2022 INVASIVE PLANT ROADSIDE SURVEY YUKON TERRITORY

Prepared for Yukon Invasive Species Council

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Photo Credit, YSR

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Top of the World Highway. Photo Credit: Wikipedia Commons

EXECUTIVE SUMMARY

The 2022 Yukon invasive plant survey is meant to provide an updated snapshot of the occurrence, abundance and distribution of 14 priority invasive plant species in the territory. This survey was modeled after the 2016 roadside survey conducted on behalf of the Yukon Invasive Species Council (YISC) and the Government of Yukon Invasive Species Interdepartmental Working Group (YG ISIWG), which surveyed all major Yukon highways, gravel pits, rest areas, pullouts and watercourses. This is the third iteration of the survey, which was first conducted in 2007. The major objectives of the 2022 survey were to collect current data on all 14 priority invasive plants to be compared to 2016 data, assess and make recommendations on improving and streamlining survey methodology to align with invasive plant management goals, and provide opportunities for education and public outreach around invasive plants in the Yukon.

As part of the 2022 survey, training opportunities were provided to interested and available First Nation partners to share knowledge on invasive plant identification, survey methodology, and management objectives. Members of the Carcross Tagish First Nations (CTFN) Lands Department received training and conducted approximately 150 Km of survey along the South Klondike Highway, Alaska Highway and Tagish Road.

2022 survey data shows that occurrences and abundance of most priority invasive species have increased since 2016. Smooth Brome, White Sweet-clover, Alsike Clover and Narrow-Leaf Hawksbeard were the most commonly occurring invasive species with the greatest abundance. Each of these priority species occurred in over 50% of surveyed highway sections, and all increased in occurrence from 2016 to 2022. The highways with the most diverse and abundant invasive plant species were those around communities. White Sweet-clover, one of the highest ranking priority species as identified in both the 2007 and 2016 survey, had a slight increase in distribution in 2022, but a large increase in the abundance between 2016 and 2022.

Continued monitoring of invasive species along Yukon's highways is integral for support management objectives. Future surveys should focus on collecting data that help support management objectives that are clearly defined. Additionally, alternative survey methodology should be explored to increase the efficiency and effectiveness of future surveys to allow for faster and more accurate data collection, processing, and analysis. This will help improve invasive plant management operations in the Yukon, supporting healthy plant and human systems.

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LIST OF ACRONYMS

CTFN	Carcross Tagish First Nation
GIS	Geographic Information System
GPS	Global Positioning System
GSV	Google Street View
IUCN	International Union for Conservation of Nature
NNDDC	Na-Cho Nyäk Dun Development Corporation
RC	Robert Campbell Highway
YISC	Yukon Invasive Species Council
YG	Yukon Government
YG ISIWG	Government of Yukon Invasive Species Interdepartmental Working Group
HPW	Yukon Government Department of Highways and Public Works
YSR	Yukon Seed and Restoration

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INTRODUCTION

Invasive plants are species that are not native to an area and have negative effects on our economy, our environment, or our health (YISC 2016). The impact of invasive plants can be extensive such as displacement of native species, modification of ecosystems and ecosystem functions, introduction of pests and diseases, and reduction in biodiversity (Line et al. 2008). According to the International Union for Conservation of Nature (IUCN), invasive species are the second most significant threat to biodiversity, after habitat loss (Government of Canada 2016). Invasive species have cost Canada billions of dollars in direct losses, control costs, and reduced annual production every year (Government of Canada 2016).

A roadside survey of White Sweet-clover was conducted in 2007 by the Government of Yukon along Territorial roadways (Line et al. 2008). This survey was the first of its kind in Yukon specific to invasive plants and was intended to provide a baseline inventory of this priority invasive species. The survey and methodology was repeated for a 2016 survey which saw the addition of several other priority invasive plant species to the survey. In 2022, an additional roadside survey was conducted with the intention to provide updated information on the state of invasive species on Yukon roadsides.

A survey of fourteen priority Yukon invasive plant species was conducted during the summer of 2022 (Table 2). The survey included approximately 2,700 Km of highways, 71 gravel pits, 32 rest areas, 80 roadside pullouts, and 207 watercourses. Surveys were carried out between August 2nd and August 17th, 2022 when the majority of invasive plant species were in flower and conspicuous. Non-priority introduced plants were also noted when seen. In repetition of the 2016 road survey, all previously surveyed highways were included with the addition of the Dempster Highway up to the start of the Tombstone and the Atlin road. Like the 2016 survey, the Yukon highways not surveyed included Stewart-Cassiar Road, North Canol Road, and Nahanni Range Road.

OBJECTIVES

Objectives of the 2022 roadside survey included:

- Complete an updated survey of priority invasive species as determined in 2016 based on their distribution in the Yukon, biology of the species, and likelihood of identification from a moving vehicle. By providing an updated snapshot of the status of the priority invasive species along Yukon highways, vegetation management activities can be guided by the most up to date information available.

- Conduct the 2022 survey using similar/same methodology as the 2016 survey so as to obtain results that can be compared between the two years.

- Complete surveys of all of the previously surveyed gravel pits, roadside pullouts, rest areas and watercourses for the list of priority invasive species.

- Assess the current survey methodology and provide recommendations on how to make the survey more efficient (survey time, cost, data analysis and presentation).

- Provide training and educational opportunities to interested parties, particularly First Nation Lands departments, to build knowledge around invasive plant identification, survey techniques and management objectives.

FIRST NATIONS PARTICIPATION

As part of the funding agreement, the 2022 YISC roadside survey was to include First Nation participation.

First Nations throughout the Yukon were contacted once the project had commenced to solicit interest in participation in portions of the survey work. Training opportunities for interested groups were provided.

Due to the timing of project initiation, and the survey window, many First Nations had limited capacity to support, as summer staff from lands departments were very busy with other work.

YSR worked with the lands department of the Carcross Tagish First Nation and provided a day of training to staff members on invasive plant identification, survey methodology and technique, and basics of invasive plant management.

This was also an opportunity for YSR to learn from these community members about their experiences and observations of invasive plants, plant knowledge, and land management in the context of invasive species.

Following this training day, members of the CTFN completed approximately 150 Km of roadside survey work along the South Klondike Highway, Tagish Road and Alaska Highway between the Carcross Cut-off and Jakes Corner. The survey data collected by CTFN is included in this report.

It is our hope that this collaborative work will open doors for future opportunities to involve local and First Nation communities in survey work, and increase public knowledge around invasive species. The single best way to combat the spread of invasive species is through preventing invasions from occurring. This is in part achieved through public education.

A huge Mussi Cho to all those who participated!

METHODS

Highway Survey

The 2022 survey took place between August 2nd and August 17th, 2022. Surveying was timed to try and coincide with peak bloom period of the priority invasive species to help with species identification. It was found that flowers are the easiest way to identify plant species from a moving vehicle. The survey followed the same methodology as the 2016 survey for consistency and comparative analysis. The 2022 roadside survey included three components:

1. Highway Survey (as done in 2016 and 2007)
2. Pull-outs, Rest Areas, and Gravel Pits (as done in 2016 and 2007, excluding the campgrounds as done in 2007)
3. Watercourses (as done in 2016)

The Yukon Highways surveyed in 2022 were:

- Alaska Highway – Highway 1
- Atlin Road - Highway 7*
- North Klondike Highway – Highway 2
- South Klondike Highway – Highway 2
- Haines Highway – Highway 3
- Robert Campbell Highway – Highway 4 (this includes access roads to Faro and Ross River)
- Dempster Highway- Highway 5*
- South Canol Road – Highway 6
- Tagish Road – Highway 8
- Top of the World Highway – Highway 9
- Silver Trail to Keno City – Highway 11

Yukon highways were systematically surveyed the using the same methodology as 2016 to ensure the robustness of comparative analysis. Two field technologists surveyed for invasive plant species by driving at moderate speed (generally 30-40 km/hr), while a driver and an observer/recorder assessed both sides of the road. Two surveyors per vehicle permitted greater safety, probability of detection of invasive plants, and ease of recording information.

*New sections added for 2022 survey.

The survey focused on the vegetated section within the road right-of-way. The term "right-of-way" refers to the width of a road measured from the highway centerline on both sides of the highway. A 30 m right-of-way is in effect for all Yukon highways, except for the Alaska Highway, which extends 45 m out from the highway centerline (both sides). In this report, "right-of-way" is used to denote the vegetated part of the entire right-of-way width on both sides of the road.

However, along some of the less travelled roads the actual cleared right-of-way was less than 30 m and, in some cases, essentially absent with dense native vegetation growing right to the road edges. For more detailed descriptions of the highways see the Description of Highways section in this report.

Using a tablet or phone with the ArcFieldMaps app, field technologists recorded a waypoint at the beginning of highway travel, and again after approximately every 5-km of travel using the vehicle odometer to measure distance. For each 5-km road section, priority species observed were ranked for abundance using the descriptions provided in Table 1, and entered on paper forms. Communities along the highways and some sections of highways which were under active construction were not surveyed, but where some observations of invasive species were recorded, these have been included in this report.

Surveyors recorded direction of travel, type of road (i.e., paved or gravel), and any causes of reduced detectability, (i.e., highway construction), mowed, weather conditions, etc.; however, neither weather nor traffic were limiting factors.

Stops were made occasionally to inspect a right-of-way in more detail or to verify and collect a species. Unknown specimens were collected when field identification was uncertain. Specimens collected for verification were identified in detail post survey using multiple reports and studies of Yukon and northern Canada ecology (Porsild & Cody 1980; Cody 1996; Trelawny 1988; and Pojar & Mackinnon 2013).

Common Tansy. Photo Credit: Björn S..., via Flickr

Category	Sub-Category*	Description
Continuous	--	Plants form a dense and continuous patch greater than 100 m long along one or both sides of the highway. Density distribution class of 7 or 8. **
Sporadic	High Scattered Abundance	Plants form occasional patches less than 100 m long which are broken by large sections (i.e., several hundred metres) of scattered or no growth. Patches of high scattered abundance have a density distribution class of 5 or 6. **
	Low Scattered Abundance	Plants form occasional patches less than 100 m long which are broken by large sections (i.e., several hundred metres) of scattered or no growth. Patches of low scattered abundance have a density distribution class of 3 or 4. **
Rare	--	Very few plants observed (i.e., small isolated patch). Density distribution class of 1 or 2.**
Absent	--	No plants observed.

Table 1: Abundance categories for the 2022 roadside survey (as done in 2016).
* The 2016 survey followed suggestions from the 2007 survey to include a sub-category to further define the abundance of the sporadic category for future surveys.
** See Luttmerding et al. (1990)

Gravel Pits, Rest Areas, Pullouts

All of the gravel pits, pull-outs, and rest areas surveyed as part of the 2016 survey were re-surveyed in 2022 to ensure the data is comparable during analysis. Surveys of all sites were conducted on foot or from the vehicle where feasible. Abundance ranks were assigned to priority invasive species observed. Non-priority invasives were also recorded where observed.

Gravel pits were categorized as either active or abandoned. Rest areas large enough for vehicles to pull into and park are maintained by Yukon Government. One or two outhouses and trash barrels are usually present at these sites.

The 2016 survey defined pullouts as unpaved areas along a road. These are not Yukon Government rest areas or active gravel pits, but are large enough for a vehicle to pull into. Yukon-Government-maintained trash barrels and outhouses are not present at these sites. Other sites included as pullouts were two active and two inactive commercial sites (gas stations/restaurants), dumps, an airstrip, an airport parking area, a public quarry, an access road, a culvert storage area, and a road shoulder and road junction. These sites were included in the 2022 study to ensure data comparability.

Watercourses

Watercourses are riparian systems of varying sizes including creeks, streams, and rivers which intersect Yukon highways, flowing either under bridges or through culverts beneath the road.

Watercourses were surveyed from a vehicle or on foot where feasible. All four edges of the watercourse were checked for priority invasive species. Priority invasive species observed within the riparian zone were recorded, along with other relevant information, such as presence of bridges and culverts, size of stream, proximity to other disturbances, etc. Non-priority introduced or invasive plant species were noted as well. Surveys of watercourses were limited to the areas within approximately 50 meters of the intersection with the roadway.

DESCRIPTION OF HIGHWAYS

The following provides descriptions of highways surveyed, including priority invasive plant species observed. For detailed information regarding priority invasive species see Priority Invasive Plants Along Yukon Highways section of this report.

Alaska Highway

One hundred and seventy two sections were surveyed in 2022 compared to 182 sections surveyed in 2016. A short section of the Alaska Highway north of Beaver Creek, beyond Canadian Customs was not surveyed in 2022. Surveyors had not anticipated having to cross through customs, and therefore could not survey this section. The difference in the number of sections is therefore likely due to both the missed section of the highway and the variability in measuring the section using different methods. It is recommended that future surveys use a standard set of predetermined coordinates to ensure consistency and accuracy.

The Alaska Highway was the longest highway surveyed as part of the 2022 roadside survey, with a length of 935 km from its western border with Alaska to the British Columbia border south of Watson Lake. The highway was surveyed from the Alaska border to Watson Lake. Road elevations were between 521 and 1027 m. The highest elevations were recorded in the Cassiar Mountains west of Watson Lake. The highway was generally in good condition except for some areas of ongoing roadwork. The road is two-laned and chip-sealed, with shoulders sloping down to a wide right-of-way through most of its length. Some roadside edges and the right-of-way appeared to have been mowed prior to the survey between Haines Junction and the Aishihik Road cutoff, as well as long stretches of roadside between Whitehorse and Jake's Corner and along Teslin Lake. Most of the priority species seen along the roadside edges, as well as in the right-of-way, were mixed in with native herbaceous and woody species. The most common and abundant priority invasive species along the length of the Alaska Highway was White Sweet-clover, followed by Smooth Brome, Narrow-leaf Hawksbeard, and Alsike Clover. Other priority invasive species seen with more widely scattered locations and much less abundance were Red Clover, Yellow Sweet-clover, Alfalfa, Yellow Lucerne, and Oxeye Daisy.

North Klondike Highway

One hundred and three sections were surveyed in 2022 compared to 105 sections surveyed in 2016. Variance in car odometer readings and the nature of the methodology used in the survey may have contributed to the differences in the number of sections surveyed between 2016 and 2022. It is recommended that future surveys use a standard set of predetermined coordinates to ensure consistency and accuracy.

The North Klondike Highway from Whitehorse north to Dawson City is 524 km long and runs through hilly terrain with road elevations ranging from 332 to 860 m. The highway is two-laned and chip-sealed with a generally widely cleared right-of-way. Approximately 35 km along the highway between Whitehorse and Carmacks, and approximately 120 km between Carmacks and Pelly Crossing had been mowed during the current season. The most common and abundant priority invasive species along the length of the North Klondike Highway was White Sweet-clover, followed by Smooth Brome, Alsike Clover, and Narrow-leaf Hawksbeard. Other priority invasive species that were widely scattered and much less abundant were Red Clover, Alfalfa, Yellow Lucerne, Yellow Sweet-clover, Umbellate Hawkweed, Perennial Sow-thistle, Oxeye Daisy, and Common Tansy.

South Klondike Highway

Ten sections were surveyed in 2022 compared to 16 sections surveyed in 2016. Due to a miscommunication with the CTFN Lands Department who completed the South Klondike Highway surveys, the highway south of Carcross to the BC border was not surveyed. It is recommended that future surveys use a standard set of predetermined coordinates to ensure consistency and accuracy and ensure no sections are missed.

The South Klondike Highway runs through hilly and mountainous terrain from the Alaska Highway east of Whitehorse to the British Columbia border, a distance of about 77.5 km, with road elevations ranging from 670-793 m. The highway was chip-sealed and in good condition with a wide, mostly brushed-out right-of-way. The most common and abundant priority invasive species observed were Smooth Brome, Alsike Clover, and Narrow-leaf Hawksbeard, followed by only a few sections each of White Sweet-clover, Yellow Sweet-clover, Yellow Lucerne, Alfalfa, and Red Clover. No other priority invasive plant species were seen along the South Klondike Highway.

Haines Highway

Twenty one sections were surveyed in 2022 compared to 21 sections surveyed in 2016. There was no difference between the surveys in number of sections measured for this section of highway; however, there is still variability in the location of the section markers. Variance in car odometer readings and the nature of the methodology used in the survey may have contributed to these differences It is recommended that future surveys use a standard set of predetermined coordinates to ensure consistency and accuracy.

The Haines Highway runs through mountainous terrain southward from Haines Junction to the British Columbia border and beyond to the Alaska coast. Its length in Yukon is 100 km with road elevations ranging from 590 to 957 m. The highway is two-laned, chip-sealed its entire distance within Yukon, and was in good condition. The cleared right-of-way is not as wide as the Alaska Highway, and supports a mix of native and introduced species through all but about 30 km at the southern end of the road, where the right-of-way narrows and native shrubs grow right to the road edges.

No mowing was observed, and no highway construction was encountered. The most common and abundant priority invasive species along the road was Alsike Clover, followed by Smooth Brome, Narrow-leaf Hawksbeard, and Red Clover. White Sweet-clover was seen in only one section. Other priority species noted were Yellow Lucerne, Alfalfa, Umbellate Hawkweed, and Reed Canary Grass. Creeping Thistle (*Cirsium Arvense*) is known from Km 223.8 along the west side of the Haines Highway. This is a non-native, invasive species that is well known at this location for over a decade. It is present within the right-of-way for approximately 100 m along the highway with a cover of approximately 50% this area; however, it was not reported during the 2016 survey nor the 2022 survey. This patch has been actively managed by volunteers to prevent spreading of the population by “dead heading” or plucking off flowers prior to seed set.

Robert Campbell Highway

One hundred and fourteen sections were surveyed in 2022 compared to 127 sections surveyed in 2016. Variance in car odometer readings and the nature of the methodology used in the survey may have contributed to the differences in the number of sections surveyed between 2016 and 2022. It is recommended that future surveys use a standard set of predetermined coordinates to ensure consistency and accuracy.

The Robert Campbell Highway runs through hilly and mountainous terrain west to east from Carmacks to Ross River, and east to southeast, south from Ross River to Watson Lake with a total distance of 582 km. Road elevations range from 521 to 1027 m. The highway between Carmacks and Faro is two-laned and chip-sealed. The road was in relatively good condition, with a narrower right-of-way than the Alaska Highway. The roadside and right-of-way had been cut along 60 km east of Carmacks during the current season and along 25 km west of Ross River in the previous season. Between the turnoff to Faro and approximately 100 km north of Watson Lake, the road is graveled and in variable condition. The last 100 km of the highway, from the highway maintenance camp south to Watson lake is chip-sealed. The northern part of the road southeast from Ross River towards Finlayson Lake is much narrower, with little to no right-of-way. A dense cover of native trees and shrubs grows up to the edge of the roadside along these sections. Between Carmacks and Ross River the most common and abundant invasive species was White Sweet-clover, which was present throughout the distance, followed by Alsike Clover, Narrow-leaf Hawksbeard (which is also present in a number of gravel pits), Smooth Brome, Yellow Sweet-clover, and Alfalfa, with a few instances of Yellow Lucerne and Perennial Sow-thistle.

Between Watson Lake and Ross River the only priority invasive species found along most of the road was Narrow-leaf Hawksbeard, mainly growing singly or in small patches along the road edges. Other species that were commonly seen from Watson Lake to the Frances Lake area were Alsike Clover, White Sweet-clover, and Red Clover. Smooth Brome and Alfalfa were seen in only a few sections of the road between Watson Lake and Frances Lake, and Yellow Sweet-clover was seen infrequently near Watson Lake and Ross River.

South Canol Road

Thirty-nine sections were surveyed in 2022 compared to 49 sections surveyed in 2016. Variance in car odometer readings and the nature of the methodology used in the survey may have contributed to the differences in the number of sections surveyed between 2016 and 2022. It is recommended that future surveys use a standard set of predetermined coordinates to ensure consistency and accuracy.

The South Canol Road is 225 km long and runs through hilly and mountainous terrain between Johnson's Crossing and the Campbell Highway near Ross River, with road elevations ranging from 731 to 1183 m. The road is unpaved, and some sections were somewhat rough, especially north of Quiet Lake. The right-of-way is relatively narrow, and in the northern part is absent or nearly so, with dense native shrubs growing right to the edge of the road. Alsike Clover and Smooth Brome were the two most common and abundant priority invasive plant species mainly occurring along the southern half of the road. Narrow-leaf Hawksbeard was noted in several places, but White Sweet-clover and Yellow Sweet-clover were rarely seen.

Tagish Road

Eleven sections were surveyed in 2022 compared to 10 sections surveyed in 2016. Variance in car odometer readings and the nature of the methodology used in the survey may have contributed to the differences in the number of sections surveyed between 2016 and 2022. It is recommended that future surveys use a standard set of predetermined coordinates to ensure consistency and accuracy.

The Tagish road is 54 km long and runs through hilly and mountainous terrain from Carcross to the Alaska Highway at Jakes Corner with road elevations ranging from 658 to 794 m. The road was paved and in good condition with a wide mostly brushed-out right-of-way. Smooth Brome, White Sweet-clover, and Narrow-leaf Hawksbeard were the most common priority invasive plant species seen along the road. Alsike Clover, Yellow Sweet-clover, Alfalfa, and Red Clover were also observed, but less commonly.

Top of the World Highway

Twenty sections were surveyed in 2022 compared to 24 sections surveyed in 2016. Variance in car odometer readings and the nature of the methodology used in the survey may have contributed to the differences in the number of sections surveyed between 2016 and 2022. It is recommended that future surveys use a standard set of predetermined coordinates to ensure consistency and accuracy.

The Top of the World Highway in Yukon is 106 km long and runs from Dawson City west to the Alaska border. Road elevations range from 321 to 1325 m, with much of the western part of the highway near or above the tree line. The road is gravel except for the first eight kilometers near Dawson, which is chip-sealed. Most of the right-of-way is uncut and native vegetation grows right to the road shoulder. Only one priority invasive plant species, Alsike Clover, was significant along the highway from Dawson to the Sixty Mile turnoff, and was absent from there west to the border. White Sweet-Clover and Smooth Brome were observed along a few sections from the ferry landing at Dawson and were absent for the rest of the distance to the border.

The Silver Trail

Twenty two sections were surveyed in 2022 compared to 25 sections surveyed in 2016. Variance in car odometer readings and the nature of the methodology used in the survey may have contributed to the differences in the number of sections surveyed between 2016 and 2022. It is recommended that future surveys use a standard set of predetermined coordinates to ensure consistency and accuracy.

The Silver Trail is 110 km long and runs through hilly terrain from Stewart Crossing to Keno City. Road elevations range from 473 to 925 m. The road is chip-sealed between Stewart Crossing and Mayo, with a wide right-of-way, and has been mechanically cleared for all but the first ten kilometers. Between Mayo and Keno the road is mostly graveled, and only partly chip-sealed, with a wide but uncut shrubby right-of-way. The most common and abundant priority invasive species along the road was White Sweet-clover, followed by Narrow-leaf Hawksbeard. Smooth Brome was common from Stewart Crossing to Mayo, and Alsike Clover was present near Stewart Crossing and north of Mayo partway to Keno. Other priority invasive plant species observed were Yellow Lucerne in several road sections, Yellow Sweet-clover near Mayo, and Umbellate Hawkweed near Stewart Crossing.

Atlin Road

The Atlin Road was added to the 2022 roadside survey to capture the state of invasive species along this section roadway that spans the Yukon/British Columbia border. Eighteen sections were surveyed along the Atlin Road. The Atlin Road begins at Jakes Corner where the Tagish Road and Alaska Highways meet, and extends approximately 90 Km south to the town of Atlin, BC.

The Atlin Road was generally in good condition. The road is two-laned and chip sealed over the majority of its length. The section of road within the Yukon had unmodified right-of-ways. Once over the British Columbia border, the right-of-way was mowed.

Most of the priority invasive species observed along the Atlin Road in the right-of-way were mixed in with native vegetation. The most common and abundant priority invasive species along the Atlin Road were Alsike Clover, Narrow-Leaf Hawksbeard and Smooth Brome. Alsike Clover and Narrow-Leaf Hawksbeard were present in nearly all sections. Other priority species observed were Oxeye Daisy and Perennial Sow-thistle. The Atlin Road has very low occurrence rates of White Sweet-clover, where it was categorized as rare in only three roadway sections.

Dempster Highway to the Start of Tombstone

Twenty sections were surveyed in 2022. For future studies it is recommended to use the GPS points from the 2022 study to measure sections, to ensure the sections can be directly compared.

The Dempster Highway in Yukon is 465 km long and runs from near Dawson City north to the Northwest Territory border. Road elevations range from 321 to 1400 m. The 2022 survey covers the first 50 km of the Dempster Highway from the beginning at the Klondike Highway to the entrance to Tombstone Territorial Park. The road is gravel except for the first kilometer, which is chip-sealed near the intersection with the North Klondike Highway.

Most of the right-of-way is uncut and native vegetation grows right to the road shoulder. Only one priority invasive plant species, Alsike Clover, was significant along the highway from Dawson to the park entrance. White Sweet-Clover and Smooth Brome were observed along a few sections south of the midway point to the park.

PRIORITY INVASIVE SPECIES

Summary of Results

The following table provides a summary of survey results. Detailed descriptions of the occurrence of each species are described in the following sections.

Species	Continuous	High Scatter	Low Scatter	Rare	Total
Smooth Brome	71	76	167	66	380
White Sweet-clover	89	92	139	45	365
Alsike Clover	122	108	72	28	330
Narrow-leaf Hawksbeard	18	54	148	92	312
Red Clover	20	30	67	49	166
Alfalfa	6	9	25	29	69
Yellow Sweet-clover	0	3	17	32	52
Yellow Lucerne	5	9	12	45	71
Umbellated Hawkweed	1	6	8	3	18
Perennial Sow-thistle	0	0	1	8	9
Oxeye Daisy	0	0	3	2	5
Reed Canary Grass	0	0	0	1	1
Common Tansy	0	0	0	1	1
Scentless Chamomile	0	0	0	0	0

Table 2: Summary of survey results showing the number of highway sections for each abundance classification for each of the priority invasive species.

Smooth Brome *(Bromus inermis)*

Smooth Brome was recorded in 380 (70.4%) of the 540 road sections surveyed (Figure 2). Smooth Brome was observed growing in highway right-of-ways, along the edges of pullouts and rest stops, and along grassy areas near some watercourses. Smooth brome was identified by its tall stature, clump forming stands and droopy seed heads. When close up visual inspection was required and possible, Smooth Brome was distinguished from the native *Bromus pumpellianus* by the lack of hairs on its glumes. It was often seen growing amongst other grasses and native species, with its seed heads extending high above all other vegetation. It was most commonly set back from the roadway in the least disturbed area of the right-of-way. It formed dense patches despite being interspersed with some other vegetation. Smooth Brome has been used to revegetate large sections of highway in the Yukon, leading to most of the known occurrences in the territory (Bruce Bennet, personnel communication, March 9th, 20223).

Smooth brome was observed in some abundance along every highway in the territory. The highest abundance of smooth brome was observed along the Alaska Highway between Haines Junction and Teslin, where a significant portion was categorized as continuous. Other sections of continuous smooth brome were observed along the Silver Trail Highway between Stewart Crossing and Mayo, around the community of Carmacks on the Alaska Highway, and along the Robert Campbell Highway north of Watson Lake. Much of the rest of the territorial highways has low scatter or rare abundance of Smooth Brome throughout.

White Sweet-clover *(Melilotus albus)*

White Sweet-clover was recorded in 365 (67.6%) of the 540 road sections surveyed (Figure 3). White Sweet-clover was observed growing throughout the right-of-way, as individual plants, and dense patches often continuing for long stretches. Large, second-year flower plants were typically set back from the roadside, but in certain locations, large obstructive plants were seen growing right up the edge of the highway pavement. Small first year plants were easily identifiable growing in the narrow gravel shoulder of the highway. White sweet-clover by far had the most biomass of any of the priority invasive plant species.

White Sweet-clover was observed along almost every highway section surveyed, except for the South Canol Road. Significant sections of continuous White Sweet-clover were present along the Klondike Highway north of Whitehorse to Carmacks, on the Alaska Highway south of Whitehorse to Jakes Corner, along the Robert Campbell Highway near Carmacks, and along the Silver Trail Highway between Stewart Crossing and Mayo. These are high traffic sections of highway and many are managed by mowing the right-of-way. Not previously surveyed was the Dempster Highway, on which patches of low scatter White Sweet-clover were observed.

White Sweet-clover was also common in gravel pits, pullouts and other areas where disturbance has occurred to highway right-of-ways.

Alsike Clover *(Trifolium hybridum)*

Alsike Clover was recorded in 330 (61.1%) of the 540 road sections surveyed (Figure 4). Low growing plants were observed in small bunches or forming large dense continuous mats in some areas. Due to its size and the nature of the survey technique, it is possible that some occurrences were missed in areas where the right-of-way could not be observed fully (steep slopes, ditches, obstructive vegetation). Alsike Clover was often seen growing in association with red clover, with both species forming dense patches together.

Several highways had stretches of continuous Alsike Clover including north and south of Whitehorse on the Klondike and Alaska Highways respectively, the Klondike Highway and Top of the World Highway to the east and west of Dawson City, and a large stretch of the Robert Campbell Highway North of Watson Lake. The entire southern portion of the Alaska Highway between Whitehorse and Watson Lake has either continuous or high scatter Alsike Clover.

AlsikeClover was also observed frequently in rest areas and pullouts, and along the grassy approaches to watercourses near boat launches.

Narrow-leaf Hawksbeard *(Crepis tectorum)*

Narrow-leaf Hawksbeard was recorded in 312 (57.8%) of the 540 road sections surveyed (Figure 5). Narrow-leaf Hawksbeard was observed on almost all sections of highway in the Yukon, but did not frequently form high density patches like some other common invasive plants. Narrow-leaf Hawksbeard was frequently observed in the narrow gravel shoulder right next to the roadway. Due to its small size (both height and flower size) it was sometimes difficult to identify amongst other vegetation. As such, some occurrences might have been missed. When larger patches of narrow-leaf hawksbeard did occur, the plants appeared at a relatively low density.

The greatest abundance of Narrow-leaf Hawksbeard was observed north and south of Whitehorse on the Klondike and Alaska Highways respectively, and north, east, and south of Haines Junction on the Alaska Highway and Haines Road respectively. All other roadways, including the South Canol Road and Top of the World Highway had observations of Narrow-leaf Hawksbeard.

Narrow-leaf Hawksbeard was frequently observed in gravel pits, rest areas, pullouts, and in gravel areas around watercourse culverts. These gravely disturbed areas had some of the highest abundances of Narrow-leaf Hawksbeard observed.

Red Clover *(Trifolium pratense)*

Red Clover was recorded in 166 (30.7%) of the 540 road sections surveyed (Figure 6). Low growing plants were observed growing as individuals or in small dense patches, often interspersed with Alsike Clover. Due to its size and the nature of the survey technique, it is possible that some occurrences were missed in areas where the right-of-way could not be observed fully (steep slopes, ditches, obstructive vegetation).

Continuous patches of Red Clover were observed along the Haines Road south of Haines Junction, east of Mayo along the Silver Trail Highway, and some scattered patches of the Alaska Highway south of Whitehorse all the way to Watson Lake. Red Clover had relatively low occurrence and abundance on most other sections of Highway.

Like Alsike Clover, Red Clover observed frequently in rest areas and pullouts, and along the grassy approaches to watercourses near boat launches.

Alfalfa *(Medicago sativa)*

Alfalfa was recorded in 69 (12.8%) of the 540 road sections surveyed (Figure 7). Alfalfa was seen growing as individual plants, often forming low density patches within the right-of-way. It seemed most common on sloped areas, and was often associated with Alsike and Red Clover. Several colour varieties of alfalfa were identified including white, yellow and purple flowers. In some instances distinguishing between Alfalfa and Yellow Lucerne was difficult, in which case, surveyors stopped and investigated closer. Alfalfa has been used to revegetate sections of highway in the Yukon, leading to most of the known occurrence in the territory ((Bruce Bennet, personnel communication, March 9th, 20223).

Alfalfa was most frequently observed along some sections of the Robert Campbell around Faro, and on the Alaska highway just south of Carmacks, and north of Whitehorse. Some low density patches were also identified along the Alaska Highway north of Haines Junction. Save for a single rare occurrence, no Alfalfa was observed north of Carmacks.

Alfalfa in bloom. Photo credit: Washington State Department

Yellow Sweet-clover *(Melilotus officinalis)*

Yellow Sweet-clover was recorded in 52 (9.6%) of the 540 road sections surveyed (Figure 8). Yellow Sweet-clover was observed growing in the same areas as White Sweet-clover, but far less frequently. The majority of the Yellow Sweet-clover observed was along the Klondike Highway between Whitehorse and Carmacks, south of Whitehorse on the Alaska Highway, and north of Haines Junction along the Alaska Highway. All observations were rare or low scatter abundance, except for two high scatter sections that align the Alaska Highway near Whitehorse and Carmacks.

Yellow Lucerne *(Medicago falcata)*

Yellow Lucerne was recorded in 71 (13.1%) of the 540 road sections surveyed (Figure 9). Particularly near Haines Junction, high density patches of yellow lucerne were observed along roadsides near an experimental farm, which were planted with Yellow Lucerne as part of agriculture test plots (Matheus and Omtzig, 2012). The bright yellow flower colour helped distinguish Yellow Lucerne from other clover species.

Yellow Lucerne was most common and abundant north and east of Haines Junction along the Alaska Highway, north and south of Carmacks along the Klondike Highway, and east and west of Mayo along the silver Trail Highway. Particularly near Haines Junction, high density patches were observed near large farmers' fields of Yellow Lucerne, pointing to a possible point source of this species. Some rare patches of this species were also observed along the remainder of the Alaska Highway north of Haines Junction to Beaver Creek. Most of the rest of the Yukon was relatively free of Yellow Lucerne.

Umbellated Hawkweed *(Hieracium umbellatum)*

Umbellated Hawkweed was recorded in 18 (3.3%) of the 540 road sections surveyed (Figure 10). Umbellated Hawkweed is a native species, but has been included in both the 2016 and 2022 surveys due to its rapid expansion and its close resemblance to Perennial Sow-thistle. Umbellated Hawkweed, when observed, was found growing in the center of highway right-of-ways, often in large patches amongst other vegetation. The most significant section of Umbellated Hawkweed was observed along the Alaska Highway from Whitehorse to Johnson's Crossing. One particular section along the shore of Marsh lake to Jake’s Corner had several sections of high scatter abundance of Umbellated Hawkweed in a row. One section of continuous Umbellated Hawkweed was observed along the Silver Trail Highway approaching Mayo.

Perennial Sow-thistle *(Sonchus arvensis)*

Perennial Sow-thistle was recorded in 9 (1.7%) of the 540 road sections surveyed (Figure 11). A single 'low scatter' occurrence was observed along the Robert Campbell Highway at section RC108, approximately 100 Km south/east of Ross River. All other occurrences were categorized as 'rare', and occurred along the Robert Campbell, the Alaska Highway near Beaver Creek, the North Klondike Highway near Carmacks, and several occurrences at the beginning of the Atlin Road near Jakes Corner.

Oxeye Daisy *(Leucanthemum vulgare)*

Oxeye Daisy was recorded in 5 (1%) of the 540 road sections surveyed (Figure 12).Oxeye Daisy was observed in low scatter abundance along two sections of the South Klondike Highway between Teslin and Watson Lake, and one section of the Robert Campbell Highway just north of Watson Lake. Two low scatter occurrences of Oxeye Daisy were observed along the Atlin Road.

Reed Canary Grass *(Phalaris arundinacea)*

Reed Canary Grass was recorded in 1 (<1%) of the 540 road sections surveyed (Figure 13). Reed Canary Grass was observed growing near a water course within the highway right-of-way on the Haines Road just south of Haines Junction. Reed Canary Grass was easily identifiable due to its large size amongst the other vegetation. Reed Canary Grass was seeded along the south Alaska Highway between Watson Lake and Rancheria, and the north Alaska Highway between the Donjek River and White River prior to 2005 (Bruce Bennet, personnel communication, March 9th, 20223).

Common Tansy *(Tanacetum vulgare)*

Common Tansy was recorded in 1 (<1%) of the 540 road sections surveyed (Figure 14). A single Common Tansy plant was observed growing in the highway-right-of-way along the shore of Marsh Lake on the Alaska Highway. Surveyors stopped the vehicle to confirm its ID. The single plant was pulled and placed in a black garbage bag to be left in the sun to heat kill seeds.

Scentless Chamomile *(Tripleurospermum indororum)*

Scentless Chamomile occurs rarely along roadsides and was not observed at all during the highway survey. It is possible that occurrences were missed in areas where the right-of-way could not be observed fully (steep slopes, ditches, obstructive vegetation).

Total Invasive Species Abundance

Total invasive species abundance within each highway section was determined to help visualize where the most invasive species are present throughout the territory. To do so, each species abundance category was given a numerical value (absent=0, rare=1, low scatter=2, high scatter=3, continuous=4) which was then summed across all species within each highway segment to give a single value denoting total invasive species abundance. This works to capture both presence/absence of invasive species as well as the relative abundance within each highway section. Total abundance is presented in Figure 15.

The highway sections with the greatest total invasive species abundance are the Alaska and Klondike Highways east, south and north of Whitehorse, the Alaska Highway between Jakes Corner and Teslin, the Klondike Highway south of Carmacks, and the Silver Trail Highway around Mayo. These highways are some of the busiest transportation routes and most populous areas in the Yukon. Other highway sections of note are the Alaska Highway and Haines Road around Haines Junction, and the Robert Campbell Highway north of Watson Lake.

GRAVEL PITS, REST AREAS, PULLOUTS, WATERCOURSES

Gravel Pits

The most common and abundant priority invasive plant species seen along access roads into gravel pits and within the 69 gravel pits surveyed (Appendix C) were Narrow-leaf Hawksbeard, White Sweet-clover, and Alsike Clover, and to a lesser extent Smooth Brome. Four pits lacked priority invasive species (Figure 15).

Narrow-leaf Hawksbeard was recorded in 57 gravel pits (83% of 69 pits total) along the Alaska Highway (15 pits – 4 Rare, 6 Low Scattered, 5 High Scattered), the Campbell Highway (25 pits - 3 Rare, 10 Low Scattered, 4 High Scattered), the North Klondike Highway (8 pits - 4 Low Scattered, 2 High Scattered), the Haines Highway (3 pits – 1 Low Scattered, 1 High Scattered), the Silver Trail (4 pits – 2 Low Scattered, 2 High Scattered), the South Klondike Highway (1 pit – Low Scattered), and the Tagish Road (1 pit – High Scattered).

White Sweet-clover was recorded in 37 gravel pits (54%) along the Alaska Highway (11 pits - 1 Rare, 6 Low Scattered, 3 High Scattered, 1 Continuous), the North Klondike Highway (6 pits - 2 Rare, 4 High Scattered), the Campbell Highway (20 pits - 3 Rare, 2 High Scattered, 1 Continuous), Atlin Road (2 pits – both Rare), the Dempster Highway (1 pit – Rare), Tagish Road (1 pit – Low Scattered), Haines Road (1 pit – High Scattered), and the Silver Trail (4 pits – three Continuous, 1 High Scattered).

Alsike Clover was recorded in 20 gravel pits (29%) along the Alaska Highway (9 pits - 4 Rare, 2 Low Scattered, 3 High Scattered), the Campbell Highway (6 pits - 4 Rare, 2 Low Scattered), the North Klondike Highway (4 pits - 3 Rare, 1 Low Scattered), the Haines Highway (2 pits - both Rare), the South Canol Road (1 pit- Rare), and the South Klondike Highway (1 pit - Rare).

Smooth Brome was recorded in 14 pits (21%) along the Alaska Highway (5 pits - 3 Rare, 1 Low Scattered, 1 High Scattered), the Robert Campbell (2 pits – 2 Low Scattered), the North Klondike (3 pits – 3 Rare), Tagish Road (1 pit – Low Scattered), the Dempster Highway (1 pit – Low Scattered).

Red Clover was recorded in 6 pits (9%) along the Robert Campbell (3 pits – 1 Low Scattered, 2 Rare), the North Klondike Highway (1 pit - Rare), Atlin Road (1 pit – Low Scattered), and the Haines Highway (1 pit – Low Scattered).

Yellow Sweet-clover was recorded in three gravel pit (4%) along the Alaska Highway, all ranked as Rare.

Alfalfa was recorded in 2 gravel pits (2%), along the Campbell Highway (1 pit - Rare), and the North Klondike Highway (1 pit - Rare).

Yellow Lucerne was recorded in 2 gravel pits (4%) along the Alaska Highway (1 pit – Rare), and the Robert Campbell Highway (1 pit – High Scatter).

Rest Areas

Invasive plant species in rest areas are mostly found bordering the adjacent highway and along the edges of the graveled part of the rest areas. The most common and abundant priority invasive species found in the 31 rest areas surveyed were Narrow-leaf Hawksbeard (61%), followed by Alsike Clover (58%), and Smooth Brome (51%) (Figure 17; Appendix C). One rest area lacked all priority invasive species, and it was located along the Top of the World Highway.

Narrow-leaf Hawksbeard was present in 19 out of all the surveyed rest areas (including all highways and roads), comprising 61% of the sites. Along the Alaska Highway east of Whitehorse, Narrow-leaf Hawksbeard was present in 2 out of 4 sites surveyed (50%). Out of the 6 sites surveyed in the Klondike Highway, Narrow-leaf Hawksbeard was present in 4 sites (66%). It was present in 2 sites in the Silver Trail (40%), in 8 sites in the Robert Campbell Highway (66%). Abundance ranks for Narrow-leaf Hawksbeard were mainly Rare to Low Scattered, but with two Continuous presences recorded in two rest areas along the Alaska Highway, and one along Silver Trail.

White Sweet-clover was recorded in 15 rest areas (48% of all rest areas surveyed). It was recorded in 100% of the areas along the North Klondike Highway (seven sites), 60% along the Silver Trail (five sites), and 41% along the Robert Campbell Highway (twelve sites) all ranging from Low to High Scattered. It was recorded in 25% of the rest areas along the Alaska Highway (one out of four sites) as Continuous. Abundance ranks for White Sweet-clover ranged from Rare to Continuous, being the most abundant (Continuous) along the Alaska Highway.

Alsike Clover was recorded in 18 rest areas (58% of all rest areas surveyed). Abundance ranks for Alsike Clover ranged from Low Scattered (8 sites) to Continuous (1 site along the Alaska Highway). In total, it was recorded in 4 out of 6 sites along the Klondike Highway (66%) and in 9 out of 12 rest areas along the Robert Campbell Highway (75%), where it was found to be High Scattered in 2 rest areas.

It was recorded as Low Scattered twice and once as rare on the rest areas along the Silver trail, totalling 60% of all rest areas. It was recorded once as Rare along the Atlin Road.

Smooth Brome was recorded in 16 rest areas (51% of all rest area surveyed) along all the highways surveyed but absent from Atlin Road and Top of the World Highway.

Smooth Brome was most abundant (being recorded twice as Continuous) at the Alaska Highway. Abundance ranks for Smooth Brome along the Robert Campbell Highway and the Klondike Highway ranged from Rare to Low Scattered, with two High Scattered areas in the Robert Campbell Highway and one in the Klondike Highway.

Red Clover was only recorded in three rest areas, all at Robert Campbell Highway, totalling 9.6% of all rest areas surveyed. The abundance ranks were Low and High Scattered and once as Rare.

Yellow Sweet-clover was recorded in only one rest area (3.2%), along Robert Campbell Highway, and ranked as Rare.

Pullouts

The most common and often abundant species found in the 80 surveyed pullouts were Alsike Clover, White Sweet-clover, Narrow-leaf Hawksbeard, and Smooth Brome (Figure 18; Appendix C). Nineteen pullouts lacked priority invasive species.

Alsike Clover was recorded in 28 pullouts (35%) on seven highways: the Haines Highway (6 sites), the Alaska Highway (2 sites), the Campbell Highway (13 sites), Atlin Road (1 site), the North Klondike Highway (1 site), the Dempster Highway (1 site), and the Top of the World Highway (3 sites). Abundance ranks for Alsike Clover in most sites were mainly Low Scattered, however, 8 High Scattered and 2 Continuous were recorded along the Campbell Highway, and 2 High Scattered and 2 Continuous were recorded along both the Top of the World Highway and the Haines Highway. Finally, 1 High Scattered site was recorded along the Dempster Highway and the Alaska Highway.

White Sweet-clover was recorded in 31 pullouts (39%) along four highways: the North Klondike Highway (7 sites), the Campbell Highway (10 sites), the Haines Highway (2 sites), and the Alaska Highway (11 sites). Abundance ranks for White Sweet-clover in most sites were Rare or Low Scattered, with High Scattered recorded in 1 site on the Campbell Highway and 3 sites on the Alaska Highway, and 1 Continuous along the North Klondike Highway.

Narrow-leaf Hawksbeard was recorded in 35 pullouts (44%) along eight highways: the Haines Highway (4 sites), the Alaska Highway (12 sites), the Campbell Highway (7 sites), the South Klondike Highway (1 site), the North Klondike Highway (6 sites), the Top of the World Highway (1 site), Atlin Road (2 sites), and the Dempster Highway (1 site). Abundance ranks for Narrow-leaf Hawksbeard in all sites were mainly Rare or Low Scattered, but 2 High Scattered were recorded along the Alaska Highway.

Smooth Brome was recorded in 34 (43%) pullouts on 7 highways: the Alaska Highway (14 sites), the Haines Highway (3 sites), the Campbell Highway (6 sites), the Top of the World Highway (2 sites), Atlin Road (2 sites), the South Klondike Highway (2 sites), and the North Klondike Highway (4 sites). Abundance ranks for Smooth Brome were mainly Low Scattered or Rare, but 5 High Scattered and 1 Continuous were recorded along the Alaska Highway, and 1 High Scattered along the North Klondike Highway.

Red Clover was recorded in 11 pullouts (14%) along 4 highways: the Haines Highway (4 sites), the Campbell Highway (3 sites), the Alaska Highway (2 sites), and the Top of the World Highway (1 site). Abundance ranks for Red Clover in most sites were Rare or Low Scattered, but 2 High Scattered and 1 Continuous were recorded along the Haines Highway, and 1 High Scattered along the Alaska Highway.

Alfalfa was recorded in 5 pullouts (6%) along 3 highways: the Alaska Highway (1 site), the Campbell Highway (2 sites), and the North Klondike Highway (1 site). Abundance ranks for Alfalfa in all sites were Rare or Low Scattered.

Yellow Lucerne was recorded in only 2 pullouts (3%), both along the Alaska Highway, and ranked as Rare.

Yellow Sweet-clover was recorded in 4 pullouts (5%), all sites were along the Alaska Highway and ranked as Rare or Low Scattered.

A single occurrence of Scentless Chamomile (low scatter) was identified at a pullout along the Robert Campbell Highway.

Watercourses

Of 207 watercourses surveyed, 25 (12%) had invasive species present either in the the riparian zone (Appendix C). Species seen were Smooth Brome (eleven watercourses), Alsike Clover (ten watercourses), White Sweet-clover (eight watercourses), Narrow-leaf Hawksbeard (five watercourses), and Red Clover (one watercourses). These species were also commonly present above the banks, along approaches to the watercourse, around bridges, or along the road above the watercourse.

One hundred and fifty nine watercourses (77%) had priority invasive species close to the watercourse but above the banks, along approaches to the watercourse, around bridges, or along the road above the watercourse (Appendix C). The usual species present in these sites include White Sweet-clover, Alsike Clover, Red Clover, Smooth Brome, and Narrow-leaf Hawksbeard.

Priority invasive species were absent in or near forty eight watercourses (23%) (Appendix C). Many of these were small creeks flowing through culverts beneath the road, and/or were surrounded by dense native vegetation with minimal human disturbance.

OTHER INTRODUCED SPECIES OBSERVED DURING SURVEY

Opportunistic observations of other introduced species were noted along highways while driving or stopped along the right-of-way, or while surveying the gravel pits, pullouts, rest areas and watercourses. It is likely that occurrences were missed as the priority of the survey was to observe the list of priority invasive plants as determined by the 2016 survey. The following table provides a summary of other introduced species observed during the survey.

Species	Location	Notes
Canadian (Creeping) Thistle (*Cirsium Arvense*)	Silver Trails Highway approximately 15 Km from Steward Crossing. North Side of Roadway.	Patch of approximately 200 plants observed in the right-of-way. Stopped to identify and photograph plants. Observation uploaded to iNaturalist.
Butter and Eggs (*Linaria Vulgaris*)	Klondike Highway approximately 10 km north of Whitehorse and Alaska Highway approximately 5 Km South of Whitehorse.	Small patches observed along right-of-way and near gravel driveways.
Yellow Clematis (*Clematis Tangutica*)	Klondike and Alaska Highways north and south of Whitehorse, Tagish Road and the beginning of the Atlin Road.	Observed in small patches on several sections of highway right-of-way. Also observed frequently in Whitehorse city limits in industrial areas and roadsides.
Chickpea Milk Vetch (*Astragalus Cicer*)	Haines Road South of Dezadeash Lake to BC Border	Numerous patches in the right-of-way, ranging from low to high, scatter along sections of the Haines road between Dezadeash Lake and the BC border.
Common Dandelion (*Taraxacum Officinale)*	Cosmopolitan- most frequent near communities and along disturbed sections of highway right-of-ways	Observed frequently along highway right-of-ways, generally in low density patches. Specific occurrences were not marked as they occurred frequently.

Table 3: Observations of other introduced species noted during survey.

COMPARISON TO 2016 SURVEY

An objective of this survey was to collect results that could be compared more directly to the 2016 survey data. As such, methods were replicated as closely as possible to allow for comparison. All priority invasive species surveyed in 2016 were surveyed once again in 2022. The same abundance ranking system was used on 5 km segments of highways throughout the territory. The 5 km segments from 2016 and 2022 are not perfect matches (i.e., they don't overlap exactly), but can still be compared. Recommendations are made later in this report outlining how to continue collecting survey data that can be directly compared from survey to survey.

A survey of fourteen priority Yukon invasive plant species was conducted during the summer of 2022 (Table 2). The survey included approximately 2,700 Km of highways, 71 gravel pits, 32 rest areas, 80 roadside pullouts, and 207 watercourses. Surveys were carried out between August 2nd and August 17th, 2022 when the majority of invasive plant species were in flower and conspicuous. Non-priority introduced plants were also noted when seen. In repetition of the 2016 road survey, all previously surveyed highways were included with the addition of the Dempster Highway up to the start of the Tombstone and the Atlin road. Like the 2016 survey, the Yukon highways not surveyed included Stewart-Cassiar Road, North Canol Road, and Nahanni Range Road.

Species	2016 % of Sections	2022 % of Section	Change in Abundance & Distribution Between 2016 and 2022
Smooth Brome	49	70.4	A substantial increase in the occurrence of Smooth Brome occurred between 2016 and 2022. Areas with high Smooth Brome abundance in 2016 showed an increase in size in 2022, and other highway sections that previously had low occurrence and abundance of Smooth Brome showed a marked increase. The Top of the World Highway, southern Section of the Robert Campbell Highway and the Alaska Highway north of Haines Junction were relatively untouched in 2016 compared to observations from 2022. There were statistical differences between Smooth Brome in 2016 and 2022 at the following highways: Top of the World ($p < 0.001$), Klondike Highway North ($p < 0.001$), Robert Campbell Highway ($p < 0.001$), and Silver Trail ($p < 0.001$). Highways where there were no differences between 2016 and 2022 were: Haines Road ($p = 0.505$), Alaska ($p = 0.162$), South Canol Road ($p = 0.066$), Tagish Road ($p = 0.094$) and South Klondike Highway ($p = 0.866$).

White Sweet-clover	65	67.6	White Sweet-clover was observed in slightly more sections in 2022. From comparison of the maps between 2016 and 2022, it appears that white sweet clover occurred in more continuous patches in 2022, especially around Whitehorse and Carmacks. There were statistical differences between White Sweet-clover in 2016 and 2022 at the following highways: Alaska ($p < 0.001$), Klondike Highway North ($p < 0.001$), Robert Campbell Highway ($p < 0.001$), Tagish Road ($p = 0.004$) and South Klondike Highway ($p < 0.001$). Highways where there were no differences between 2016 and 2022 were: Haines Road ($p = 0.277$), Top of the World ($p = 0.745$), South Canol Road ($p = 0.204$) and Silver Trail ($p = 0.692$).
Alsike Clover	52	61.1	Alsike Clover was observed along more highway sections in 2022 compared to 2016. Large stretches of continuous Alsike Clover appear in 2022 north and south of Whitehorse, east and west of Dawson City and north of Watson Lake, that were not as obviously abundant in the 2016 survey. There were statistical differences between Alsike Clover in 2016 and 2022 at the following highways: Top of the World ($p < 0.001$), Alaska ($p < 0.001$), Klondike Highway North ($p < 0.001$), Robert Campbell Highway ($p = 0.003$), South Canol Road ($p < 0.001$), Tagish Road ($p = 0.023$). Silver Trail ($p < 0.001$) and South Klondike Highway ($p < 0.001$). There were no differences between 2016 and 2022 at Haines Road ($p = 0.542$).
Narrow-leaf Hawksbeard	48	57.8	The number of sections with Narrow-leaf Hawksbeard occurrences, and the number of sections with continuous abundance increased from 2016 to 2022. More continuous patches were observed along the Alaska Highway and Haines Road north and south of Haines Junction, and around the Whitehorse area. Several new occurrences of Narrow-leaf Hawksbeard were recorded along the North Klondike Highway south of Dawson to Stewart Crossing, all of which were low scatter or rare abundance. There were statistical differences between Narrow-leaf Hawksbeard in 2016 and 2022 at the following highways: Alaska ($p < 0.001$), Klondike Highway North ($p < 0.001$), Tagish Road ($p < 0.001$) and Silver Trail ($p = 0.002$). Highways where there were no differences between 2016 and 2022 were: Haines Road ($p = 0.355$), Top of the World ($p = 0.896$), Robert Campbell Highway ($p = 0.342$), South Canol Road ($p = 0.102$) and South Klondike Highway ($p = 0.202$).
Red Clover	16	30.7	Red Clover almost doubled in the percentage of highway sections it was observed in, between 2016 and 2022. There were statistical differences between Red Clover in 2016 and 2022 at the following highways: Top of the World ($p = 0.025$), Alaska ($p < 0.001$), Robert Campbell Highway ($p < 0.001$), South Canol Road ($p = 0.042$). Highways where there were no differences between 2016 and 2022 were: Haines Road ($p = 0.156$), Klondike Highway North ($p = 0.316$), Tagish Road ($p = 1.000$), Silver Trail ($p = 0.086$) and South Klondike Highway ($p = 0.092$).

Alfalfa	14	12.8	The number of highway sections observed to have Alfalfa decreased slightly from 2016 to 2022. When comparing the maps from 2016 and 2022, the occurrence and abundance of Alfalfa appears to be very similar. In fact, no statistical differences were found for any highway when comparing the data obtained in 2016 with 2022. The following p-values were obtained: Haines Road (p = 0.916), Alaska (p = 0.946), Klondike Highway North (p = 0. 130), Robert Campbell Highway (p = 0.188), Tagish Road (p = 0.294) and South Klondike Highway (p = 0.254).
Yellow Sweet-clover	11	9.6	The number of highway sections observed to have Yellow Sweet-clover decreased slightly from 2016 to 2022. When comparing the maps from 2016 and 2022, the occurrence and abundance of Yellow Sweet-clover appears to be very similar. No statistical differences were found for any highway when comparing the data obtained in 2016 with 2022. The following p-values were obtained: Alaska (p = 0.891), Klondike Highway North (p = 0. 761), Robert Campbell Highway (p = 0.837), South Canol Road (p = 0.858), Tagish Road (p = 0.128), Silver Trail (p = 0.536) and South Klondike Highway (p = 0.254).
Yellow Lucerne	10	13.1	Yellow Lucerne occurrence has increased slightly from 2016 to 2022. When comparing the maps from 2016 and 2022, Yellow Lucerne appears to have increased in abundance in those areas it was observed in 2016, namely along the Alaska Highway around Haines Junction, and the Silver Trails Highway around Mayo. The following p-values were obtained: Haines Road (p = 0.659), Alaska (p = 0.069), Klondike Highway North (p = 0. 449), Robert Campbell Highway (p = 0.947), South Canol Road (p = 0.858), Tagish Road (p = 0.128), Silver Trail (p = 0.327) and South Klondike Highway (p = 0.429).
Umbellated Hawkweed	1	3.3	Umbellated Hawkweed occurrences have tripled since 2016 when it was recorded in seven sections compared to 18 sections in 2022. No statistical analyses were performed comparing Umbellated Hawkweed in 2016 and 2022.
Perennial Sow-thistle	<1	1.7	Perennial Sow-thistle observations almost doubled from five in the 2016 survey, to nine in the 2022 survey. No statistical analyses were performed comparing Field Sow Thistle in 2016 and 2022.
Oxeye Daisy	1	0.9	Oxeye Daisy was observed in two fewer sections in the 2022 survey compared to the 2016 survey. The location of occurrences was similar (South Klondike and Robert Campbell Highways). No Oxeye Daisy was observed near Dawson in 2022, where in 2016 2 occurrences were marked. The 2022 survey included the Atlin Road, on which Oxeye Daisy was observed. No statistical analyses were performed comparing Oxeye Daisy in 2016 and 2022.

Reed Canary Grass	<1	0.2	A single occurrence of Reed Canary Grass was made in 2022 compared to five occurrences in 2016. In both surveys, occurrences were restricted to the Haines Road south of Haines Junction. No statistical analyses were performed comparing Reed Canary Grass in 2016 and 2022.
Common Tansy	<1	0.2	The single Common Tansy plant observed along a Yukon highway in 2016 was near Dawson City on the North Klondike Highway, where as the single observation made in 2022 was along the Alaska Highway next to Marsh Lake. No statistical analyses were performed comparing Common Tansy in 2016 and 2022.

Table 4: Priority invasive species occurrence compared between 2016 and 2022 surveys.

DISCUSSION & RECOMMENDATIONS FOR FUTURE SURVEYS

Aligning Management Objectives with Focused Surveys

The main objective of this survey was to provide an updated snapshot of the state of invasive plant species along Yukon highways, and was previously done in 2016. This included surveying all highways throughout the territory, for priority invasive plant species, as determined in 2016.

It is understood that this survey is part of broader scale efforts to help manage invasive plant species in the Yukon by providing contemporary data. It is also understood that the organization like YISC, and YG Highways and Public Works (HPW) and YG Invasive Species Interdepartmental Working Group, are working to better manage invasive plant species. With this understanding, it is recommended that objectives of future surveys are aligned with management objectives of these groups. With an understanding of priority management goals/targets, surveys can be designed to collect specific information (specific species, section of highway, time of year, other metrics such as roadside modification, animal browsing, interspecific species interactions) in more detail. Management objectives will also dictate how frequent surveys should be conducted (annual, bi-annual, every 5 years etc.). Creating efficiencies in survey methodologies, data collection and analysis will be important if more frequent surveys are needed to help achieve management objectives.

Public Education and Outreach

The most effective, low cost and easily accessible way to control the spread of invasive species is preventing their establishment (i.e. prevention) (Invasive Species Centre, 2023). Public awareness of invasive species, their presence, threat to the environment, how they are spread, and ways to control them are crucial in this preventative approach. The Yukon Invasive Species Council regularly runs education programming around invasive species in the territory. Projects such as this territory wide survey provide opportunity to share current information about the current state of invasive species and actions being taken to monitor and control said species in the territory with the public. It is recommended that this survey data be adapted for presentation to a public audience to be used as part of Yukon invasive species education.
Future survey work can and should also be presented to public audiences to continue providing up to date and relevant information on the state of invasive species in the territory. Surveys can even be augmented through the use of data collected through citizen science initiatives.

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Recommendations for Methodology

It was decided that the 2022 survey would utilize the same methodology as 2016 to ensure consistency in data collection and comparability between the two surveys. Other data collection methods had been proposed, utilizing new technologies such as plant ID image analysis or drones, but due to a lack of certainty around the use of these methods, and the tight timeline available to complete the survey, the standard visual observation method was selected. The following section outlines recommendations for modifying survey methodology in the future.

Recommendations for future surveys using similar methodology to 2016/22:

- Create a uniform set of highway sections that can be surveyed year to year. As explained in the methods section for both 2016 and 2022, surveys began at the beginning of a certain stretch of road, and the driver of the vehicle would keep track of distance traveled, marking points on a GPS every 5 km. Predetermining sections with a full set of standard way points, would eliminate errors associated with recording and marking waypoints in the field using a car odometer. Although these errors are small, having standard sections marked out will improve accuracy of comparison of results from year to year. This will also eliminate the need for the driver/observer to record this data in the field, while they are busy driving/observing. Implementation of uniform highway sections will require the following:
    - Predetermined collection points;
    - Include collections points at each road intersection;
    - Each predetermined collection point will have a unique name that will be that same from year to year; and
    - Data dictionary for the points which includes the field names and data types.

- Create a simple data collection app, linked to the map preloaded with section waypoints, that will allow data to be entered easily and with little error. This will also eliminate the need to transfer data from paper to digital, making data management and analysis more streamlined and efficient.

    - This app should be something that allows for data to be entered very quickly and with minimal error.
    - Domains should be pre-set wherever possible and a drop down of options given; this allows fewer opportunities for simple errors such as typos. These can be pre-set for abundance categories, highway, weather, etc., and will improve consistency. Many fields can be pre-populated (i.e., highway, direction of travel, date, etc.) so that it is less rushed during field collection.
    - A list of common errors for GIS staff to check for back in the office (unwanted null values, zeros instead of Os, etc.)

Possibilities for alternative survey methodologies:

Alternative technologies exist that could support invasive plant surveys, including:

- Drone surveys of Yukon roadsides to collect aerial imagery of invasive plant species. Methods exist to run imagery through AI programming trained to identify specific invasive plant species (Kedia et al. 2021, Sladonja et al. 2022, MacLellan & Jonas, 2023). This has potential to reduce costs, time and effort involved in surveys. This is obviously highly dependent on the objective, extent and budget associated with surveying.

- Google Street View (GSV) has been tested as a method for assessing roadside invasive plant species and determined to be effective at predicting actual occurrence (Kotowska et al. 2021). This has obvious limitations in the Yukon, but similar methodology (capturing imagery from a moving vehicle) could be employed in certain cases.

Both alternative methods would be most effective at monitoring a specific priority species (ex. White Sweet-clover) or a specific section of roadway rather than inventorying all invasive species along all roadways in the territory. Again, this would be dictated by management objectives.

For example, a pilot study could be designed to test the effectiveness of these two alternative survey techniques against traditional visual observation. Using a section of highway known to have a high abundance of a certain invasive plant (White Sweet-clover, Narrow-leaf Hawksbeard, Yellow Lucerne), each of the three survey methods could be used to assess plant density within subsection. These results could then be compared to determine if the alternative methods yield similar results to the traditional survey technique, as well as assess the effort required to conduct each type of survey. Pilot scale studies such as this can help inform where to direct future efforts.

REFERENCES

1. Cody, W. J. (1996). Flora of the Yukon Territory. Ottawa, ON: NRC Press. ISBN: 0-660-16406-X/li>

2. Invasive Species Centre. Investing in Prevention: Invasive Species and Stages of Management. Accessed January 23rd, 2023. https://www.invasivespeciescentre.ca/learn/invasion-curve/.

3. Government of Canada, Environment and Climate Change Canada. 2016. Why are invasive alien species a problem? Available at: https://www.ec.gc.ca/eeeias/default.asp?lang=En&n=4612AC81-1 [accessed May 2016].

4. Kedia, A.C.; Kapos, B.; Liao, S.; Draper, J.; Eddinger, J.; Updike, C.; Frazier, A.E. (2021). An Integrated Spectral–Structural Workflow for Invasive Vegetation Mapping in an Arid Region Using Drones. Drones, 5, 19. https:// doi.org/10.3390/drones5010019

5. Kotowska, D., Part, T., Zmihorski, M. (2021). Evaluating Google Street View for tracking invasive plants along roads. Ecological Indicators, 121. https://doi.org/10.1016/j.ecolind.2020.107020

6. Line, J., G. Brunner, R. Rosie, and K. Russell. 2008. Results of the 2007 invasive plant roadside inventory in Yukon. Available at: http://www.env.gov.yk.ca/publicationsmaps/documents/invasive_plants_roadside_inventory2008.pdf [accessed May 2016].

7. MacLellan, A., Jonas, S. (January 18, 2023). How drones and AI could help stem the spread of a plant invading Quebec parks. CBC News. https://www.cbc.ca/news/canada/montreal/drone-ai-invasive-species-iles-de-boucherville-1.6715500

8. Matheus, P.E. and C.M. Omtzigt, 2013. Yukon Revegetation Manual: Practical Approaches and Methods. Whitehorse, Yukon. 182 pages. ISBN 978-0-9919499-0-8. URL: yukonrevegetatiomanual.ca

9. McDonald, J.H. 2014. Handbook of Biological Statistics (3rd ed.). Sparky House Publishing, Baltimore, Maryland.

10. Pojar, J., & MacKinnon, A. (2013). Alpine plants of British Columbia, Alberta & Northwest North America. Edmonton, AB: Lone Pine. ISBN: 978-1-55105-886-3/li>

11. Porsild, A. E., & Cody, W. J. (1980). Vascular plants of continental Northwest Territories, Canada. Ottawa, ON: National Museums of Canada. ISBN: 0-660-00119-5

12. R Core Team (2021). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria.URL https://www.R-project.org/.

13. Sladonja B, Damijanić D, Krapac M, Uzelac M, Linić I, Poljuha D (2022) Development of drone-based methodology for inventory and monitoring invasive plants along river banks in Croatia. Management of Biological Invasions 13 (in press)

14. Trelawny, J. G. (1988). Wild flowers of the Yukon, Alaska & Northwestern Canada, 3rd ed. Madeira Park, BC: Harbour Publishing. ISBN: 978-1-55017-498-4

APPENDICES

Appendix A: Figures

Appendix B: Highway Survey Data Table

Appendix C: Other Features Survey Data Table

Appendix D: Kruskal-Wallis Statistical Output

Appendix A: Figures

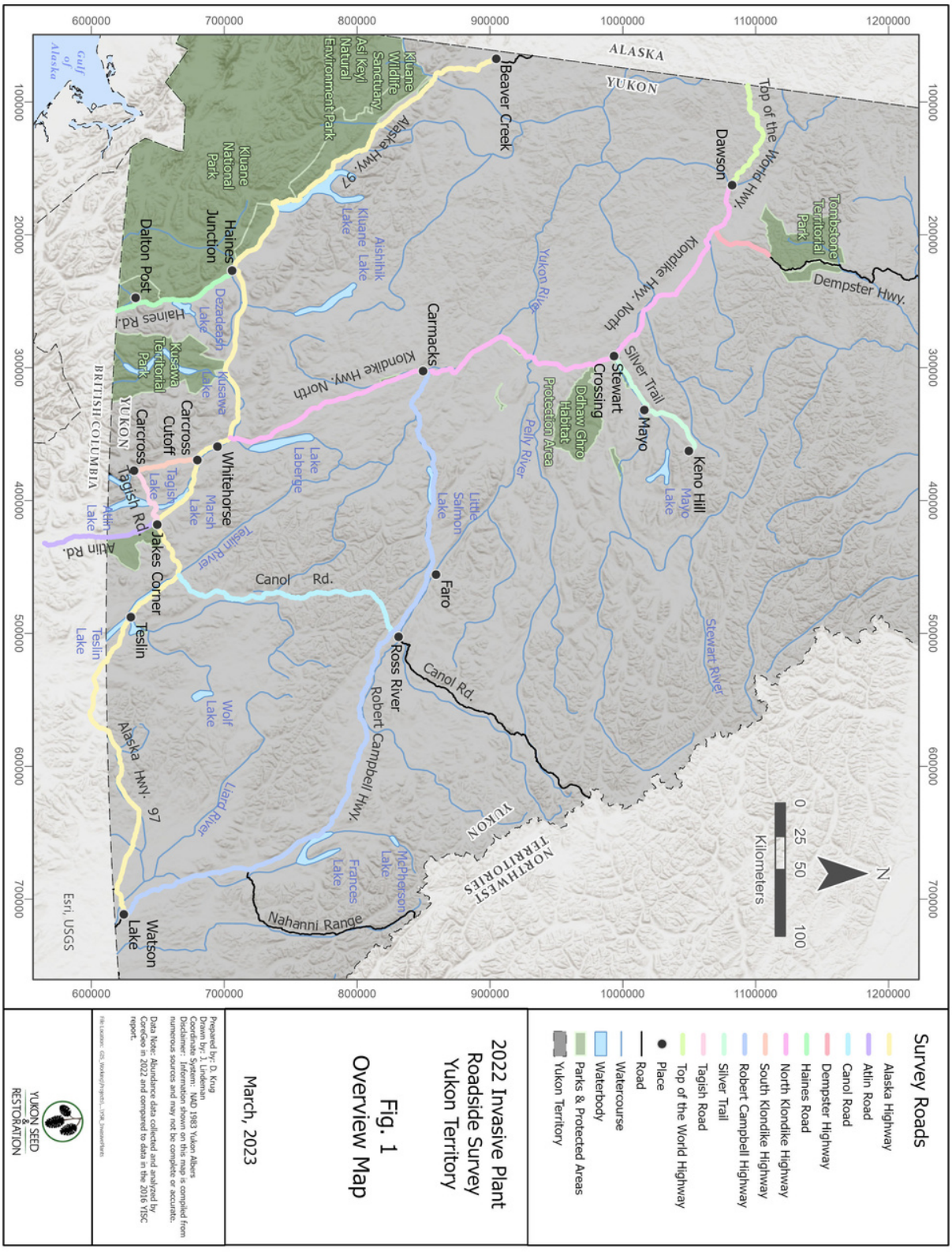

Figure 1: Overview Map.

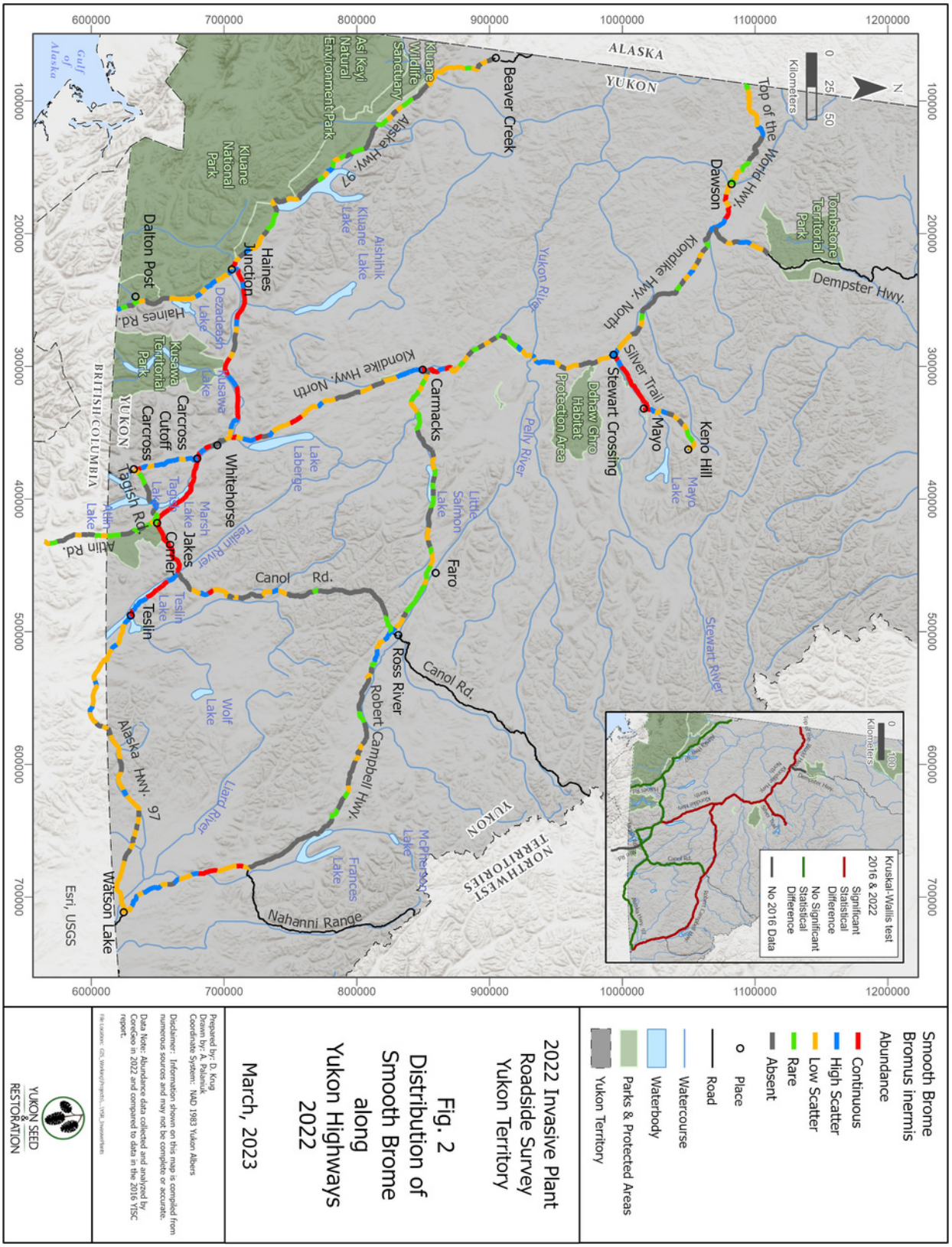

Figure 2: Distribution of Smooth Brome Along Yukon Highways, 2022.

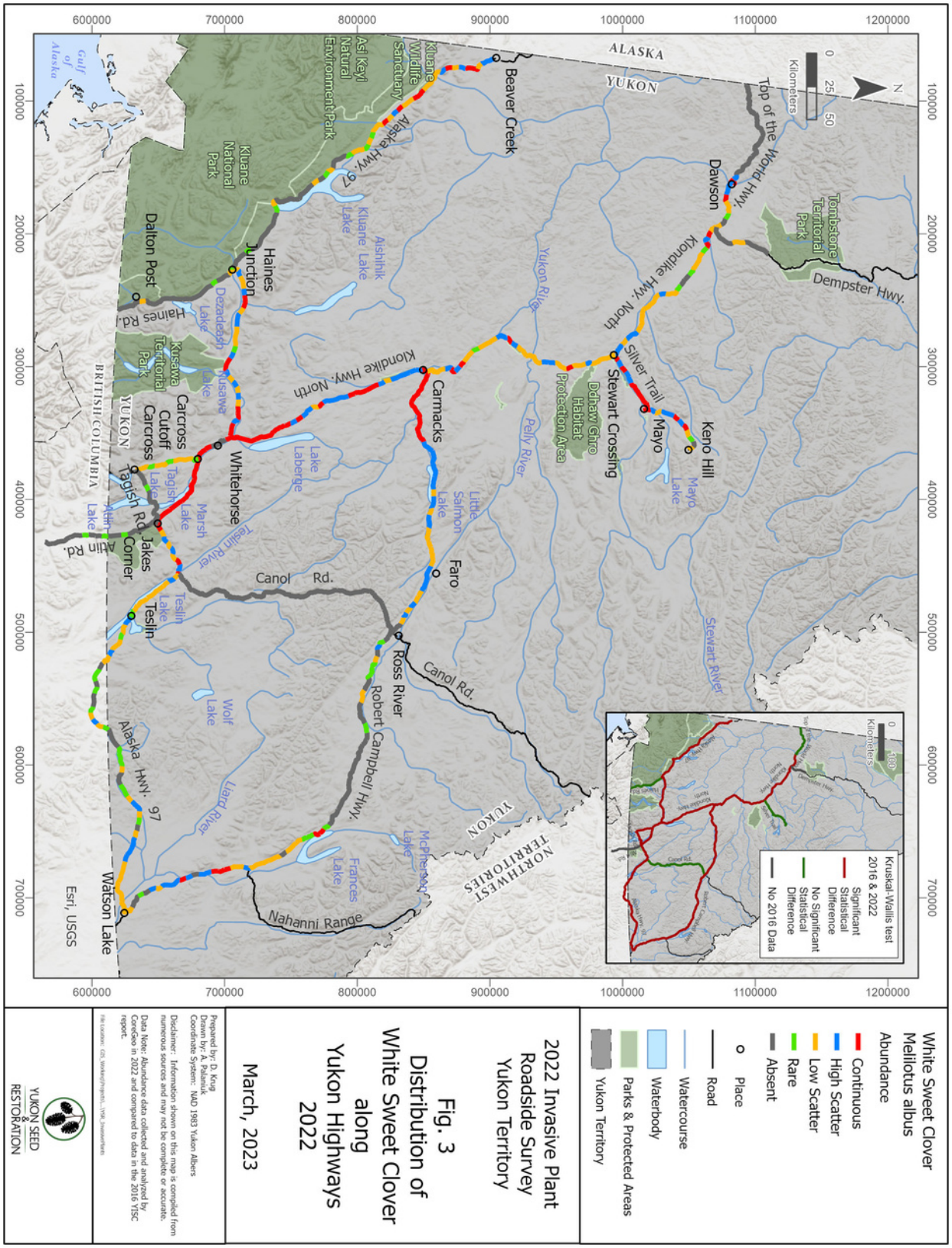

Figure 3: Distribution of White Sweet Clover Along Yukon Highways, 2022.

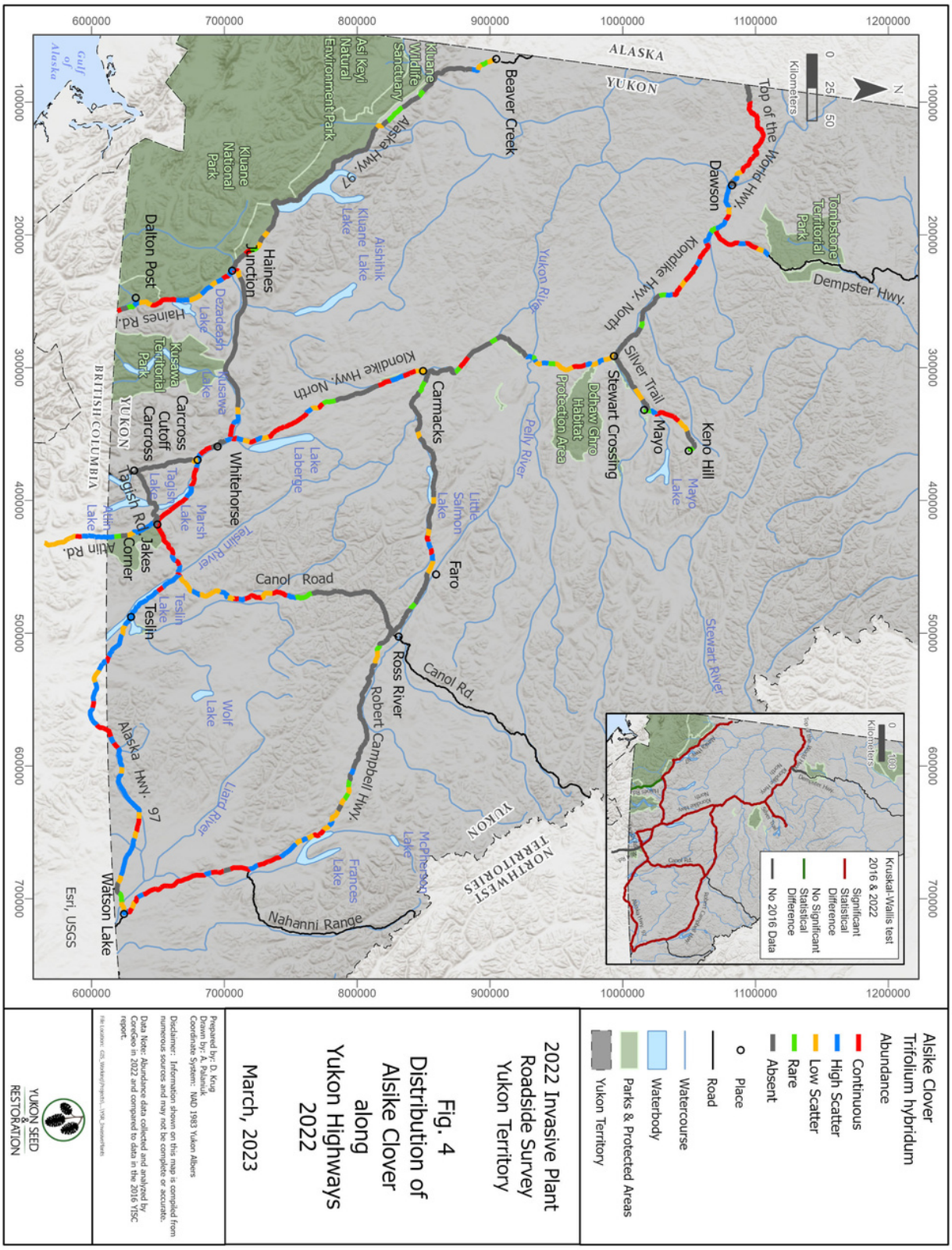

Figure 4: Distribution of Alsike Clover Along Yukon Highways, 2022.

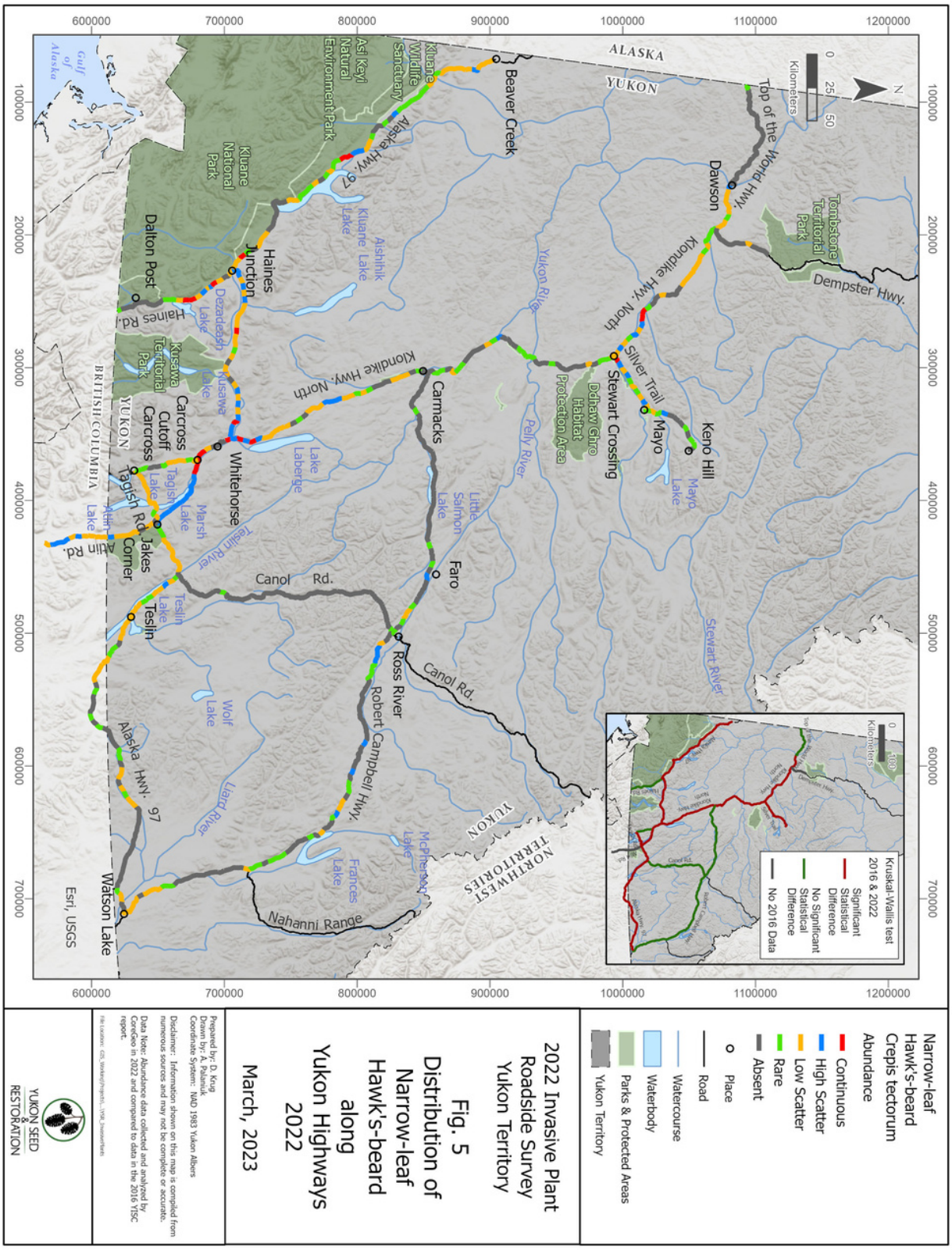

Figure 5: Distribution of Narrow-leaf Hawksbeard Along Yukon Highways, 2022.

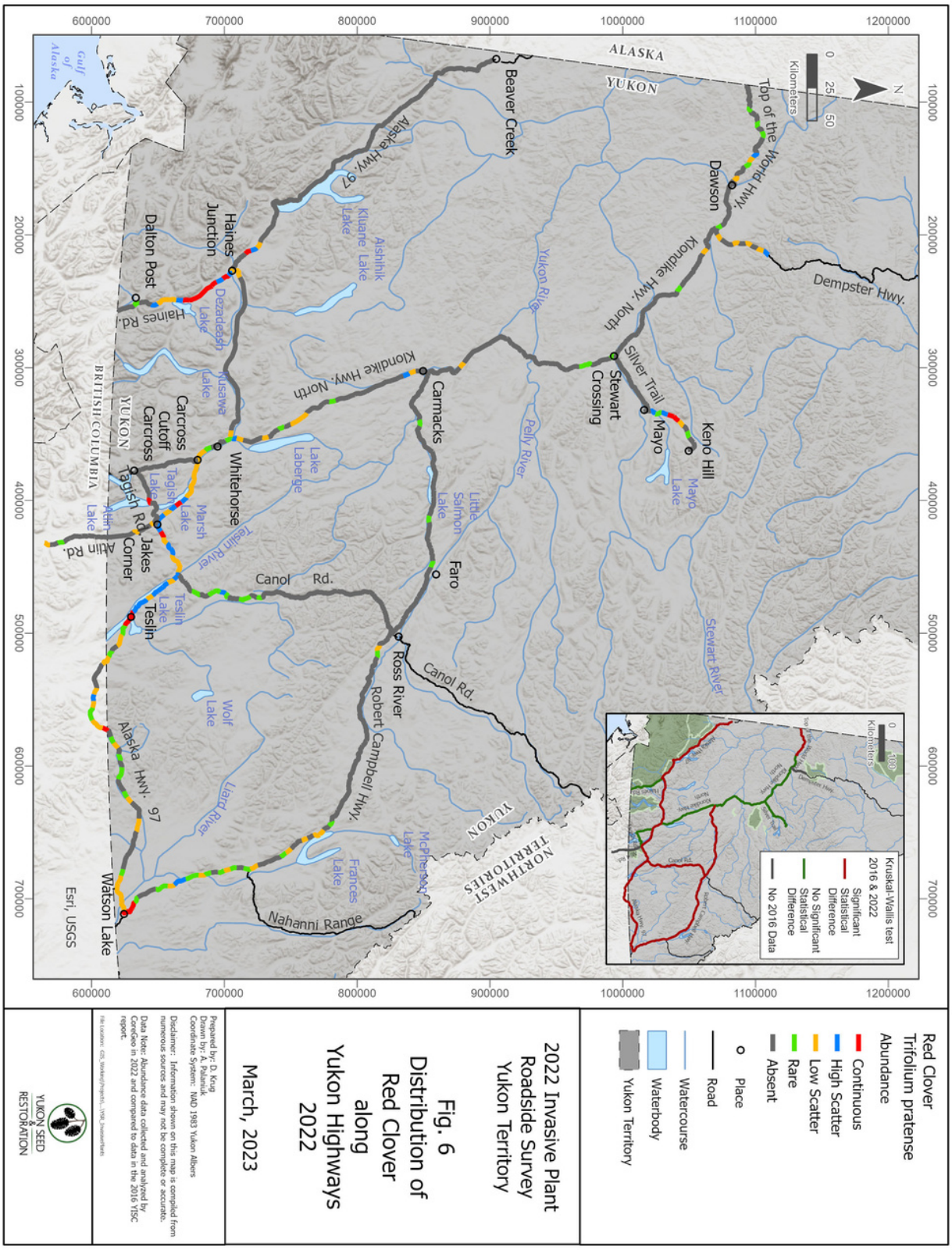

Figure 6: Distribution of Red Clover Along Yukon Highways, 2022.

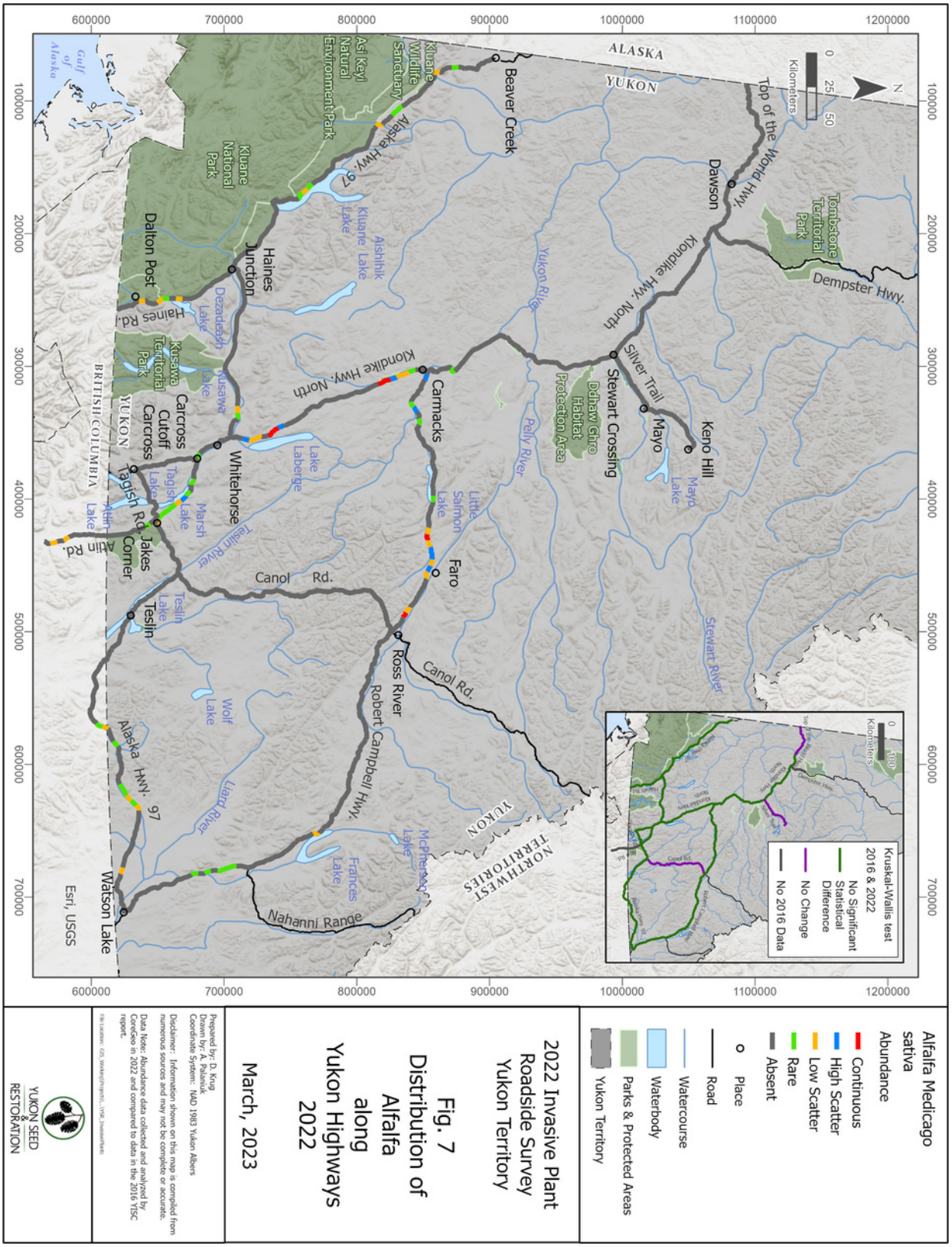

Figure 7: Distribution of Alfalfa Along Yukon Highways, 2022.

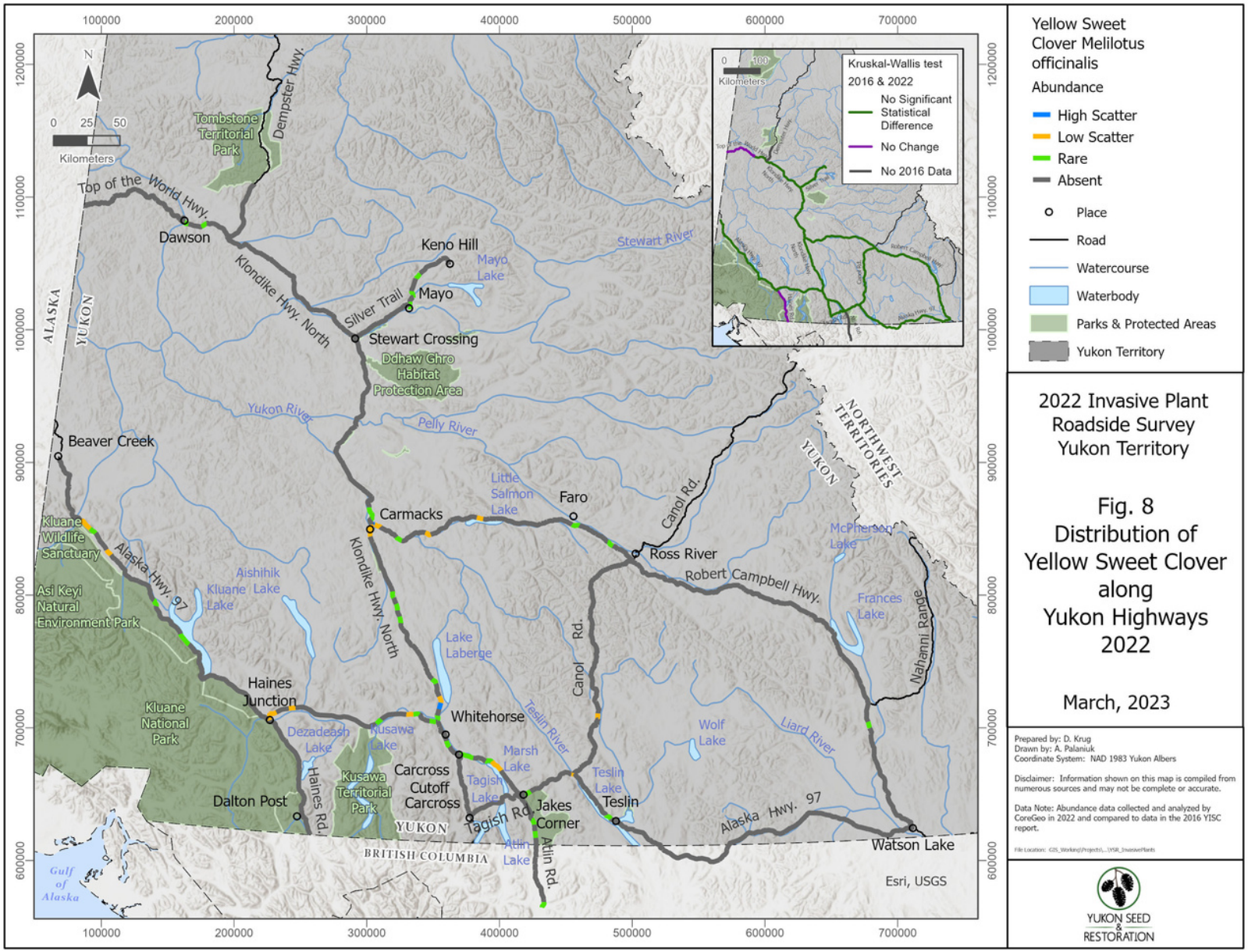

Figure 8: Distribution of Yellow Sweet Clover Along Yukon Highways, 2022.

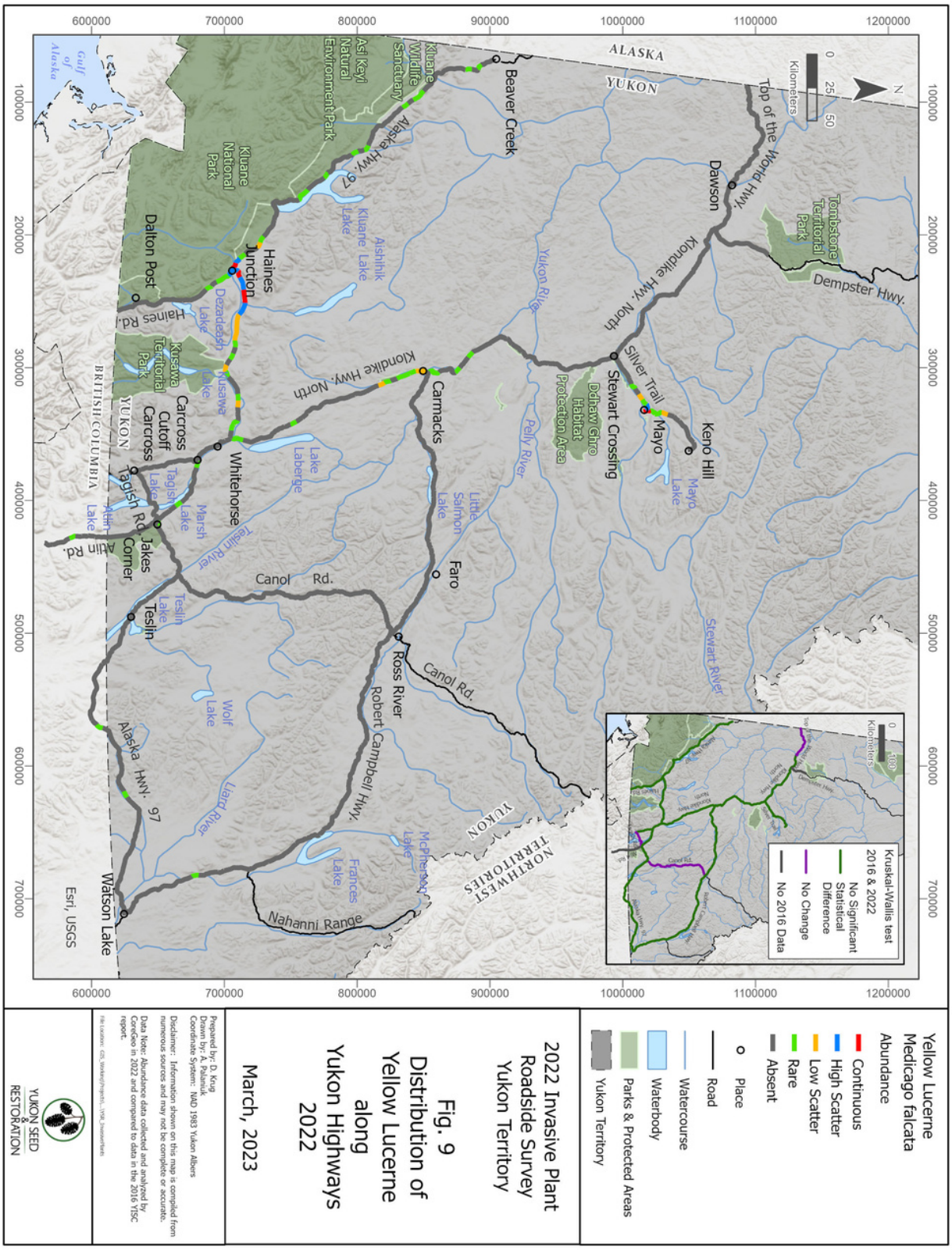

Figure 9: Distribution of Yellow Lucerne Along Yukon Highways, 2022.

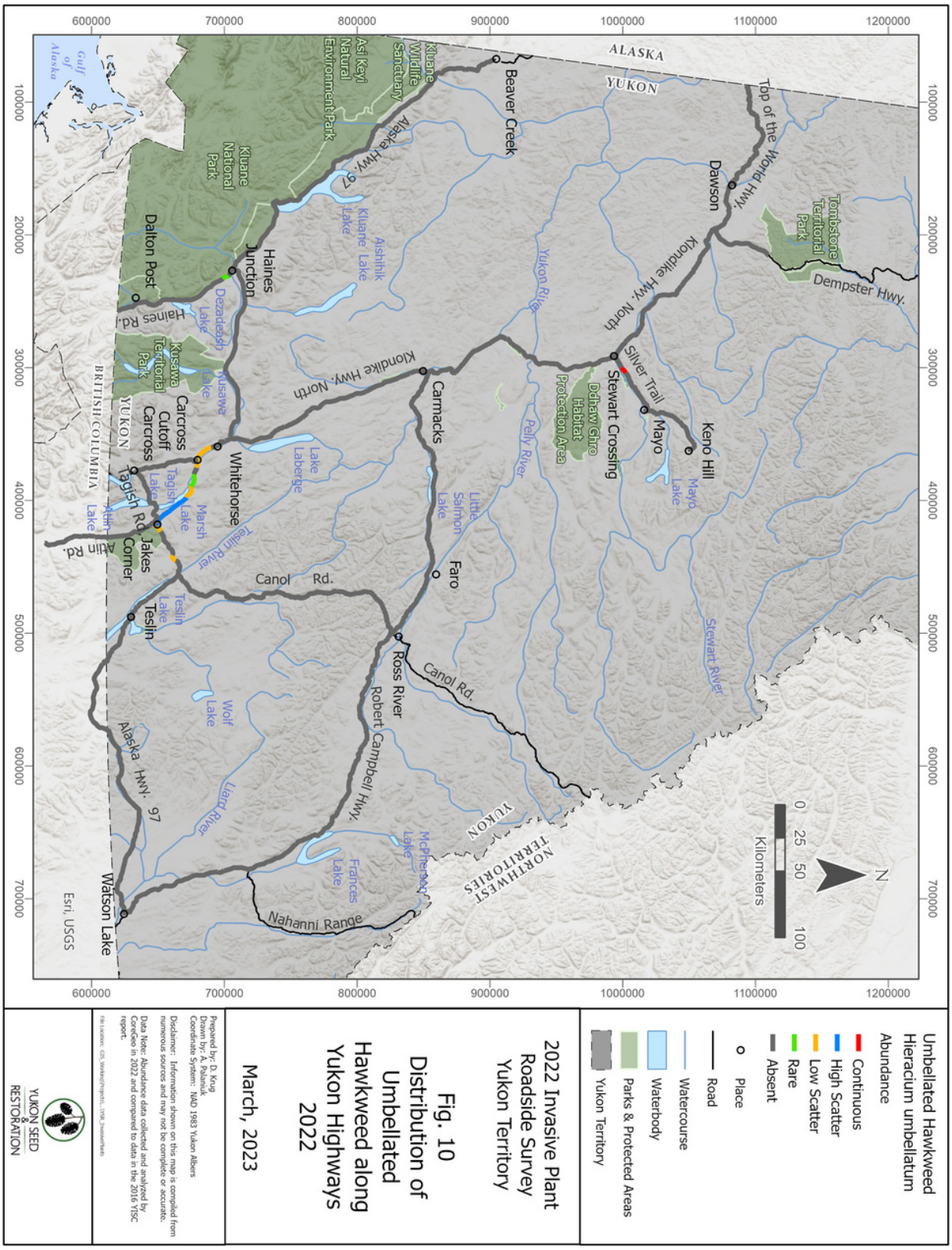

Figure 10: Distribution of Umbellated Hawkweed Along Yukon Highways, 2022.

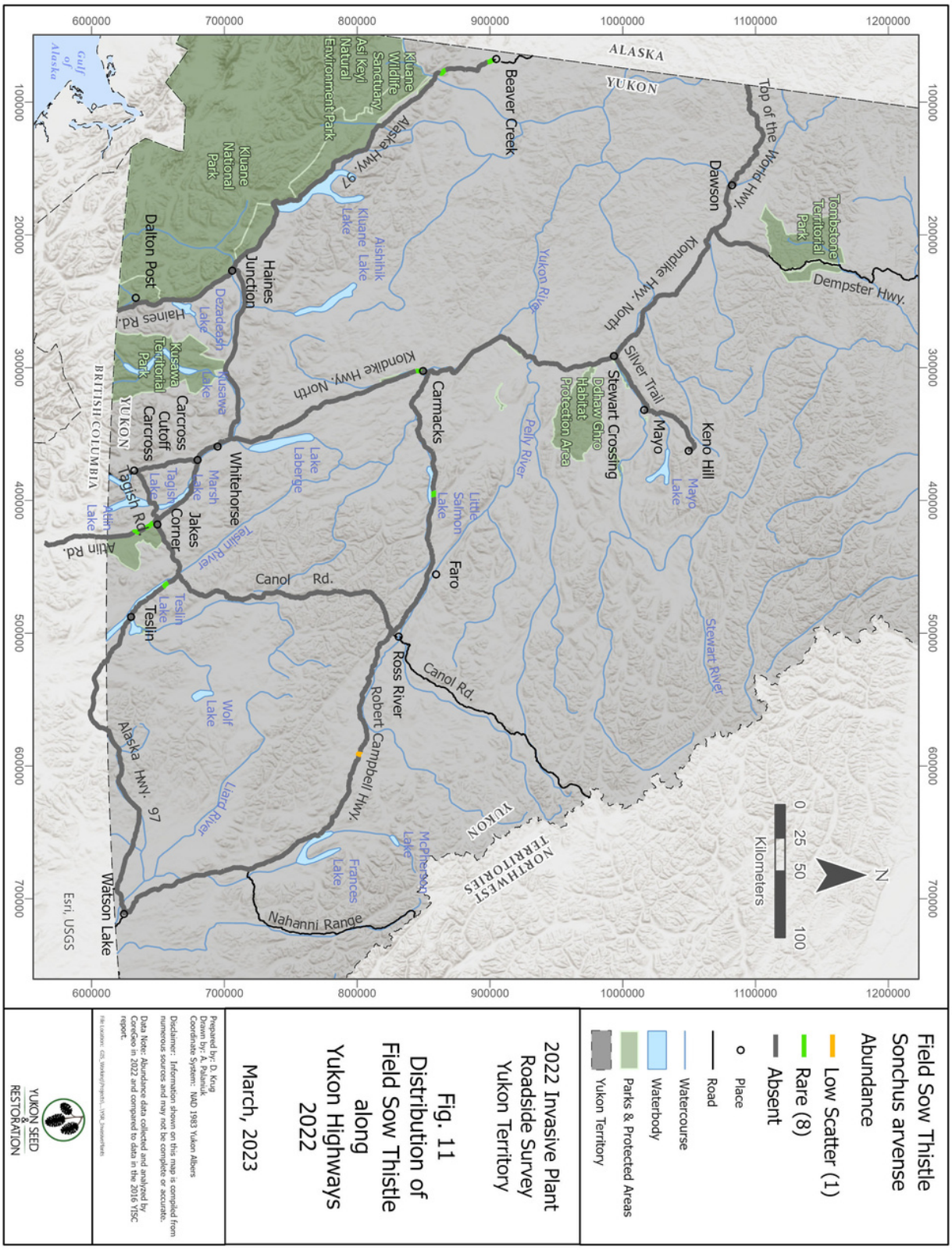

Figure 11: Distribution of Perennial Sow-thistle Along Yukon Highways, 2022.

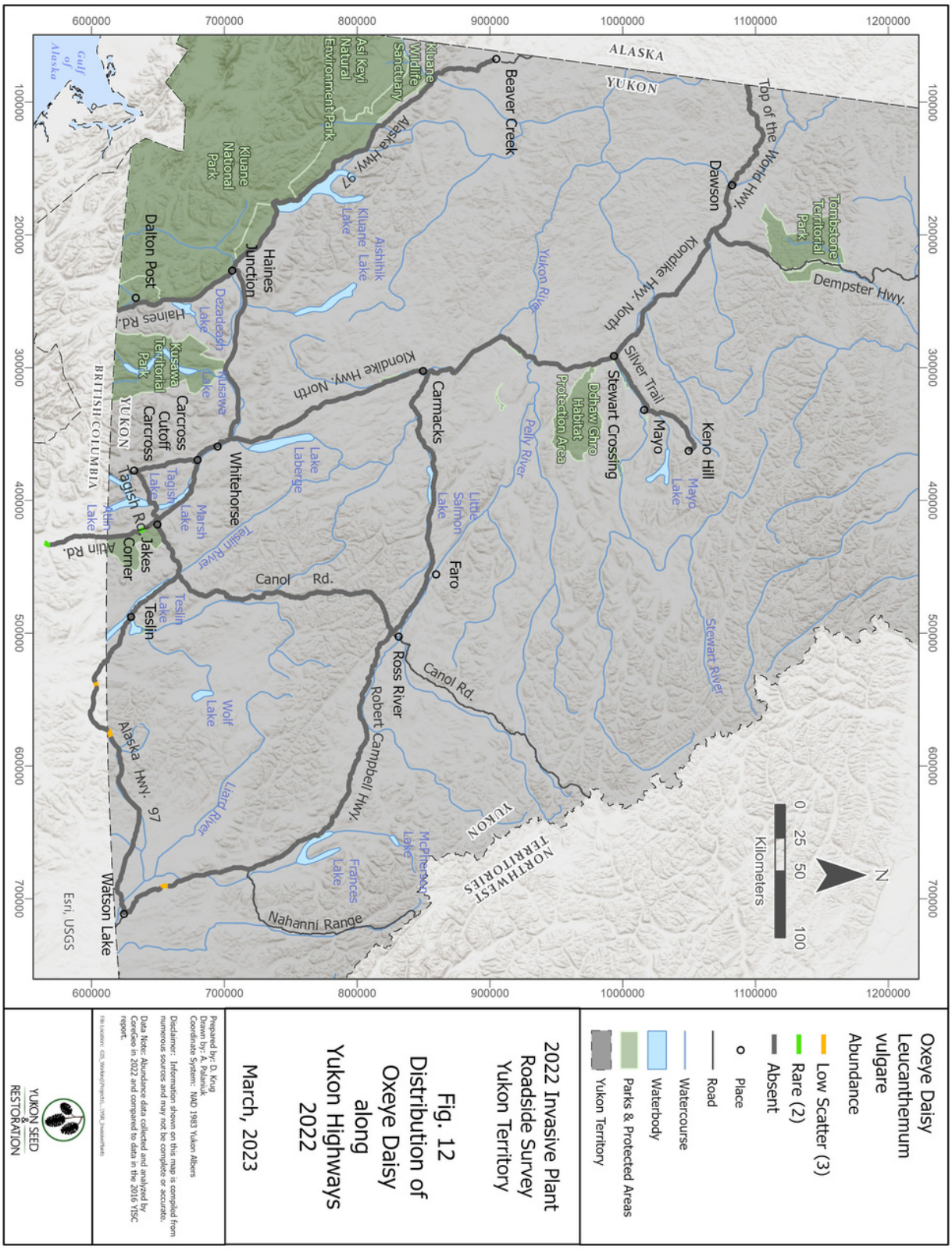

Figure 12: Distribution of Oxeye Daisy Along Yukon Highways, 2022.

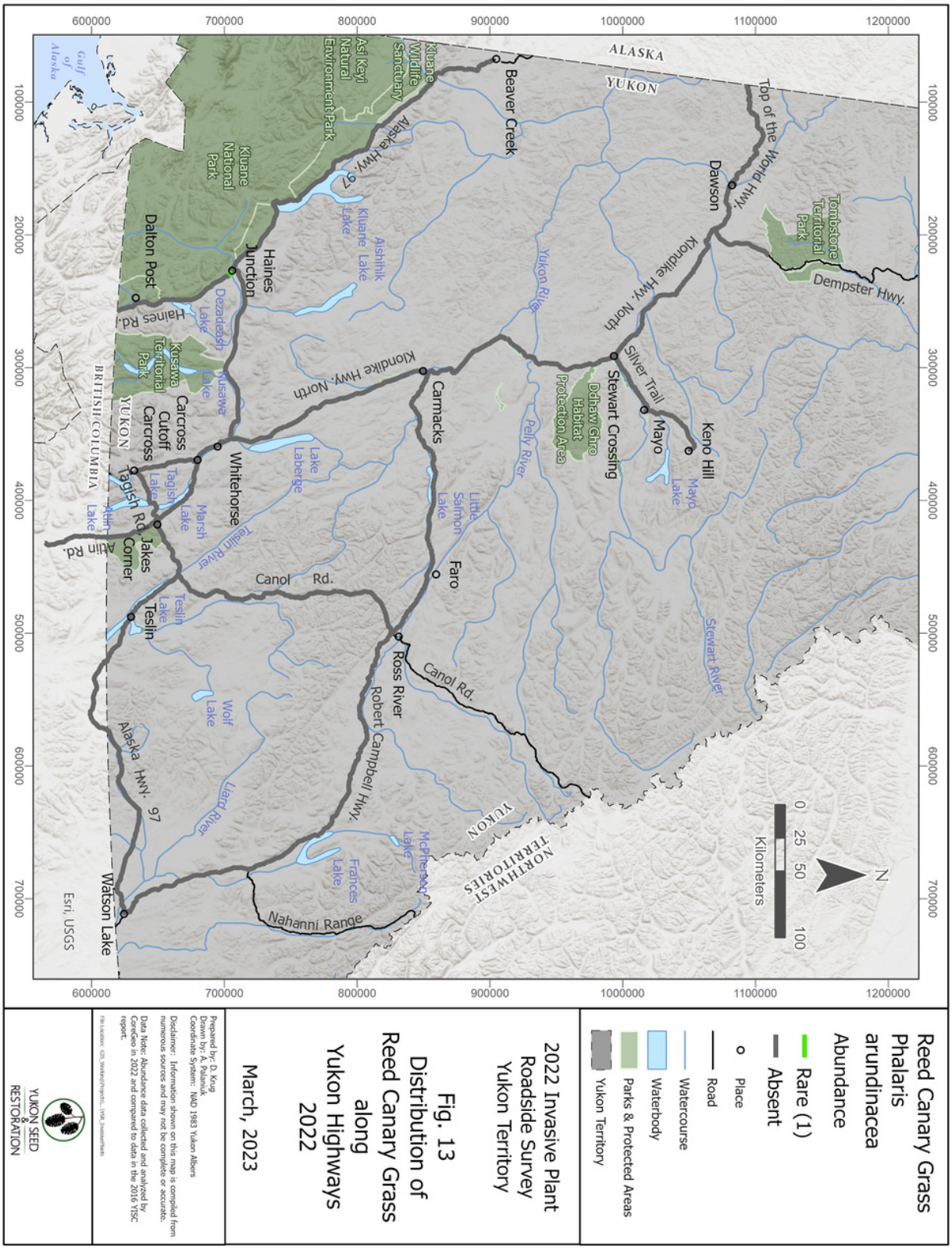

Figure 13: Distribution of Reed Canary Grass Along Yukon Highways, 2022.

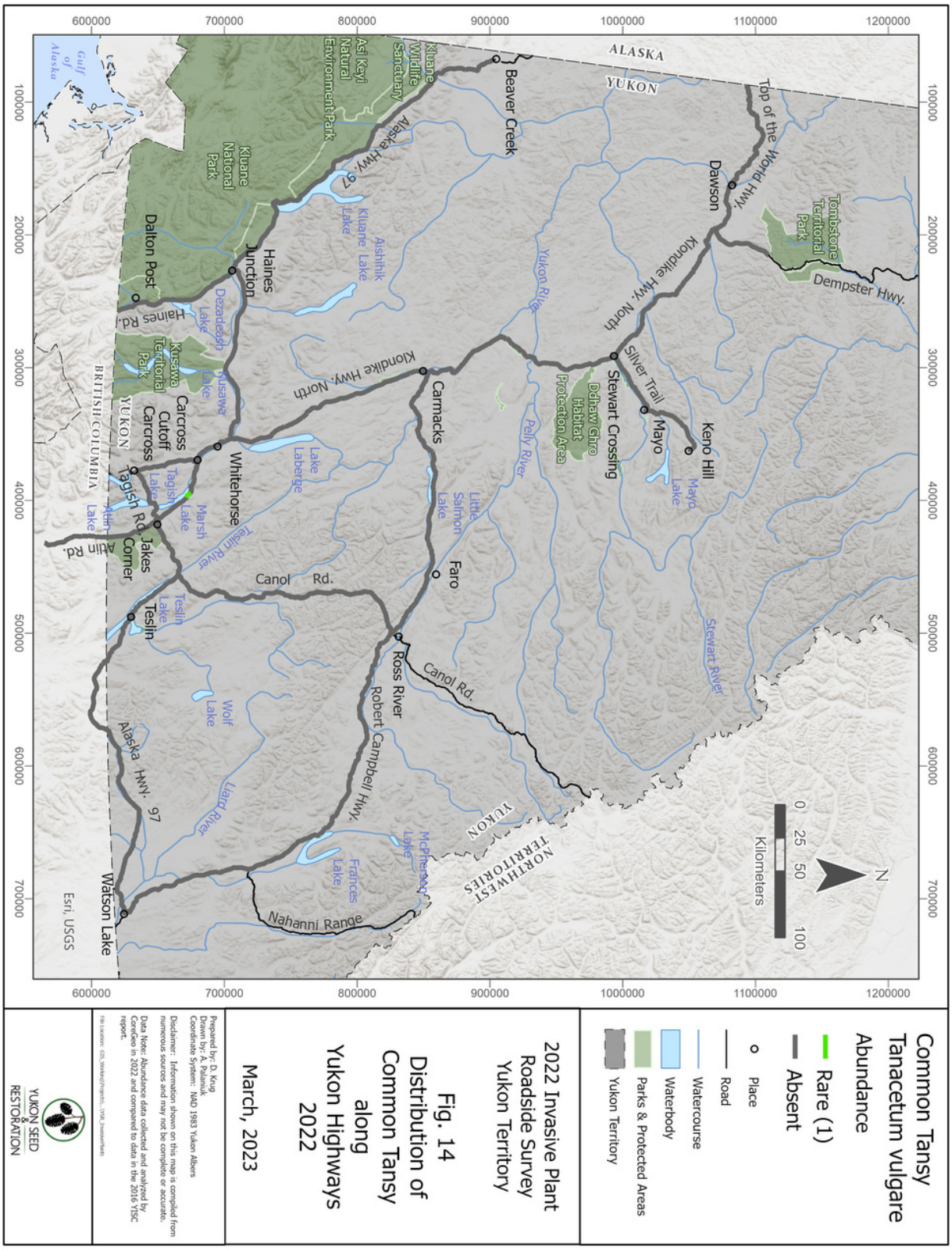

Figure 14: Distribution of Common Tansy Along Yukon Highways, 2022.

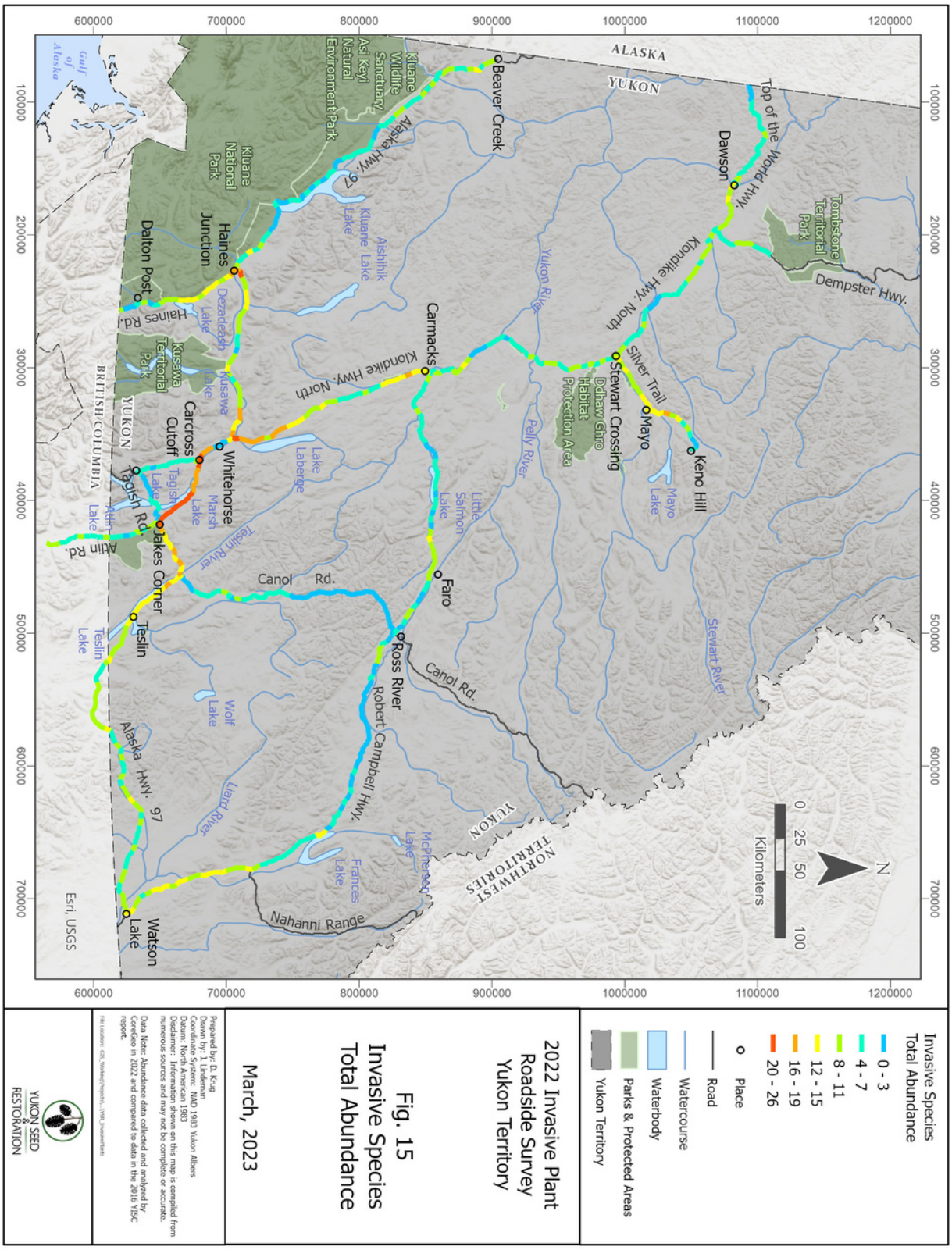

Figure 15: Invasive Species Total Abundance

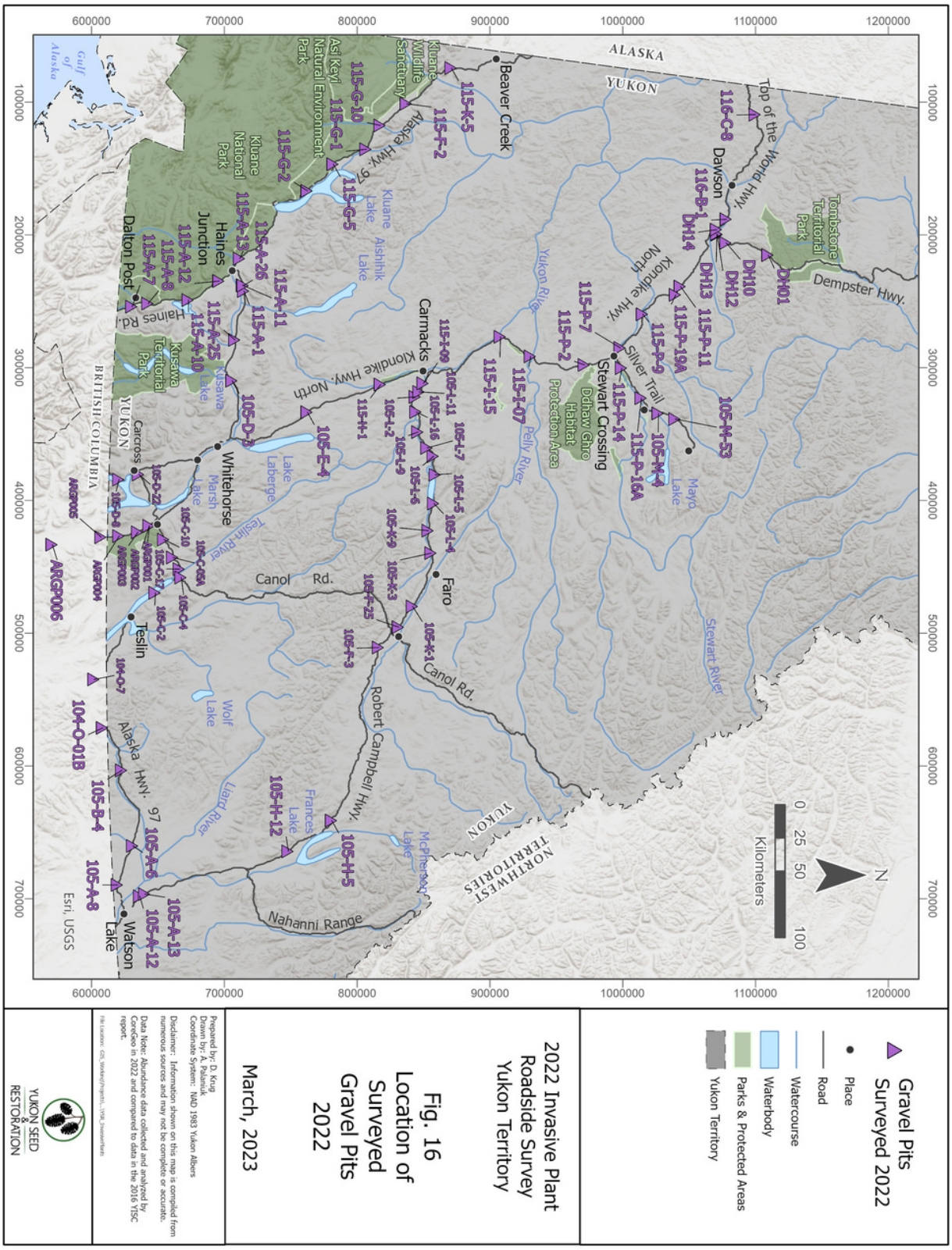

Figure 16: Location of surveyed gravel pits, 2022.

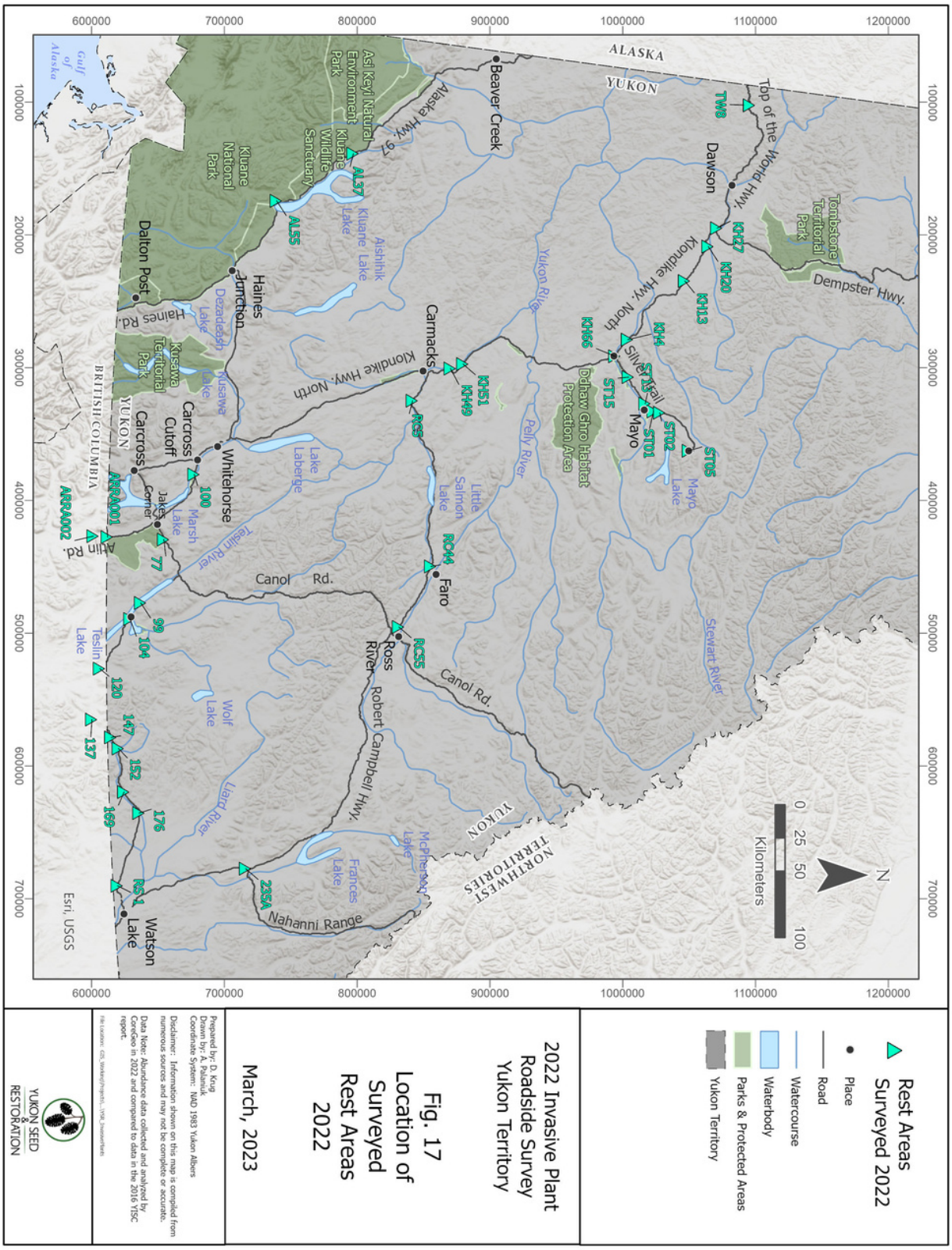

Figure 17: Location of surveyed rest areas, 2022.

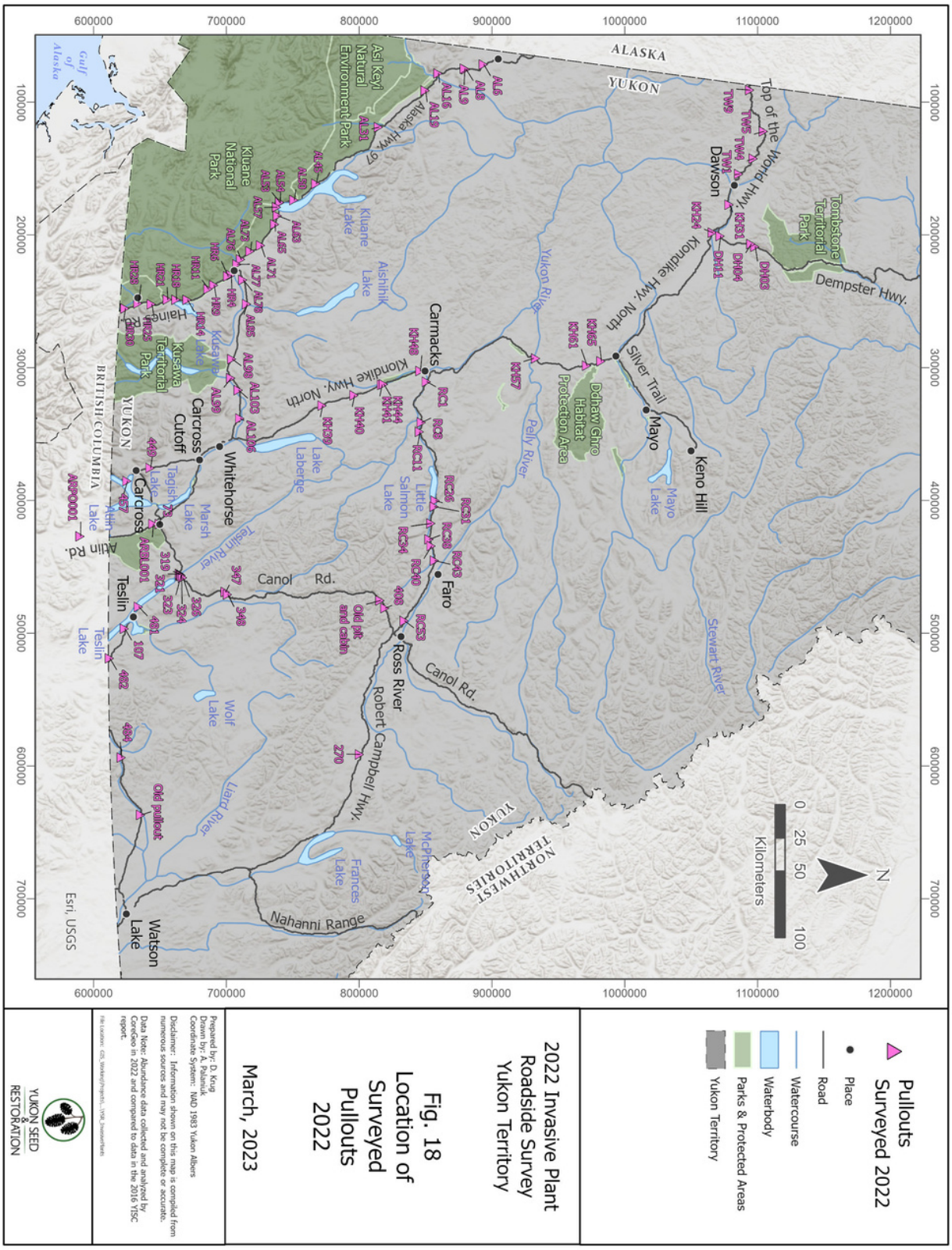

Figure 18: Location of surveyed pullouts, 2022.

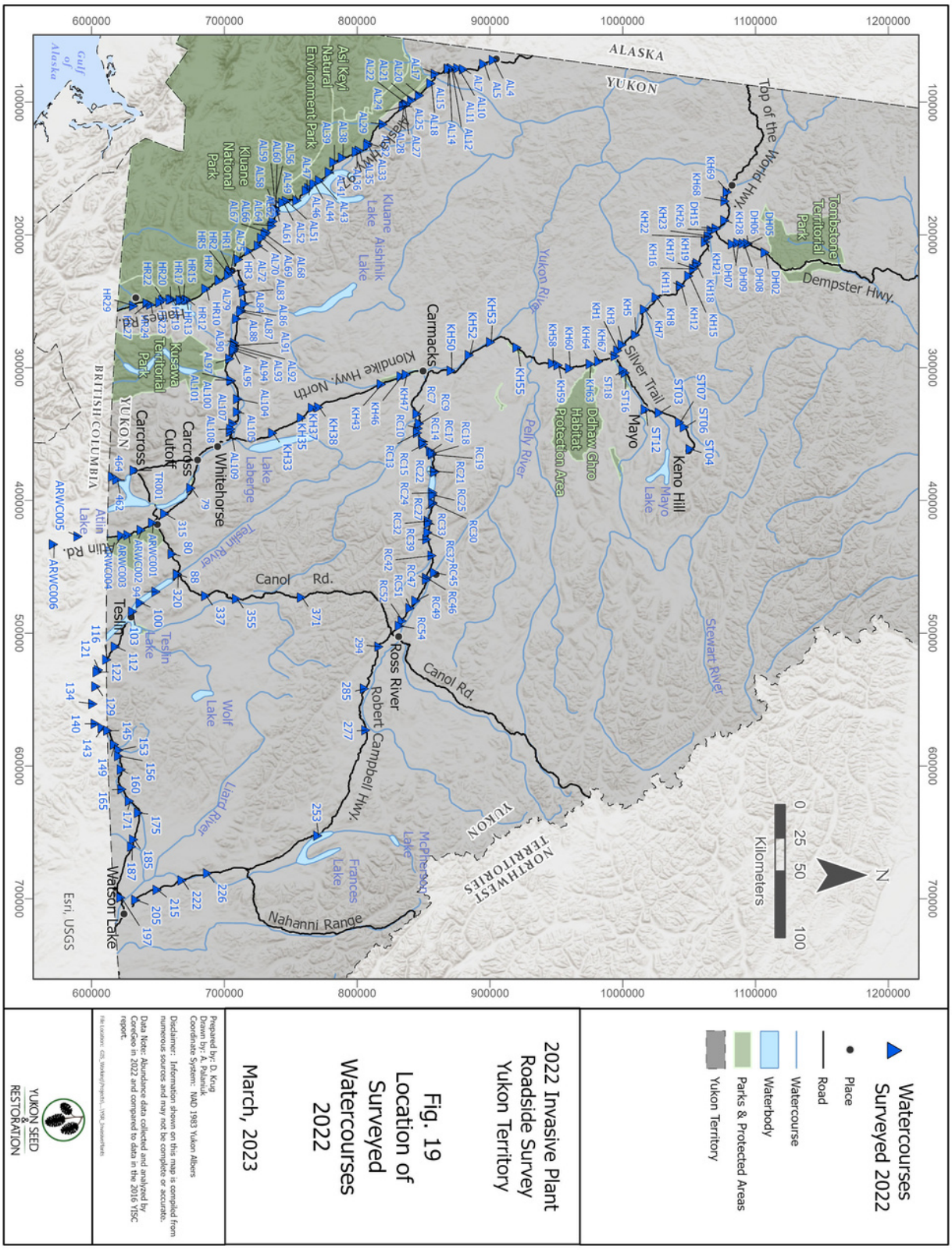

Figure 19: Location of surveyed watercourses, 2022.

Appendix B: Highway Survey Data Table

SECTION START WP	Smooth Brome	Narrow leaf Hawksbeard	Yellow Lucerne	Alfalfa	W Sweet Clover	Y Sweet Closer	Alsik Clover	Red Clover	Umbellated Hawkweed	Oxeye Daisy	Reed Canary Grass	Field Sow Thistle	Common Tansy	Date	Observer	Highway/Road	RoW Mod	Direction of Travel	Side of Highway Assessed	Comments
AK001	L	L	A	A	H	A	L	A	A	A	A	A	A	02-Aug-22	DK+JL	Alaska		South	Both	
AK002	A	L	A	A	H	A	L	A	A	A	A	R	A	02-Aug-22	DK+JL	Alaska		South	Both	
AK003	L	L	A	A	H	A	R	A	A	A	A	A	A	02-Aug-22	DK+JL	Alaska		South	Both	
AK004	A	L	R	A	L	A	L	A	A	A	A	A	A	02-Aug-22	DK+JL	Alaska		South	Both	
AK005	L	H	A	A	C	A	H	A	A	A	A	A	A	02-Aug-22	DK+JL	Alaska		South	Both	
AK006	R	L	R	A	C	A	A	A	A	A	A	A	A	02-Aug-22	DK+JL	Alaska		South	Both	
AK007	L	L	A	A	H	A	A	A	A	A	A	A	A	02-Aug-22	DK+JL	Alaska		South	Both	
AK008	L	L	A	R	L	A	A	A	A	A	A	A	A	02-Aug-22	DK+JL	Alaska		South	Both	
AK009	L	L	A	A	C	A	A	A	A	A	A	A	A	02-Aug-22	DK+JL	Alaska		South	Both	
AK010	L	L	A	A	H	A	A	A	A	A	A	R	A	02-Aug-22	DK+JL	Alaska		South	Both	
AK011	L	R	A	L	L	A	A	A	A	A	A	A	A	02-Aug-22	DK+JL	Alaska	Mowed sections	South	Both	
AK012	L	L	A	A	L	A	A	A	A	A	A	A	A	02-Aug-22	DK+JL	Alaska		South	Both	
AK013	L	L	A	A	L	L	A	A	A	A	A	A	A	02-Aug-22	DK+JL	Alaska		South	Both	
AK014	A	R	A	A	L	L	A	A	A	A	A	A	A	02-Aug-22	DK+JL	Alaska		South	Both	
AK015	A	R	R	A	C	R	R	A	A	A	A	A	A	02-Aug-22	DK+JL	Alaska		South	Both	
AK016	A	R	R	A	C	A	A	A	A	A	A	A	A	02-Aug-22	DK+JL	Alaska		South	Both	
AK017	R	R	A	A	L	A	A	A	A	A	A	A	A	02-Aug-22	DK+JL	Alaska		South	Both	
AK018	R	R	R	A	L	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK019	L	R	A	R	C	L	R	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK020	A	H	A	R	H	A	R	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK021	L	A	A	A	L	A	R	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK022	R	R	A	A	C	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK023	R	A	A	L	L	A	L	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK024	A	A	A	A	L	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK025	A	R	A	A	R	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK026	A	L	A	A	L	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK027	A	L	R	A	R	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK028	R	H	A	A	L	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK029	R	H	R	A	L	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK030	A	C	A	A	R	R	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK031	R	C	A	A	A	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK032	L	R	A	A	A	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK033	R	R	A	A	A	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK034	H	L	A	A	L	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK035	L	R	R	A	R	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK036	R	A	A	A	A	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK037	A	L	A	A	L	R	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK038	A	R	A	R	A	R	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK039	A	R	R	L	A	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK040	A	R	R	R	A	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK041	L	L	A	A	A	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK042	L	L	A	A	A	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK043	A	A	A	A	A	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK044	A	A	A	A	A	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK045	L	A	A	A	L	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK046	A	A	A	A	R	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK047	R	A	A	A	A	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK048	R	A	A	A	A	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK049	R	A	A	A	A	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK050	A	L	A	A	A	A	L	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK051	L	L	R	A	A	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK052	L	L	L	A	A	A	L	L	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK053	L	A	A	A	A	A	R	H	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK054	H	R	A	A	R	A	C	C	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK055	A	C	R	A	A	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK056	L	L	H	A	A	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK057	C	L	C	A	A	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK058	L	H	H	A	R	H	H	L	A	A	A	A	A	03-Aug-22	DK+JL	Alaska		South	Both	
AK059	H	H	H	A	L	L	C	L	A	A	A	A	A	11-Aug-22	JL+SG	Alaska		East	Both	
AK060	C	H	C	A	H	L	L	L	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	Mowed sections	East	Both	
AK061	C	L	H	A	L	A	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	Mowed sections	East	Both	
AK062	H	H	H	A	L	A	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	Mowed sections	East	Both	
AK063	C	L	C	A	H	L	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	Mowed sections	East	Both	
AK064	C	H	C	A	C	A	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	Mowed sections	East	Both	
AK065	C	L	H	A	C	A	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	Mowed sections	East	Both	
AK066	C	L	H	A	L	A	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	Mowed sections	East	Both	
AK067	C	L	L	A	H	A	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	Mowed sections	East	Both	
AK068	H	L	L	A	H	A	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska		East	Both	
AK069	L	C	L	A	L	A	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska		East	Both	
AK070	A	L	L	A	L	A	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska		East	Both	
AK071	A	L	R	A	L	A	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska		East	Both	
AK072	A	R	A	A	R	A	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska		East	Both	
AK073	L	L	R	A	H	A	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska		East	Both	
AK074	C	A	A	A	C	A	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska		East	Both	
AK075	C	L	L	A	C	A	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska		East	Both	
AK076	C	L	R	A	H	A	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	None	East	Both	
AK077	H	A	A	A	L	R	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	None	East	Both	
AK078	H	L	A	A	H	A	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	None	East	Both	
AK079	C	H	A	A	L	A	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	None	East	Both	
AK080	C	L	R	A	H	A	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	None	East	Both	
AK081	C	H	L	A	L	A	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	None	East	Both	
AK082	C	L	A	L	C	L	L	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	None	East	Both	
AK083	C	H	A	R	C	R	H	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	None	East	Both	
AK084	H	C	R	A	H	A	H	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	None	East	Both	
AK085	H	H	R	A	C	A	C	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	None	East	Both	
AK086	L	H	A	A	C	R	C	L	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	Mowed sections	East	Both	
AK087	L	C	A	A	C	A	H	R	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	Mowed sections	East	Both	
AK088	A	A	A	A	A	A	A	A	A	A	A	A	A	11-Aug-22	JL+SG	Alaska	None	East	Both	
AK100	C	L	A	A	C	R	C	R	L	A	A	A	A	11-Aug-22	DK+TT	Alaska	Mowed sections	South	Both	
AK101	H	C	A	A	C	A	C	L	L	A	A	A	A	11-Aug-22	DK+TT	Alaska	Mowed sections	South	Both	
AK102	C	C	A	R	C	A	H	L	L	A	A	A	A	11-Aug-22	DK+TT	Alaska	Mowed sections	South	Both	
AK103	C	C	R	A	C	R	H	L	L	A	A	A	A	11-Aug-22	DK+TT	Alaska	None	South	Both	
AK104	C	C	A	A	C	R	C	L	A	A	A	A	A	11-Aug-22	DK+TT	Alaska	None	South	Both	
AK105	C	H	A	A	C	A	C	L	R	A	A	A	A	11-Aug-22	DK+TT	Alaska	None	South	Both	
AK106	C	H	A	R	C	A	C	L	R	A	A	A	A	11-Aug-22	DK+TT	Alaska	None	South	Both	
AK107	C	H	A	A	C	R	H	L	L	A	A	A	A	11-Aug-22	DK+TT	Alaska	None	South	Both	
AK108	C	H	A	R	C	L	H	L	L	A	A	A	R	11-Aug-22	DK+TT	Alaska	None	South	Both	
AK109	C	H	A	H	C	L	C	H	H	A	A	A	A	11-Aug-22	DK+TT	Alaska	None	South	Both	
AK110	C	H	R	L	C	A	C	C	H	A	A	A	A	11-Aug-22	DK+TT	Alaska	None	South	Both	
AK111	C	H	A	R	C	A	C	H	H	A	A	A	A	11-Aug-22	DK+TT	Alaska	None	South	Both	
AK112	C	H	A	R	C	A	C	L	H	A	A	A	A	11-Aug-22	DK+TT	Alaska	None	South	Both	
AK113	C	H	A	R	C	A	C	H	H	A	A	A	A	11-Aug-22	DK+TT	Alaska	None	South	Both	
AK114	C	H	R	L	C	A	C	H	H	A	A	A	A	11-Aug-22	DK+TT	Alaska	None	South	Both	
AK115	C	R	A	A	C	R	C	H	L	A	A	A	A	11-Aug-22	DK+TT	Alaska	None	South	Both	
AK116	C	R	A	A	L	A	C	C	A	A	A	A	A	11-Aug-22	DK+TT	Alaska	None	South	Both	
AK117	C	L	A	A	H	A	C	L	A	A	A	A	A	11-Aug-22	DK+TT	Alaska	None	South	Both	
AK118	C	L	A	A	L	A	C	H	A	A	A	A	A	11-Aug-22	DK+TT	Alaska	None	South	Both	

AK119	C	L	A	A	H	A	C	H	A	A	A	A	A	11-Aug-22	DK+TT	Alaska	None	South	Both		
AK120	C	L	A	A	L	A	H	L	L	A	A	A	A	11-Aug-22	DK+TT	Alaska	None	South	Both		
AK121	C	L	A	A	C	A	C	L	A	A	A	A	A	11-Aug-22	DK+TT	Alaska	None	South	Both		
AK122	C	L	A	A	H	A	H	L	A	A	A	A	A	11-Aug-22	DK+TT	Alaska	None	South	Both		
AK123	C	A	A	A	C	L	C	H	A	A	A	A	A	11-Aug-22	DK+TT	Alaska	None	South	Both		
AR001	L	L	A	A	A	A	H	L	A	A	A	R	A	17-Aug-22	SM+RS	Atlin Road	None	South	Both		
AR002	R	L	A	R	A	A	H	A	A	A	A	R	A	17-Aug-22	SM+RS	Atlin Road	None	South	Both		
AR003	A	A	A	A	A	A	H	A	A	R	A	A	A	17-Aug-22	SM+RS	Atlin Road	None	South	Both		
AR004	R	L	A	A	A	A	H	L	A	A	A	R	A	17-Aug-22	SM+RS	Atlin Road	None	South	Both		
AR005	A	L	A	A	A	R	L	A	A	A	A	A	A	17-Aug-22	SM+RS	Atlin Road	None	South	Both		
AR006	A	L	A	A	R	A	A	A	A	A	A	A	A	17-Aug-22	SM+RS	Atlin Road	None	South	Both		
AR007	R	L	A	A	A	R	R	A	A	A	A	A	A	17-Aug-22	SM+RS	Atlin Road	None	South	Both		
AR008	R	H	A	A	A	A	H	A	A	A	A	A	A	17-Aug-22	SM+RS	Atlin Road	None	South	Both		
AR009	L	L	A	A	R	A	H	A	A	A	A	A	A	17-Aug-22	SM+RS	Atlin Road	Mowed	South	Both		
AR010	R	L	A	A	A	A	H	A	A	A	A	A	A	17-Aug-22	SM+RS	Atlin Road	Mowed	South	Both		
AR011	A	L	A	A	A	A	H	A	A	A	A	A	A	17-Aug-22	SM+RS	Atlin Road	Mowed	South	Both		
AR012	A	L	A	A	R	A	H	A	A	A	A	A	A	17-Aug-22	SM+RS	Atlin Road	Mowed	South	Both		
AR013	L	H	A	A	A	A	C	A	A	A	A	A	A	17-Aug-22	SM+RS	Atlin Road	Mowed	South	Both		
AR014	A	L	R	A	A	A	L	A	A	A	A	A	A	17-Aug-22	SM+RS	Atlin Road	Mowed	South	Both		
AR015	A	H	A	L	A	A	L	A	A	A	A	A	A	17-Aug-22	SM+RS	Atlin Road	Mowed	South	Both		
AR016	A	H	A	A	A	A	L	R	A	A	A	A	A	17-Aug-22	SM+RS	Atlin Road	Mowed	South	Both		
AR017	R	H	A	L	A	A	L	A	A	A	A	A	A	17-Aug-22	SM+RS	Atlin Road	Mowed	South	Both		
AR018	L	L	A	A	A	R	L	L	A	R	A	A	A	17-Aug-22	SM+RS	Atlin Road	Mowed	South	Both		
DH001	A	A	A	A	A	A	H	H	A	A	A	A	A	05-Aug-22	JL+AT	Dempster Highway	None	South	Both		
DH002	L	A	A	A	A	A	L	L	A	A	A	A	A	05-Aug-22	JL+AT	Dempster Highway	None	South	Both		
DH003	L	A	A	A	A	A	C	A	A	A	A	A	A	05-Aug-22	JL+AT	Dempster Highway	None	South	Both		
DH004	H	L	A	A	A	A	C	L	A	A	A	A	A	05-Aug-22	JL+AT	Dempster Highway	None	South	Both		
DH005	H	A	A	A	L	A	H	A	A	A	A	A	A	05-Aug-22	JL+AT	Dempster Highway	None	South	Both		
DH006	A	A	A	A	L	A	C	L	A	A	A	A	A	05-Aug-22	JL+AT	Dempster Highway	None	South	Both		
DH007	L	A	A	A	A	A	C	A	A	A	A	A	A	05-Aug-22	JL+AT	Dempster Highway	Mowed	South	Both		
DH008	A	A	A	A	A	A	C	A	A	A	A	A	A	05-Aug-22	JL+AT	Dempster Highway	Mowed	South	Both		
DH009	A	A	A	A	A	A	C	L	A	A	A	A	A	05-Aug-22	JL+AT	Dempster Highway	Mowed	South	Both		
DH010	A	A	A	A	A	A	C	A	A	A	A	A	A	05-Aug-22	JL+AT	Dempster Highway	Mowed	South	Both		
HR001	H	L	H	A	L	A	H	H	A	A	R	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
HR002	L	A	R	A	A	A	C	C	R	A	A	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
HR003	L	L	R	A	A	A	H	H	A	A	A	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
HR004	H	C	A	A	R	A	L	C	A	A	A	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
HR005	H	H	R	A	A	A	H	C	A	A	A	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
HR006	H	L	R	A	A	A	H	C	A	A	A	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
HR007	L	H	A	A	A	A	H	C	A	A	A	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
HR008	H	L	A	A	A	A	L	C	A	A	A	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
HR009	L	C	A	A	A	A	L	C	A	A	A	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
HR010	L	C	A	A	A	A	H	C	A	A	A	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
HR011	L	L	A	L	A	A	H	H	A	A	A	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
HR012	L	R	A	A	A	A	C	L	A	A	A	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
HR013	A	R	A	R	A	A	C	L	A	A	A	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
HR014	A	A	A	L	A	A	C	L	A	A	A	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
HR015	A	A	A	A	A	A	C	H	A	A	A	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
HR016	A	A	A	A	A	A	L	A	A	A	A	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
HR017	L	A	A	L	L	A	L	A	A	A	A	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
HR018	R	A	A	A	A	A	H	R	A	A	A	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
HR019	A	A	A	A	A	A	R	A	A	A	A	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
HR020	R	A	A	A	A	A	A	A	A	A	A	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
HR021	H	R	A	A	A	A	C	A	A	A	A	A	A	03-Aug-22	DK+JL	Haines Road	None	South	Both		
KH001	L	H	A	A	H	R	H	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	Mowed	South East	Both		
KH002	L	L	A	A	H	A	H	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	Mowed	South East	Both		
KH003	C	L	A	A	C	A	H	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	Mowed	South East	Both		
KH004	L	L	A	A	L	R	H	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	Mowed	South East	Both		
KH005	C	L	A	A	L	A	L	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	Mowed	South East	Both		
KH006	C	R	A	A	R	A	C	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	Mowed	South East	Both		
KH007	H	L	A	A	A	A	H	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	Mowed	South East	Both		
KH008	H	L	A	A	L	A	H	R	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH009	H	R	A	A	L	A	R	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH010	A	R	A	A	C	A	H	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH011	A	R	A	A	H	A	H	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH012	R	L	A	A	C	A	C	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH013	A	R	A	A	R	A	C	L	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH014	L	L	A	A	L	A	C	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH015	A	L	A	A	L	A	H	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	Construction	South East	Both		
KH016	L	L	A	A	L	A	C	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	Construction	South East	Both		
KH017	H	L	A	A	R	A	C	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	Construction	South East	Both		
KH018	L	L	A	A	A	A	C	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	Construction	South East	Both		
KH019	A	L	A	A	A	A	L	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH020	R	A	A	A	R	A	C	R	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH021	A	A	A	A	L	A	C	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH022	A	A	A	A	L	A	H	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH023	A	L	A	A	H	A	R	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH024	A	A	A	A	L	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH025	A	A	A	A	L	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH026	A	R	A	A	L	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH027	A	C	A	A	L	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	Construction	South East	Both		
KH028	R	C	A	A	L	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	Construction	South East	Both		
KH029	L	H	A	A	L	A	R	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	Construction	South East	Both		
KH030	A	L	A	A	L	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	Construction	South East	Both		
KH031	A	H	A	A	H	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH032	L	R	A	A	H	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH033	L	L	A	A	L	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH034	L	H	A	A	H	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH035	H	L	A	A	H	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH036	H	L	A	A	L	A	L	R	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH037	L	R	A	A	L	A	L	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH038	L	R	A	A	L	A	H	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH039	A	A	A	A	L	A	L	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH040	A	L	A	A	H	A	H	R	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH041	A	A	A	A	L	A	C	R	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH042	L	A	A	A	L	A	C	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH043	L	A	A	A	C	A	L	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH044	A	A	A	A	L	A	L	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH045	L	A	A	A	L	A	L	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH046	H	R	A	A	H	A	R	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH047	H	A	A	A	H	A	H	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH048	H	A	A	A	L	A	L	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH049	L	A	A	A	L	A	H	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH050	H	R	A	A	L	A	R	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH051	L	R	A	A	L	A	H	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH052	L	R	A	A	L	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH053	H	R	A	A	L	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH054	R	A	A	A	H	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH055	R	A	A	A	C	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		
KH056	A	A	A	A	H	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both		

KH057	R	H	A	A	H	A	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both	
KH058	A	R	A	A	L	A	R	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both	
KH059	L	L	A	A	L	A	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both	
KH060	A	A	A	A	L	A	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both	
KH061	R	A	A	A	R	A	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both	
KH062	A	A	R	A	L	A	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both	
KH063	L	A	A	A	L	A	C	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both	
KH064	R	R	A	A	C	A	C	L	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both	
KH065	L	R	R	A	H	A	R	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Klondike Highway North	None	South East	Both	
KH066	L	L	A	R	C	A	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	Mowed	South East	Both	
KH067	C	A	A	A	H	A	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	Mowed	South East	Both	
KH068	H	R	A	A	L	R	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both	
KH069	C	R	R	A	L	R	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both	
KH070	C	A	R	A	L	A	A	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South East	Both	
KH071	C	A	L	A	C	L	L	A	A	A	A	A	A	A	05-Aug-22	JL+AT	Klondike Highway North	None	South	Both	1 patch of Sow Thistle in rest stop
KH072	H	R	L	A	H	L	L	A	A	A	A	R	A	09-Aug-22	DK+TT	Klondike Highway North	None	South	Both		
KH073	H	A	R	R	H	A	C	L	A	A	A	A	A	A	09-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	
KH074	H	L	R	L	H	A	C	H	A	A	A	A	A	A	09-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	Umbellated Hawkweed - Rare
KH075	H	L	R	L	H	A	H	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	
KH076	L	L	A	H	H	A	H	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	
KH077	L	A	R	C	L	A	C	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	
KH078	A	A	L	C	H	A	C	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	
KH079	A	A	A	A	C	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	
KH080	L	R	A	A	C	A	A	A	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	
KH081	L	L	A	A	C	A	A	A	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	
KH082	A	R	A	A	C	R	A	A	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	
KH083	A	L	A	A	C	A	A	A	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	
KH084	A	L	A	A	H	R	A	A	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	Umbellated Hawkweed - 30-50 plants - Braeburn
KH085	A	H	A	A	H	A	A	A	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	Umbellated Hawkweed - 1 plant
KH086	L	H	A	A	H	R	R	R	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	Umbellated Hawkweed - 1 patch - 50+ plants
KH087	L	H	A	A	H	A	R	A	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	Umbellated Hawkweed - small patches - Rare
KH088	H	L	A	A	C	A	C	A	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	
KH089	L	L	A	A	L	A	L	A	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	
KH090	L	L	A	A	H	A	H	A	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	
KH091	L	A	A	A	H	A	C	L	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	
KH092	C	R	A	A	C	A	C	L	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	
KH093	C	A	R	A	H	A	C	L	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	
KH094	L	L	A	A	C	A	C	A	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	
KH095	L	L	A	H	C	A	C	R	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	
KH096	L	L	A	C	C	A	C	A	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	Mowed	South	Both	
KH097	H	L	A	C	C	R	C	A	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	None	South	Both	
KH098	A	L	A	A	C	A	L	L	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	None	South	Both	Umbellated Hawkweed - Rare - 50+ plants
KH099	C	H	A	L	C	A	H	A	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	None	South	Both	Umbellated Hawkweed - Rare
KH100	H	C	A	L	C	L	C	A	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	None	South	Both	Umbellated Hawkweed - Rare
KH101	H	H	A	H	C	H	L	A	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	None	South	Both	Umbellated Hawkweed - Rare
KH102	L	C	R	A	C	A	H	L	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	None	South	Both	Umbellated Hawkweed - High scattered. Clamatis - Rare. Butter + Eggs - Rare
KH103	C	H	R	A	C	R	C	H	A	A	A	A	A	A	10-Aug-22	DK+TT	Klondike Highway North	None	South	Both	
KH104	H	L	A	A	R	A	L	A	A	A	A	A	A	A	22-Aug-22	CTFN	Klondike Highway South	None	N	Both	Points manually added to map - AP
KH105	H	R	A	A	L	A	A	A	A	A	A	A	A	A	22-Aug-22	CTFN	Klondike Highway South	None	N	Both	Points manually added to map - AP
KH106	L	L	A	A	L	A	A	A	A	A	A	A	A	A	22-Aug-22	CTFN	Klondike Highway South	None	N	Both	Points manually added to map - AP
KH107	H	L	A	A	L	A	A	A	A	A	A	A	A	A	22-Aug-22	CTFN	Klondike Highway South	None	N	Both	Points manually added to map - AP
KH108	H	L	A	A	R	A	A	A	A	A	A	A	A	A	22-Aug-22	CTFN	Klondike Highway South	None	N	Both	Points manually added to map - AP
KH109	H	R	A	A	L	A	A	A	A	A	A	A	A	A	22-Aug-22	CTFN	Klondike Highway South	None	N	Both	Points manually added to map - AP
KH110	H	A	A	A	L	A	A	A	A	A	A	A	A	A	22-Aug-22	CTFN	Klondike Highway South	None	N	Both	Points manually added to map - AP
KH111	L	A	A	A	R	A	A	A	A	A	A	A	A	A	22-Aug-22	CTFN	Klondike Highway South	None	N	Both	Points manually added to map - AP
KH112	H	R	A	A	L	A	A	A	A	A	A	A	A	A	22-Aug-22	CTFN	Klondike Highway South	None	N	Both	Points manually added to map - AP
KH113	C	R	A	A	L	A	A	A	A	A	A	A	A	A	22-Aug-22	CTFN	Klondike Highway South	None	N	Both	Points manually added to map - AP
RC001	H	R	A	A	L	A	H	H	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC002	H	L	A	A	H	A	H	L	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC003	C	H	A	A	L	A	H	H	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC004	C	L	A	A	L	A	C	H	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC005	C	L	A	A	L	A	H	H	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC006	C	R	A	A	L	A	H	L	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC007	H	R	A	A	L	A	H	H	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC008	H	L	A	A	L	A	H	H	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC009	H	L	A	A	L	R	H	H	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	Mowed	East	Both	
RC010	C	L	A	A	R	A	H	C	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	Mowed	East	Both	
RC011	H	L	A	A	H	A	H	C	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC012	L	L	A	A	L	A	L	R	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC013	L	L	A	A	R	A	H	L	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC014	L	A	A	A	L	A	H	L	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC015	H	R	A	A	L	A	H	A	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC016	L	R	A	A	H	A	H	R	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC017	L	L	A	A	L	A	C	L	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC018	L	L	A	A	L	A	H	L	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC019	L	L	A	A	A	A	H	A	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC020	L	L	A	A	R	A	L	A	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC021	L	L	A	A	R	A	L	A	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC022	H	A	A	A	A	A	H	A	A	L	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC023	L	R	A	A	R	A	H	L	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC024	L	A	A	A	A	A	H	H	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC025	L	A	A	A	A	A	C	L	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC026	H	A	A	A	R	A	H	R	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC027	L	R	A	A	L	A	H	R	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC028	L	A	A	A	H	A	H	L	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC029	A	R	R	R	L	A	C	L	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC030	L	A	A	L	R	A	C	C	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC031	A	A	A	A	A	A	C	A	A	L	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC032	L	A	A	A	A	A	H	R	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC033	L	A	A	R	A	A	C	L	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC034	L	R	A	A	R	A	H	A	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC035	L	R	A	A	R	A	H	R	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC036	A	A	A	A	R	A	H	A	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC037	A	L	A	A	L	A	L	R	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC038	L	L	A	A	A	A	H	R	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC039	L	A	A	A	A	A	H	A	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC040	L	L	A	R	R	A	H	A	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC041	H	R	R	R	R	A	H	R	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC042	L	L	A	L	L	A	H	L	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC043	L	L	A	R	H	A	H	A	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC044	L	A	A	L	H	A	H	A	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC045	A	A	A	A	L	A	L	A	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC046	L	A	A	A	R	A	C	L	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC047	A	A	A	A	A	A	C	L	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC048	L	A	A	A	L	A	L	A	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC049	A	A	A	A	H	A	H	A	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC050	L	A	A	A	H	A	H	A	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC051	A	A	A	A	H	A	H	A	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	
RC052	A	A	A	A	H	A	H	A	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both	

RC053	L	A	A	A	L	A	H	A	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both
RC054	L	A	A	L	L	A	H	R	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both
RC055	L	A	A	A	L	A	L	L	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both
RC056	L	A	A	A	L	A	A	L	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both
RC057	L	R	A	A	L	A	A	L	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both
RC058	L	L	A	A	L	A	R	L	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both
RC059	L	A	A	A	L	A	L	L	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both
RC060	L	L	A	A	L	A	H	C	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	Mowed	East	Both
RC061	L	L	A	A	L	A	C	C	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	Mowed	East	Both
RC062	H	L	A	A	A	A	L	C	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both
RC063	H	L	A	A	A	A	C	R	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both
RC064	L	A	A	A	R	A	H	A	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both
RC065	H	L	A	A	A	A	C	A	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both
RC066	H	L	A	A	H	A	C	A	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both
RC067	H	L	A	A	L	A	C	R	A	A	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both
RC068	L	R	A	A	H	A	C	R	A	L	A	A	A	A	08-Aug-22	JL+AT	Robert Campbell Highway	None	East	Both
RC069	A	R	A	A	H	A	C	L	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC070	H	A	A	A	H	A	C	H	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC071	L	A	A	A	C	A	C	H	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC072	L	A	A	A	H	A	C	R	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC073	H	A	R	R	A	A	C	R	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC074	C	A	A	A	H	A	C	L	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC075	C	A	A	R	H	A	H	R	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC076	C	A	A	A	C	A	C	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC077	L	A	A	R	C	A	C	R	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC078	L	A	A	R	C	R	A	L	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC079	L	A	A	R	L	A	C	R	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC080	C	A	A	A	L	A	C	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC081	L	L	A	A	H	A	C	R	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC082	A	R	A	A	L	A	H	L	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC083	A	R	A	A	L	A	C	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC084	A	A	A	A	L	A	C	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC085	A	R	A	A	L	A	C	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC086	A	R	A	A	L	A	C	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC087	A	R	A	A	A	A	H	R	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC088	A	A	A	A	L	A	H	L	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC089	A	A	A	A	L	A	H	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC090	A	A	A	A	L	A	L	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC091	A	A	A	A	R	A	H	L	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC092	A	R	A	A	R	A	L	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC093	A	A	A	L	C	A	C	L	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC094	A	L	A	A	C	A	C	L	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC095	A	A	A	A	R	A	L	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC096	A	A	A	A	A	A	H	R	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC097	R	R	A	A	A	A	L	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC098	R	H	A	A	A	A	L	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC099	A	L	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC100	A	L	A	A	A	A	L	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC101	R	A	A	A	A	A	R	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC102	L	R	A	A	A	A	L	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC103	A	R	A	A	A	A	R	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC104	A	A	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC105	A	H	A	A	A	A	H	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC106	A	A	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC107	L	A	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC108	A	A	A	A	A	A	A	A	A	A	A	A	L	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC109	L	A	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC110	A	H	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC111	A	A	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC112	A	A	A	A	R	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC113	R	A	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC114	A	A	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC115	A	A	A	A	L	A	L	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC116	A	A	A	A	L	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC117	A	A	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC118	A	A	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC119	L	R	A	A	R	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North	Both
RC120	A	R	A	A	R	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North-West	Both
RC121	R	R	A	A	R	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North-West	Both
RC122	H	H	A	A	L	A	L	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North-West	Both
RC123	H	H	A	A	A	A	L	R	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North-West	Both
RC124	L	H	A	A	H	A	R	L	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North-West	Both
RC125	L	L	A	A	R	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North-West	Both
RC126	H	A	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North-West	Both
RC127	H	A	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North-West	Both
RC128	L	A	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North-West	Both
RC129	L	A	A	A	R	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North-West	Both
RC130	R	R	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North-West	Both
RC131	R	A	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North-West	Both
RC132	R	A	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North-West	Both
RC133	A	A	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North-West	Both
RC134	A	A	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North-West	Both
RC135	A	A	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North-West	Both
RC136	A	A	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	JL+AT	Robert Campbell Highway	None	North-West	Both
RC137	A	A	A	A	A	A	A	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC138	A	A	A	A	A	A	A	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC139	A	A	A	A	A	A	A	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC140	A	A	A	A	A	A	A	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC141	A	A	A	A	A	A	A	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC142	A	A	A	A	A	A	A	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC143	A	A	A	A	A	A	A	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC144	A	A	A	A	A	A	A	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC145	R	A	A	A	A	A	A	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC146	A	A	A	A	A	A	R	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC147	A	A	A	A	A	A	R	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC148	A	A	A	A	A	A	H	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC149	L	A	A	A	A	A	C	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC150	H	A	A	A	A	A	C	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC151	L	A	A	A	A	A	L	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC152	L	A	A	A	A	A	L	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC153	A	A	A	A	A	A	C	R	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC154	A	A	A	A	A	A	C	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC155	A	A	A	A	A	A	C	R	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC156	A	A	A	A	A	A	H	R	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC157	L	A	A	A	A	L	C	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC158	A	A	A	A	A	A	L	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC159	L	A	A	A	A	A	H	R	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC160	L	R	A	A	A	A	H	H	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC161	L	A	A	A	A	A	L	R	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both
RC162	C	A	A	A	A	A	L	R	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both

RC163	H	A	A	A	A	A	L	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both	
RC164	L	A	A	A	A	A	H	R	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both	
RC165	A	A	A	A	A	A	L	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both	
RC166	A	A	A	A	A	A	L	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both	
RC167	A	A	A	A	A	A	L	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both	
RC168	A	A	A	A	A	A	C	A	A	A	A	A	A	A	10-Aug-22	JL+AT	Robert Campbell Highway	None	South	Both	
RC200	H	R	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC201	L	A	A	A	A	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC202	L	R	A	A	L	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC203	A	L	A	C	H	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC204	R	L	A	L	L	R	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC205	R	R	A	A	H	A	R	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC206	R	A	A	A	L	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC207	R	A	A	A	L	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC208	R	A	A	A	H	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC209	L	A	A	A	H	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC210	R	H	A	L	H	R	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC211	R	A	A	H	H	A	L	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC212	L	R	A	L	L	A	L	R	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC213	L	A	A	H	L	A	H	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC214	R	A	A	H	L	A	C	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed + Mowed & Brushed
RC215	A	R	A	L	L	A	H	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC216	L	A	A	C	L	A	C	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC217	L	A	A	L	L	A	L	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC218	A	A	A	A	H	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC219	A	A	A	A	H	A	A	R	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC220	A	A	A	A	L	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC221	R	A	A	A	H	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC222	R	A	A	R	H	A	L	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC223	A	A	A	A	L	A	A	A	A	A	A	A	R	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC224	R	A	A	A	H	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC225	A	A	A	A	H	L	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC226	R	A	A	A	H	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC227	L	A	A	A	H	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC228	L	A	A	A	H	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC229	A	A	A	A	H	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC230	A	A	A	A	H	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC231	A	A	A	A	H	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC232	A	A	A	A	C	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC233	A	A	A	A	C	A	L	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC234	R	A	A	A	C	L	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC235	R	A	A	R	C	A	A	R	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC236	R	A	A	A	C	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC237	L	R	A	H	C	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC238	L	A	A	R	C	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC239	R	A	A	A	C	R	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC240	R	A	A	A	C	A	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC241	L	A	A	A	C	A	R	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC242	R	A	A	A	C	A	R	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC243	L	A	A	H	C	L	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed
RC244	A	A	A	A	C	H	A	A	A	A	A	A	A	A	09-Aug-22	DK+TT	Robert Campbell Highway	None	West	Both	Disturbed due to cable being layed + Mowed ~ 2M row
ST001	C	C	A	A	C	A	A	A	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST002	H	H	R	A	H	A	A	A	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST003	C	L	A	A	C	A	A	A	C	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST004	C	H	A	A	H	A	A	A	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST005	C	R	A	A	H	A	A	A	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST006	C	L	R	A	C	A	A	A	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST007	C	R	A	A	C	A	L	A	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST008	C	L	L	A	C	A	L	A	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST009	C	H	R	A	C	A	A	A	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST010	C	L	H	A	C	A	A	A	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST011	C	R	C	A	C	R	R	A	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST012	H	L	R	A	H	A	H	H	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST013	L	R	R	A	L	R	C	R	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST014	H	H	L	A	H	A	C	H	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST015	A	A	A	A	H	A	C	C	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST016	L	A	A	A	C	R	C	C	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST017	A	A	A	A	H	A	L	L	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST018	L	R	A	A	C	A	L	A	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST019	R	A	A	A	L	A	A	R	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST020	R	R	A	A	R	A	A	A	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST021	L	R	A	A	A	A	A	A	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
ST022	L	A	A	A	L	A	R	A	A	A	A	A	A	A	05-Aug-22	DK+SM	Silver Trail	None	East	Both	
TR001	L	L	A	A	A	A	A	A	A	A	A	A	A	A	17-Aug-22	CTFN	Tagish Road	None	NE	Both	
TR002	R	L	A	A	A	A	A	A	A	A	A	A	A	A	17-Aug-22	CTFN	Tagish Road	None	NE	Both	
TR003	R	L	A	A	A	A	A	A	A	A	A	A	A	A	17-Aug-22	CTFN	Tagish Road	None	NE	Both	
TR004	A	L	A	A	R	A	A	A	A	A	A	A	A	A	17-Aug-22	CTFN	Tagish Road	None	NE	Both	
TR005	A	L	A	A	A	A	A	A	A	A	A	A	A	A	17-Aug-22	CTFN	Tagish Road	None	NE	Both	
TR006	A	L	A	A	A	A	A	C	A	A	A	A	A	A	17-Aug-22	CTFN	Tagish Road	None	NE	Both	
TR007	H	L	A	A	A	A	A	A	A	A	A	A	A	A	17-Aug-22	CTFN	Tagish Road	None	NE	Both	
TR008	H	L	A	A	A	A	A	A	A	A	A	A	A	A	17-Aug-22	CTFN	Tagish Road	None	NE	Both	
TR009	A	R	A	A	A	A	A	A	A	A	A	A	A	A	17-Aug-22	CTFN	Tagish Road	None	NE	Both	
TR010	R	L	A	A	A	A	A	A	A	A	A	A	A	A	17-Aug-22	CTFN	Tagish Road	None	NE	Both	
TR011	R	A	A	A	A	A	A	A	A	A	A	A	A	A	17-Aug-22	CTFN	Tagish Road	None	NE	Both	
TW001	R	R	A	A	A	A	A	A	A	A	A	A	A	A	04-Aug-22	JL+AT	Top of the World	None	East	Both	Points manually added to map - AP
TW002	L	A	A	A	A	A	A	A	A	A	A	A	A	A	04-Aug-22	JL+AT	Top of the World	None	East	Both	Points manually added to map - AP
TW003	L	A	A	A	A	A	A	A	A	A	A	A	A	A	04-Aug-22	JL+AT	Top of the World	None	East	Both	Points manually added to map - AP
TW004	L	A	A	A	A	A	C	A	A	A	A	A	A	A	04-Aug-22	JL+AT	Top of the World	None	East	Both	Points manually added to map - AP
TW005	L	A	A	A	A	A	C	R	A	A	A	A	A	A	04-Aug-22	JL+AT	Top of the World	None	East	Both	Points manually added to map - AP
TW006	L	A	A	A	A	A	C	A	A	A	A	A	A	A	04-Aug-22	JL+AT	Top of the World	None	East	Both	Points manually added to map - AP
TW007	L	A	A	A	A	A	C	A	A	A	A	A	A	A	04-Aug-22	JL+AT	Top of the World	None	East	Both	Points manually added to map - AP
TW008	L	A	A	A	A	A	C	R	A	A	A	A	A	A	04-Aug-22	JL+AT	Top of the World	None	East	Both	Points manually added to map - AP
TW009	H	A	A	A	A	A	C	A	A	A	A	A	A	A	04-Aug-22	JL+AT	Top of the World	None	East	Both	Points manually added to map - AP
TW010	H	A	A	A	A	A	C	R	A	A	A	A	A	A	04-Aug-22	JL+AT	Top of the World	None	East	Both	Points manually added to map - AP
TW011	A	A	A	A	A	A	C	A	A	A	A	A	A	A	04-Aug-22	JL+AT	Top of the World	None	East	Both	Points manually added to map - AP
TW012	A	A	A	A	A	A	C	A	A	A	A	A	A	A	04-Aug-22	JL+AT	Top of the World	None	East	Both	Points manually added to map - AP
TW013	A	A	A	A	A	A	C	A	A	A	A	A	A	A	04-Aug-22	JL+AT	Top of the World	None	East	Both	Points manually added to map - AP
TW014	A	A	A	A	A	A	C	H	A	A	A	A	A	A	04-Aug-22	JL+AT	Top of the World	None	East	Both	Points manually added to map - AP
TW015	A	A	A	A	A	A	C	L	A	A	A	A	A	A	04-Aug-22	JL+AT	Top of the World	None	East	Both	Points manually added to map - AP
TW016	R	A	A	A	A	A	C	R	A	A	A	A	A	A	04-Aug-22	JL+AT	Top of the World	None	East	Both	Points manually added to map - AP
TW017	R	A	A	A	A	A	C	A	A	A	A	A	A	A	04-Aug-22	JL+AT	Top of the World	None	East	Both	Points manually added to map - AP
TW018	L	A	A	A	A	A	L	A	A	A	A	A	A	A	04-Aug-22	JL+AT	Top of the World	None	East	Both	Points manually added to map - AP
TW019	L	A	A	A	H	A	H	L	A	A	A	A	A	A	04-Aug-22	JL+AT	Top of the World	None	East	Both	Points manually added to map - AP
TW020	R	A	A	A	C	A	A	A	A	A	A	A	A	A	04-Aug-22	JL+AT	Top of the World	None	East	Both	Points manually added to map - AP

Appendix C: Other Features Survey Data Table

PITS														
YG_Pit_Number	Notes	Smooth Brome	Narrow leaf Hawksbeard	Yellow Lucerne	Alfalfa	W. Sweet Clover	Y. Sweet Closer	Alsik Clover	Red Clover	OTHER SPECIES	Date	Observer	Highway/Road	Comments
104-O-01B	142	A	L	A	R	A	A	L	R		09-Aug-22	JL+AT	Robert Campbell	
104-O-07	127	R	R	A	A	A	A	A	A		09-Aug-22	JL+AT	Robert Campbell	
105-A-06	105-A-06	A	A	A	A	A	A	A	A		09-Aug-22	JL+AT	Robert Campbell	
105-A-08	71	A	A	A	A	A	A	A	A		09-Aug-22	JL+AT	Robert Campbell	
105-B-04	485	A	L	A	A	A	A	A	R		09-Aug-22	JL+AT	Robert Campbell	
105-C-02	480	R	L	A	A	L	A	H	L		09-Aug-22	JL+AT	Robert Campbell	
105-C-05A	83	R	L	A	A	A	A	A	A		11-Aug-22	DK+TT	Alaska Highway	
105-C-10	105-C-10	A	H	A	A	L	A	C	A		11-Aug-22	DK+TT	Alaska Highway	
105-C-17	86	H	R	A	A	H	A	C	A		11-Aug-22	DK+TT	Alaska Highway	
105-D-03	AL101	A	L	A	A	L	A	A	A		11-Aug-22	DK+TT	Alaska Highway	
115-A-01	AL82	R	R	A	A	H	A	A	A		11-Aug-22	DK+TT	Alaska Highway	
115-A-11	AL81	A	L	A	A	A	A	A	A		00-Jan-00	DK+TT	Alaska Highway	
115-A-13	AL74	A	H	R	A	A	A	A	A		11-Aug-22	DK+TT	Alaska Highway	
115-A-25	AL89	A	L	A	A	A	A	A	A		11-Aug-22	DK+TT	Alaska Highway	
115-A-26	AL80	L	L	A	A	L	A	A	A		11-Aug-22	DK+TT	Alaska Highway	
115-F-02	AL23	A	R	A	A	L	A	L	A		11-Aug-22	DK+TT	Alaska Highway	
115-G-01	AL34	A	H	A	A	C	A	A	A		11-Aug-22	DK+TT	Alaska Highway	
115-G-02	AL48	A	R	A	A	R	A	A	A		11-Aug-22	DK+TT	Alaska Highway	
115-G-05	AL40	A	H	A	A	L	A	A	A		11-Aug-22	DK+TT	Alaska Highway	
115-G-10	AL30	R	H	A	A	L	A	R	A		11-Aug-22	DK+TT	Alaska Highway	
115-K-05	AL13	A	L	A	A	H	A	A	A		11-Aug-22	DK+TT	Alaska Highway	
105-E-04	KH36										10-Aug-22	DK+TT	Klondike Highway	Not accesible
115-H-01	KH42										10-Aug-22	DK+TT	Klondike Highway	Not accesible
115-I-07	KH56	R	L	A	A	L	A	A	A		05-Aug-22	JL+AT	Klondike Highway	
115-I-15	KH54	A	L	A	A	H	R	A	A		05-Aug-22	JL+AT	Klondike Highway	
115-P-02	KH62	A	L	A	A	A	A	L	A		05-Aug-22	JL+AT	Klondike Highway	
115-P-07	KH2	A	H	A	A	H	A	A	A		05-Aug-22	JL+AT	Klondike Highway	
115-P-09	KH6	A	L	A	A	L	A	A	A		05-Aug-22	JL+AT	Klondike Highway	
115-P-11	KH10										05-Aug-22	JL+AT	Klondike Highway	Construction- not accessible
115-P-19A	KH9	A	A	A	R	R	A	H	R		05-Aug-22	JL+AT	Klondike Highway	
116-B-01	KH29	R	H	A	A	R	A	H	A		05-Aug-22	JL+AT	Klondike Highway	
105-D-08	461	A	L	A	A	A	A	A	A		11-Aug-22	DK+TT	South Klondike	
115-A-07	HR31	A	A	A	A	A	A	A	A		31-Jul-22	DK+JL	Haines Road	
115-A-08	HR26	A	H	A	A	H	A	H	L		01-Aug-22	DK+JL	Haines Road	
115-A-12	HR8	A	L	A	A	A	A	A	A		03-Aug-22	DK+JL	Haines Road	
105-A-12	207	A	L	A	A	A	A	A	A		09-Aug-22	JL+AT	Robert Campbell	
105-A-13	211	A	A	A	A	A	A	H	A		09-Aug-22	JL+AT	Robert Campbell	
105-F-03	293	A	A	H	A	A	A	A	A		09-Aug-22	JL+AT	Robert Campbell	
105-F-25	RC56	L	L	A	A	A	R	A	A		09-Aug-22	JL+AT	Robert Campbell	
105-H-05	258	A	H	A	A	A	A	A	A		09-Aug-22	JL+AT	Robert Campbell	
105-H-12	246	A	R	A	A	L	A	A	A		09-Aug-22	JL+AT	Robert Campbell	
105-K-01	RC50	L	H	A	A	A	A	A	A		09-Aug-22	JL+AT	Robert Campbell	
105-K-03	RC41	A	H	A	A	L	A	A	A		09-Aug-22	JL+AT	Robert Campbell	
105-K-09	RC36	A	A	A	A	R	A	A	A		09-Aug-22	JL+AT	Robert Campbell	
105-L-02	RC4	A	H	A	A	H	A	A	A		09-Aug-22	JL+AT	Robert Campbell	
105-L-04	RC29	A	A	A	A	H	A	A	A		09-Aug-22	JL+AT	Robert Campbell	Active pit. Did not go all the way.
105-L-05	RC23	A	A	A	A	A	A	A	A		09-Aug-22	JL+AT	Robert Campbell	Active pit. Nothing visable from road
105-L-06	RC20	A	L	A	A	A	A	A	A		09-Aug-22	JL+AT	Robert Campbell	
105-L-07	RC16	A	A	A	A	R	A	A	A		09-Aug-22	JL+AT	Robert Campbell	
105-L-09	RC12	A	R	A	A	L	A	A	A		09-Aug-22	JL+AT	Robert Campbell	
105-L-11	RC3	A	L	A	A	A	A	A	A		09-Aug-22	JL+AT	Robert Campbell	
105-L-16	RC6	A	L	A	A	A	A	A	A		09-Aug-22	JL+AT	Robert Campbell	
115-I-09	RC2	A	L	A	A	L	A	A	A		09-Aug-22	JL+AT	Robert Campbell	
105-C-04	325	A	L	A	A	R	A	A	A		09-Aug-22	JL+AT	Robert Campbell	

105-D-22	466	L	H	A	A	L	A	A	A		11-Aug-22	DK+TT	Tagish Road	
116-C-08	TW7	R	A	A	A	A	A	A	A		05-Aug-22	JL+AT	Klondike Highway	
105-M-04	ST11	A	H	A	A	C	A	L	A		05-Aug-22	DK_SM	Silver Trail	
105-M-53	ST09	A	C	A	A	C	A	A	A		05-Aug-22	DK_SM	Silver Trail	
115-P-14	ST19	A	H	A	A	H	A	A	A	Lucerne-R	05-Aug-22	DK_SM	Silver Trail	
115-P-16A	ST14	A	C	A	A	C	A	L	A		05-Aug-22	DK_SM	Silver Trail	
	DH01 GP	L	A	A	A	A	A	A	A		05-Aug-22	JL+AT	Dempster Highway	NEW PIT- changed name from DH01
	DH10 GP	A	L	A	A	A	A	L	A		05-Aug-22	JL+AT	Dempster Highway	NEW PIT-changed name from DH10
	DH12 GP	A	R	A	A	A	A	R	A		05-Aug-22	JL+AT	Dempster Highway	NEW PIT-changed name from DH12
	DH13 GP	A	R	A	A	A	A	R	A		05-Aug-22	JL+AT	Dempster Highway	NEW PIT-changed name from DH13
	DH14 GP	A	R	A	A	R	A	A	A		05-Aug-22	JL+AT	Dempster Highway	NEW PIT-changed name from DH14
	ARGP001	A	L	A	A	R	A	L	A		17-Aug-22	SM+RS	Atlin Road	NEW PIT
	ARGP002	A	L	A	A	A	A	A	A		17-Aug-22	SM+RS	Atlin Road	NEW PIT
	ARGP003	A	H	A	A	A	A	H	A		17-Aug-22	SM+RS	Atlin Road	NEW PIT
	ARGP004	A	L	A	A	A	R	A	A		17-Aug-22	SM+RS	Atlin Road	NEW PIT
	ARGP005	A	L	A	A	R	A	L	L		17-Aug-22	SM+RS	Atlin Road	NEW PIT
	ARGP006	A	H	A	A	A	A	A	A		17-Aug-22	SM+RS	Atlin Road	NEW PIT

PULLOUTS

Map Ref. No.	Survey Way- point	Smooth Brome	Narrow leaf Hawksbeard	Yellow Lucerne	Alfalfa	W. Sweet Clover	Y. Sweet Clover	Alsik Clover	Red Clover	OTHER SPECIES	Date	Observer	Highway/Road	Comments
1	AL6	L	R	A	A	L	A	A	A		03-Aug-22	DK+JL	Alaska Highway	
2	AL8	A	A	A	A	A	A	A	A		03-Aug-22	DK+JL	Alaska Highway	
3	AL9	H	R	A	A	L	R	A	A		03-Aug-22	DK+JL	Alaska Highway	
4	AL16	R	R	A	R	L	L	A	A		03-Aug-22	DK+JL	Alaska Highway	
5	AL19	L	R	A	A	L	A	A	A		03-Aug-22	DK+JL	Alaska Highway	
6	AL31	R	A	A	A	R	A	A	A		03-Aug-22	DK+JL	Alaska Highway	
7	AL45	A	L	A	A	L	R	A	A		03-Aug-22	DK+JL	Alaska Highway	
8	AL50	A	L	A	A	A	A	L	A		03-Aug-22	DK+JL	Alaska Highway	
9	AL53	A	A	A	A	A	A	A	A		03-Aug-22	DK+JL	Alaska Highway	In national Park
10	AL54	A	A	A	A	A	A	A	A		03-Aug-22	DK+JL	Alaska Highway	In national Park
11	AL57	A	A	A	A	A	A	A	A		03-Aug-22	DK+JL	Alaska Highway	
12	AL63	A	A	A	A	A	A	A	A		03-Aug-22	DK+JL	Alaska Highway	
13	AL65	A	A	R	A	A	A	A	A		03-Aug-22	DK+JL	Alaska Highway	
14	AL71	L	A	A	A	A	A	A	R		03-Aug-22	DK+JL	Alaska Highway	
15	AL73	R	A	A	A	A	A	H	H		03-Aug-22	DK+JL	Alaska Highway	
16	AL76	A	A	A	A	A	A	A	A		04-Aug-22	DK+JL	Alaska Highway	
17	AL77	R	R	A	A	A	A	A	A		05-Aug-22	DK+JL	Alaska Highway	
18	AL78	H	H	R	A	L	A	A	A		06-Aug-22	DK+JL	Alaska Highway	
19	AL85	H	L	A	A	H	A	A	A		07-Aug-22	DK+JL	Alaska Highway	
20	AL98	H	L	A	A	H	A	A	A		08-Aug-22	DK+JL	Alaska Highway	
21	AL99	C	A	A	A	L	R	A	A		09-Aug-22	DK+JL	Alaska Highway	
22	AL103	L	R	A	A	A	A	A	A		10-Aug-22	DK+JL	Alaska Highway	
23	AL106	H	H	A	A	H	A	A	A		11-Aug-22	DK+JL	Alaska Highway	
24	73	C	L	A	R	C	A	L	L	Butter and Eggs- R	11-Aug-22	DK+TT	Alaska Highway	
25	319	L	A	A	A	A	A	H	A		08-Aug-22	JL+AT	Robert Campbell	
26	321	L	A	A	A	A	A	H	A		08-Aug-22	JL+AT	Robert Campbell	
27	481	A	R	A	A	L	A	H	L	Scentless Chamomile - Low	08-Aug-22	JL+AT	Robert Campbell	
28	107	L	L	A	A	R	A	H	R		08-Aug-22	JL+AT	Robert Campbell	
29	482	R	L	A	A	A	A	H	A		08-Aug-22	JL+AT	Robert Campbell	
30	484	A	A	A	A	A	A	R	A		08-Aug-22	JL+AT	Robert Campbell	
31	Old pullout	A	A	A	A	A	A	A	A		08-Aug-22	JL+AT	Robert Campbell	All native
32	457	L	R	A	A	A	A	A	A		11-Aug-22	DK+TT	South Klondike	
33	449	C	A	A	A	A	A	A	A		12-Aug-22	DK+TT	South Klondike	
34	KH39	L	L	A	A	L	A	A	A		05-Aug-22	JL+AT	Klondike Highway	
35	KH40	A	R	A	A	L	A	A	A		05-Aug-22	JL+AT	Klondike Highway	
36	KH41	A	L	A	A	C	A	A	A		05-Aug-22	JL+AT	Klondike Highway	

37	KH44	A	A	A	L	A	A	A	A		05-Aug-22	JL+AT	Klondike Highway	
38	KH48	L	L	A	A	L	A	A	A		05-Aug-22	JL+AT	Klondike Highway	
39	KH57	H	R	A	A	L	A	A	A		05-Aug-22	JL+AT	Klondike Highway	
40	KH61	A	A	A	A	A	A	A	A		05-Aug-22	JL+AT	Klondike Highway	
41	KH65	A	L	A	A	A	A	L	A		05-Aug-22	JL+AT	Klondike Highway	Construction
42	KH24	A	A	A	A	R	A	A	A		05-Aug-22	JL+AT	Klondike Highway	
43	KH31	L	A	A	A	L	A	A	A		05-Aug-22	JL+AT	Klondike Highway	
48	HR4	R	R	A	A	R	A	H	H		03-Aug-22	DK+JL	Haines Road	
49	HR6	R	A	A	A	A	A	L	R		03-Aug-22	DK+JL	Haines Road	
50	HR9	R	L	A	A	R	A	R	A	Lucern-R	03-Aug-22	DK+JL	Haines Road	
51	HR11	A	L	A	A	A	A	C	C		03-Aug-22	DK+JL	Haines Road	
52	HR14	A	R	A	A	A	A	H	H		03-Aug-22	DK+JL	Haines Road	
53	HR18	A	A	A	A	A	A	A	A		03-Aug-22	DK+JL	Haines Road	
54	HR21	A	A	A	A	A	A	C	A		03-Aug-22	DK+JL	Haines Road	
55	HR25	A	A	A	A	A	A	A	A		03-Aug-22	DK+JL	Haines Road	
56	HR28	A	A	A	A	A	A	A	A		03-Aug-22	DK+JL	Haines Road	
57	HR30	A	A	A	A	A	A	A	A		03-Aug-22	DK+JL	Haines Road	
58	RC1	A	A	A	A	L	A	A	A		08-Aug-22	JL+AT	Robert Campbell	
59	RC8	A	A	A	A	A	A	A	A		08-Aug-22	JL+AT	Robert Campbell	All native
60	RC11	A	A	A	A	H	A	A	A		08-Aug-22	JL+AT	Robert Campbell	
61	RC26	A	A	A	A	L	A	R	A		08-Aug-22	JL+AT	Robert Campbell	
62	RC31	A	A	A	A	L	A	A	A		08-Aug-22	JL+AT	Robert Campbell	
63	RC34	A	A	A	A	A	A	A	A		08-Aug-22	JL+AT	Robert Campbell	All native
64	RC38	A	R	A	R	A	A	A	A		08-Aug-22	JL+AT	Robert Campbell	
65	RC40	A	A	A	A	R	A	H	A		08-Aug-22	JL+AT	Robert Campbell	
66	RC43	A	A	A	L	L	A	C	A		08-Aug-22	JL+AT	Robert Campbell	
67	RC53	A	A	A	A	A	A	A	A		08-Aug-22	JL+AT	Robert Campbell	All native
68	270	L	A	A	A	A	A	A	A		08-Aug-22	JL+AT	Robert Campbell	
69	323	A	R	A	A	R	A	H	A		08-Aug-22	JL+AT	Robert Campbell	
70	324	A	R	A	A	R	A	C	A		08-Aug-22	JL+AT	Robert Campbell	
71	326	A	A	A	A	A	A	A	A		08-Aug-22	JL+AT	Robert Campbell	All native
72	347	A	R	A	A	A	A	L	L		08-Aug-22	JL+AT	Robert Campbell	
73	348	L	A	A	A	A	A	H	A		08-Aug-22	JL+AT	Robert Campbell	
74	"Old pit and cabin"	A	A	A	A	A	A	A	A		08-Aug-22	JL+AT	Robert Campbell	All native
75	408	A	A	A	A	A	A	A	A		08-Aug-22	JL+AT	Robert Campbell	All native
44	TW1	L	A	A	A	A	A	L	A		04-Aug-22	JL+AT	Top of the World	
45	TW4	A	A	A	A	A	A	H	R		04-Aug-22	JL+AT	Top of the World	
46	TW5	A	A	A	A	A	A	H	A		04-Aug-22	JL+AT	Top of the World	
47	TW9	R	R	A	A	A	A	A	A		04-Aug-22	JL+AT	Top of the World	
	DH003	A	A	A	A	A	A	A	A		05-Aug-22	JL+AT	Dempster Highway	NEW PULLOUT-All Native
	DH004	A	L	A	A	A	A	A	A		05-Aug-22	JL+AT	Dempster Highway	NEW PULLOUT-
	DH11	A	A	A	A	A	A	H	A		05-Aug-22	JL+AT	Dempster Highway	NEW PULLOUT-Called DH11 PO in field pts collected
	ARBL001	R	L	A	A	A	A	A	A		17-Aug-22	SM+RS	Atlin Road	NEW PULLOUT
	ARPO001	L	L	A	A	A	A	L	A		17-Aug-22	SM+RS	Atlin Road	NEW PULLOUT

REST AREAS

	Survey waypoint	Smooth Brome	Narrow leaf Hawksbeard	Yellow Lucerne	Alfalfa	W. Sweet Clover	Y. Sweet Closer	Alsik Clover	Red Clover	OTHER SPECIES	Date	Observer	Highway/Road	Comments
	99	L	L	A	A	L	A	L	A		09-Aug-22	JL+AT	Robert Campbell Highway	
	100	C	C	A	R	C	A	A	A		11-Aug-22	DK+TT	Alaska Highway	New rest station- Marsh Lake Dam
	104	H	L	A	A	L	R	R	H		09-Aug-22	JL+AT	Robert Campbell Highway	
	120	L	L	A	A	A	A	L	A		09-Aug-22	JL+AT	Robert Campbell Highway	
	137	L	A	A	A	A	A	L	A		09-Aug-22	JL+AT	Robert Campbell Highway	
	147	H	L	A	A	A	A	H	R		09-Aug-22	JL+AT	Robert Campbell Highway	
	152	A	R	A	A	A	A	L	A		09-Aug-22	JL+AT	Robert Campbell Highway	
	169	R	R	A	A	A	A	L	A		09-Aug-22	JL+AT	Robert Campbell Highway	
	176	L	R	A	A	A	A	R	A		09-Aug-22	JL+AT	Robert Campbell Highway	
	77	C		A	A	A	A	C	A		11-Aug-22	DK+TT	Alaska Highway	

	AL37	R	R	A	A	A	A	A	A		03-Aug-22	DK+JL	Alaska Highway	
	AL55	A	A	A	A	A	A	A	A		03-Aug-22	DK+JL	Alaska Highway	
	RS 1	L	A	A	A	A	A	A	A		missing	missing	missing	
	KH13										05-Aug-22	JL+AT	Klondike Highway	Construction- not accessible
	KH20	R	L	A	A	L	A	R	A		05-Aug-22	JL+AT	Klondike Highway	
	KH27	A	A	A	A	L	A	H	A		05-Aug-22	JL+AT	Klondike Highway	
	KH4	A	A	A	A	L	A	A	A		05-Aug-22	JL+AT	Klondike Highway	
	KH49	L	L	A	A	R	A	A	A		05-Aug-22	JL+AT	Klondike Highway	
	KH51	A	R	A	A	R	A	R	A		05-Aug-22	JL+AT	Klondike Highway	
	KH66	H	L	A	A	H	A	L	A		05-Aug-22	JL+AT	Klondike Highway	
	235A	A	A	A	A	L	A	H	L		09-Aug-22	JL+AT	Robert Campbell Highway	
	RC44	A	A	A	A	R	A	A	A		09-Aug-22	JL+AT	Robert Campbell Highway	
	RC5	A	A	A	A	L	A	A	A		09-Aug-22	JL+AT	Robert Campbell Highway	
	RC55	A	R	A	A	A	A	A	A		09-Aug-22	JL+AT	Robert Campbell Highway	
	TW8	A	A	A	A	A	A	A	A		04-Aug-22	JL+AT	Top of the World Highway	Native species only
	ST01	A	A	A	A	A	A	L	A		05-Aug-22	DK+SM	Silver Trail	
	ST02	A	A	A	A	L	A	L	A		05-Aug-22	DK+SM	Silver Trail	
	ST05	A	A	A	A	A	A	R	A		05-Aug-22	DK+SM	Silver Trail	
	ST13	L	C	A	A	H	A	A	A		05-Aug-22	DK+SM	Silver Trail	
	ST15	L	L	A	A	L	A	A	A		05-Aug-22	DK+SM	Silver Trail	
	ARRA001	A	L	A	A	A	A	R	A		17-Aug-22	SM+RS	Atlin Road	
	ARRA002	A	R	A	A	A	A	A	A		18-Aug-22	SM+RS	Atlin Road	

WATERCOURSES

				Invasive Species Presence in Riparian Zone								
WP	**Watercourse Name**	**Invasive on Road Approach (Y/N)**	**Smooth Brome**	**Narrow leaf Hawksbeard**	**Yellow Lucerne**	**Alfalfa**	**W. Sweet Clover**	**Y. Sweet Closer**	**Alsik Clover**	**Red Clover**	**Other**
79	M'Clintock River	Y	L	L	A	A	A	A	A	A	
80	Seaforth Creek	Y	A	A	A	A	A	A	L	A	
88	Teslin River	Y	A	A	A	A	A	A	A	A	
94	Deadman Creek	Y	A	A	A	A	A	A	A	A	
100	Ten Mile Creek	Y	A	A	A	A	A	A	L	A	
103	Fox Creek	Y	A	A	A	A	A	A	A	A	
112	No name	Y	A	A	A	A	A	A	A	A	
116	Morley River	N	A	A	A	A	A	A	L	A	
121	Lower Hazel Creek	Y	A	A	A	A	A	A	L	A	
122	No name (Hazel Creek 2)	Y	A	A	A	A	A	A	A	A	
129	Smart River	Y	A	A	A	A	A	A	A	A	
134	Logjam Creek	Y	A	A	A	A	A	A	A	A	
140	No name	Y	A	A	A	A	A	A	A	A	
143	Partridge Creek	Y	A	A	A	A	A	A	A	A	
145	Seagull Creek	Y	A	A	A	A	A	A	A	A	
149	Swift River	Y	A	A	A	A	A	A	L	L	
153	Upper Rancheria River	Y	A	A	A	A	A	A	A	A	
156	Porcupine Creek	Y	A	A	A	A	A	A	A	A	
160	Canyon Creek	N	A	A	A	A	A	A	A	A	
165	George's Gorge	Y	A	A	A	A	A	A	A	A	
171	No name	Y	A	A	A	A	A	A	A	A	
175	Lower Rancheria River	Y	A	A	A	A	A	A	A	A	
185	Big Creek	Y	A	A	A	A	A	A	A	A	
187	Little Rancheria River	Y	A	A	A	A	A	A	A	A	
197	No name (Albert Creek)	Y	A	A	A	A	A	A	A	A	
205	No name	Y	A	A	A	A	A	A	A	A	
215	No name	Y	A	A	A	A	A	A	A	A	
222	Frances River	Y	A	A	A	A	A	A	A	A	
226	No name	Y	A	A	A	A	A	A	A	A	

253	Money Creek	Y	A	A	A	A	A	A	A	A		
277	Big Campbell Creek	N	A	A	A	A	A	A	A	A		
285	Hoole Creek	N	A	A	A	A	A	A	A	A		
294	Ketza River	Y	A	A	A	A	A	A	A	A		
315	Judas Creek	Y	A	A	A	A	A	A	A	A		
320	Boat launch area near Johnson's Crossing	Y	A	A	A	A	A	A	A	A		
337	Murphy Creek	Y	A	A	A	A	A	A	A	A		
355	Cottonwood Creek	Y	A	A	A	A	A	A	A	A		
371	No name	N	A	A	A	A	A	A	A	A		
462	No name	Y	A	A	A	A	A	A	A	A		
464	No name	Y	A	A	A	A	A	A	A	A		
AL10	Dry Creek No. 1	N	A	A	A	A	A	A	A	A		
AL100	Stoney Creek	Y	A	A	A	A	A	A	A	A		
AL101	Annie Ned Creek	Y	A	A	A	A	A	A	A	A		
AL104	Takhini River	Y	A	A	A	A	A	A	A	A		
AL105	No name	Y	L	A	A	L	L	A	L	A		
AL107	No name	Y	A	A	A	A	A	A	A	A		
AL108	No name	Y	L	A	A	A	L	A	L	A		
AL109	No name	Y	A	A	A	A	A	A	A	A		
AL11	No name	Y	A	A	A	A	A	A	A	A		
AL12	Sanpete Creek	Y	A	A	A	A	A	A	A	A		
AL14	No name	N	A	A	A	A	A	A	A	A		
AL15	No name	Y	L	A	A	A	L	A	A	A		
AL17	White River	Y	A	A	A	A	A	A	A	A		
AL18	Koidern River No. 2	Y	A	A	A	A	A	A	A	A		
AL20	No name	Y	A	A	A	A	A	A	A	A		
AL21	No name	Y	A	A	A	A	A	A	A	A		
AL22	No name	Y	A	A	A	A	A	A	A	A		
AL24	No name	Y	A	A	A	A	A	A	A	A		
AL25	No name	Y	A	A	A	A	A	A	A	A		
AL27	No name	Y	A	A	A	A	A	A	A	A		
AL28	Edith Creek	Y	L	A	A	A	A	A	A	A		
AL29	Donjek River	Y	A	A	A	A	A	A	A	A		
AL32	No name	Y	A	A	A	A	A	A	A	A		
AL33	Swede Johnson Creek	Y	A	A	A	A	A	A	A	A		
AL35	Glacier Creek	N	A	A	A	A	A	A	A	A		
AL36	Quill Creek	N	A	A	A	A	A	A	A	A		
AL38	Burwash Creek	N	A	A	A	A	A	A	A	A		
AL39	Duke River	Y	A	A	A	A	A	A	A	A		
AL4	Beaver Creek	N	A	A	A	A	A	A	A	A		
AL41	Grace Chambers Creek	Y	A	A	A	A	A	A	A	A		
AL43	Louis Creek	N	A	A	A	A	A	A	A	A		
AL44	Cluet Creek	Y	A	A	A	A	A	A	A	A		
AL46	Bock's Creek	N	A	A	A	A	A	A	A	A		
AL47	Mines Creek	Y	A	A	A	A	A	A	A	A		
AL49	Congdon Creek	Y	A	A	A	A	A	A	A	A		
AL5	Enger Creek	Y	A	A	A	A	A	A	A	A		
AL51	Williscroft Creek	N	A	A	A	A	A	A	A	A		
AL52	No name	N	A	A	A	A	A	A	A	A		
AL56	Slims River	N	A	A	A	A	A	A	A	A		
AL58	No name	N	A	A	A	A	A	A	A	A		
AL59	No name	N	A	A	A	A	A	A	A	A		
AL60	No name	N	A	A	A	A	A	A	A	A		
AL61	No name	N	A	A	A	A	A	A	A	A		
AL62	Silver Creek	N	A	A	A	A	A	A	A	A		
AL64	Christmas Creek	N	A	A	A	A	A	A	A	A		
AL66	No name	N	A	A	A	A	A	A	A	A		
AL67	No name	N	A	A	A	A	A	A	A	A		
AL68	No name	N	A	A	A	A	A	A	A	A		

AL69	Sulphur Creek	N		A	A	A	A	A	A	A	A	
AL7	No name	Y		A	A	A	A	A	A	A	A	
AL70	Jarvis River	Y		A	A	A	A	A	A	A	A	
AL72	No name	Y		A	A	A	A	A	A	A	A	
AL75	Bear Creek	Y		A	A	A	A	A	A	A	A	
AL79	Marshall Creek	Y		A	A	A	A	A	A	A	A	
AL83	No name	Y		A	A	A	A	A	A	A	A	
AL84	Aishihik River	Y		A	A	A	A	A	A	A	A	
AL86	No name	Y		A	A	A	A	A	A	A	A	
AL87	No name	Y		A	A	A	A	A	A	A	A	
AL88	Cracker Creek	Y		A	A	A	A	A	A	A	A	
AL90	No name	N		A	A	A	A	A	A	A	A	
AL91	No name	N		A	A	A	A	A	A	A	A	
AL92	No name	Y		A	A	A	A	A	A	A	A	
AL93	No name	N		A	A	A	A	A	A	A	A	
AL94	No name	Y		A	A	A	A	A	A	A	A	
AL95	No name	Y		A	A	A	A	A	A	A	A	
AL97	Mendenhall River	Y		A	A	A	A	A	A	A	A	
HR1	Dezadeash River	Y		A	A	A	A	A	A	A	A	
HR10	Kathleen River	Y		A	A	A	A	A	A	A	A	
HR12	No name	Y		A	A	A	A	A	A	A	A	
HR13	No name	Y		A	L	A	A	A	A	A	A	
HR15	No name	Y		A	L	A	A	A	A	A	A	
HR17	No name	Y		A	A	A	A	A	A	A	A	
HR19	No name	Y		A	A	A	A	A	A	A	A	
HR2	Dezadeash River channel	Y		A	A	A	A	A	A	A	A	
HR20	Flying Squirrel Creek	Y		A	A	A	A	A	A	A	A	
HR22	Gribbles Gulch	Y		A	A	A	A	A	A	A	A	
HR23	Klukshu	Y		A	A	A	A	A	A	A	A	
HR24	Vand Creek	Y		A	A	A	A	A	A	A	A	
HR27	Motherall Creek	N		A	A	A	A	A	A	A	A	
HR29	Takhanne River	Y		A	A	A	A	A	A	A	A	
HR3	No name	Y		A	A	A	A	A	A	L	A	
HR5	No name	Y		A	A	A	A	A	A	A	A	
HR7	Quill Creek	Y		A	A	A	A	A	A	A	A	
KH1	No name	Y		A	A	A	A	A	A	A	A	
KH11	No name	Y		A	A	A	A	A	A	A	A	
KH12	Willow Creek	Y		A	A	A	A	A	A	A	A	
KH15	Meadow Creek	Y		L	A	A	A	A	A	A	A	
KH16	No name	Y		L	A	A	A	A	A	A	A	
KH17	No name	Y		L	A	A	A	A	A	A	A	
KH18	No name	Y		A	A	A	A	L	A	A	A	
KH19	Stone Boat Swamp	Y		L	A	A	A	A	A	A	A	
KH21	No name	Y		A	A	A	A	A	A	A	A	
KH22	Flat Creek	Y		A	A	A	A	A	A	A	A	
KH23	All Gold Creek	Y		A	A	A	A	A	A	A	A	
KH26	Too Much Gold Creek	Y		A	A	A	A	A	A	A	A	
KH28	Goring Creek	Y		A	A	A	A	A	A	A	A	
KH3	Dry Creek	Y		A	A	A	A	A	A	A	A	
KH33	Fox Creek	Y		A	L	A	L	L	A	A	A	
KH35	No name	Y		A	A	A	A	A	A	A	A	
KH37	No name	N		A	A	A	A	A	A	A	A	
KH38	No name	Y		A	A	A	A	A	A	A	A	
KH43	No name	Y		A	A	A	A	A	A	A	A	
KH46	No name	N		A	A	A	A	A	A	A	A	
KH47	No name	Y		A	A	A	A	L	L	A	A	
KH5	Moose Creek	N		A	A	A	A	A	A	A	A	
KH50	Tatchun Creek	Y		A	A	A	A	A	A	A	A	
KH52	McGregor Creek	Y		A	A	A	A	A	A	A	A	

KH53	McCabe Creek	Y	A	A	A	A	A	A	A	A		
KH55	No name	N	A	A	A	A	A	A	A	A		
KH58	No name	Y	A	A	A	A	A	A	A	A		
KH59	Willow Creek	Y	L	A	A	A	L	A	L	A		
KH60	No name	Y	A	A	A	A	A	A	A	A		
KH63	No name	Y	A	A	A	A	A	A	A	A		
KH64	Crooked Creek	N	A	A	A	A	A	A	A	A		
KH67	Stewart River	Y	A	A	A	A	A	A	A	A		
KH68	Hunker Creek	Y	A	A	A	A	A	A	A	A		
KH69	Bear Creek	Y	A	A	A	A	A	A	A	A		
KH7	McQuesten River	Y	A	A	A	A	A	A	A	A		
KH8	Clear Creek	Y	A	A	A	A	A	A	A	A		
RC10	No name	Y	A	A	A	A	A	A	A	A		
RC13	No name	Y	A	A	A	A	A	A	A	A		
RC14	No name	Y	A	A	A	A	A	A	A	A		
RC15	No name	Y	A	A	A	A	A	A	A	A		
RC17	No name	Y	A	A	A	A	A	A	A	A		
RC18	No name	N	A	A	A	A	A	A	A	A		
RC19	Bearfeed Creek	Y	A	A	A	A	A	A	A	A		
RC21	No name	Y	A	A	A	A	A	A	A	A		
RC22	No name	Y	A	A	A	A	A	A	A	A		
RC24	No name	Y	A	A	A	A	A	A	A	A		
RC25	No name	N	A	A	A	A	A	A	A	A		
RC27	Drury Creek	Y	A	A	A	A	A	A	A	A		
RC30	No name	Y	A	A	A	A	A	A	A	A		
RC32	No name	Y	A	A	A	A	A	A	A	A		
RC33	No name	Y	A	A	A	A	A	A	A	A		
RC37	No name	Y	A	A	A	A	A	A	A	A		
RC39	No name	N	A	A	A	A	A	A	A	A		
RC42	No name	N	A	A	A	A	A	A	A	A		
RC45	Pelly River	Y	A	A	A	A	L	A	A	A		
RC46	No name	Y	A	L	A	A	A	A	A	A		
RC47	Buttle Creek	Y	A	A	A	A	A	A	A	A		
RC49	No name	Y	A	A	A	A	A	A	A	A		
RC51	No name	N	A	A	A	A	A	A	A	A		
RC52	No name	Y	A	A	A	A	A	A	A	A		
RC54	Lapie River	Y	A	A	A	A	A	A	A	A		
RC7	No name	Y	A	A	A	A	A	A	A	A		
RC9	No name	N	A	A	A	A	A	A	A	A		
ST03	Mayo River	Y	A	A	A	A	A	A	A	A		
ST04	Crystal Creek	Y	A	A	A	A	A	A	A	A		
ST06	No name	Y	A	A	A	A	A	A	A	A		
ST07	No name	Y	A	A	A	A	A	A	A	A		
ST12	Mayo River	Y	A	A	A	A	A	A	A	A		
ST16	No name	Y	A	A	A	A	A	A	A	A		
ST18	No name	Y	A	A	A	A	A	A	A	A		
DH02	Scoutcar Creek	N	A	A	A	A	A	A	A	A		
DH05	no name	N	A	A	A	A	A	A	A	A		
DH06	no name	N	A	A	A	A	A	A	A	A		
DH07	no name	N	A	A	A	A	A	A	A	A		
DH08	Benson Creek	N	A	A	A	A	A	A	A	A		
DH09	Glacier Creek	N	A	A	A	A	A	A	A	A		
DH15	Klondike River	N	A	A	A	A	A	A	A	A		
TR001	Tagish River	Y	L	A	A	A	A	A	A	A		
ARWC001	no name	Y	A	A	A	A	A	A	A	A		
ARWC002	Haunka Creek	Y	A	A	A	A	A	A	A	A		
ARWC003	Snafu Creek	Y	A	A	A	A	A	A	A	A		
ARWC004	Tarfu Creek	Y	A	A	A	A	A	A	A	A		
ARWC005	Indian River	Y	A	A	A	A	A	A	A	A		

ARWC006	4th of July Creek	Y		A	A	A	A	A	A	L	A		

Appendix D: Kruskal-Wallis Statistical Output

p-values - Kruskal-Wallis test

UPDATED

Highway	SMOOTH_BROME Value	NARROW_LEAF_HA WKSBEARD Value	ALSIK_CLOVER Value	RED_CLOVER Value	WHITE_SWEET_CLOVER Value	YELLOW_SWEET_CLOVER Value	ALFALFA Value	YELLOW_LUCERNE Value
Haines Road	0.5047	0.3548	0.5424	0.1561	0.2771	NA	0.916	0.6592
Top of the world	1.95E-05	0.8961	0.0007471	0.02469	0.7949	NA	NA	NA
Alaska	0.162	3.74E-10	5.10E-06	5.88E-09	4.89E-05	0.8913	0.9463	0.0690
Klondike Highway North	9.57E-06	9.31E-06	3.48E-06	0.3163	1.02E-04	0.7616	0.1295	0.4496
Robert Campbell Highway	1.23E-13	0.3419	0.003289	0.008872	5.01E-05	0.8377	0.1887	0.9479
South Canol Road	0.06669	0.1021	0.0007164	0.04169	0.2044	0.858	NA	NA
Tagish Road	0.09452	0.001102	0.02347	1	0.004377	0.1281	0.2943	NA
Silver Trail	5.05E-05	0.002162	0.006432	0.08651	0.6922	0.5361	NA	0.3274
South Klondike Highway	0.8666	0.2024	0.0009578	0.09189	4.50E-05	0.2538	0.2542	0.4292

Cells Higjhlighted in Red Have p-values less than 0.05