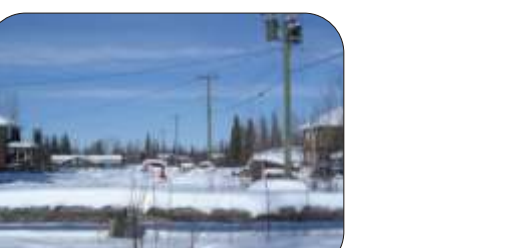
Pipelines - Spills or leaks of fuels and herbicide and pesticide sprays



Spills and Leaks - from vehicles, above-ground storage tanks (ASTs) and underground storage tanks (USTs)



Septic Systems - Household Chemicals and Bacteriological



Generator Stations - Spill or leaks of ozone depleting substances

