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**SITE C CLEAN ENERGY PROJECT
ANNUAL SUMMARY REPORT (2021)
HERITAGE INVESTIGATION PERMIT
2016-0235 and
SITE ALTERATION PERMIT
2019-0213**

**SITE C CLEAN ENERGY PROJECT ANNUAL SUMMARY REPORT
(2021) HERITAGE INVESTIGATION PERMIT 2016-0235 and
SITE ALTERATION PERMIT 2019-0213**

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March 31, 2022

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Ecofor is solely responsible for any errors evident in this report. The opinions and/or recommendations presented herein are ours, and do not necessarily reflect those held by the British Columbia Hydro and Power Authority or the Ministry of Forests, Lands and Natural Resource Operations, Archaeology Branch.

MANAGEMENT SUMMARY

This report is a summary of the results of archaeological investigations, in the form of systematic data recovery and archaeological impact assessment conducted under British Columbia *Heritage Conservation Act (HCA)* Section 12.2 Investigation Permit 2016-0235. This report also summarizes the results of archaeological site alterations in the form of post-ground disturbance inspection and archaeological monitoring conducted under British Columbia *Heritage Conservation Act (HCA)* Section 12.4 (formerly 12) Alteration Permit 2019-0213. In addition, Chance Find response is included. All work described in this report was conducted by Ecofor Consulting Ltd. at the request of the British Columbia Hydro and Power Authority (BC Hydro) for the Site C Clean Energy Project (the Project) during the summer and fall of 2021.

The archaeological investigation of one archaeological site through systematic data recovery; HbRg-5 within the Project's proposed reservoir, was conducted at the request of BC Hydro.

BC Hydro, in consultation with the Archaeology Branch of British Columbia, and based on the results of previous inventory work (Golder 2019b; Stantec 2020; Stantec 2021, Stantec 2022), determined which archaeological sites required additional investigation in the form of systematic data recovery (SDR) by utilizing a statistical representative draw based on predetermined site classes and following the requirements set out by the British Columbia Archaeological Impact Assessment Guidelines (Archaeology Branch, 1998). The one archaeological site investigated represents a predetermined site class (i.e. Class I, IIa, IIb, and IIc). HbRg-5 is recognized as a Class I archaeological site as it exhibits a high to moderate significant site. In previous years the site received 72m² of excavation. In total, 3 evaluative units (EUs), equalling 3m² of excavation, were conducted at the one investigated archaeological site in 2021.

The results of previous work and the 2021 SDR field work conducted at this site have provided sufficient information concerning the density, stratigraphy, integrity, and significance of the site. No further archaeological work is recommended for the archaeological site investigated by the Ecofor team during the 2021 field season. Post-ground disturbance inspection or archaeological monitoring may occur during or after site altering construction activities in conjunction with the *Heritage Conservation Act* Section 12.2 (Alteration) Permit 2019-0213.

In addition to SDR, an amendment to Permit 2016-0235 in 2019, allowed for the undertaking of archaeological impact assessment (AIA). At the request of BC Hydro, Ecofor conducted an AIA of ten developments within areas to be

impacted by the Project that were not previously assessed. AIAs were conducted to locate and determine the significance of archaeological resources within the assessment areas. A total of 70 shovel tests were placed in areas of archaeological potential either pre-determined by the potential model established for the Project and Project Activity Zone (PAZ) or placed judgmentally at the discretion of the Field Director. As a result of 2021 assessments, two new archaeological sites were identified, HaRk-84 and 2016-0235-21B, and eight previously identified archaeological sites HbRh-146, HbRi-33, HbRh-36, HbRh-37, HbRh-65, HbRh-124, HbRh-155, and HbRh-122 were revisited in preparation for development in proximity of site boundaries. Currently no further archaeological work is recommended for the assessment areas as proposed, including where the new sites were identified, as no impact to the site is planned.

Post-ground disturbance inspection (PGDI) was conducted by Ecofor at fourteen archaeological sites in 2021 that were to be altered for construction activities this year for the Project. Work was conducted under Site Alteration Permit 2019-0213. The fourteen sites include four in the Cache Creek area: HbRh-155, HbRh-36, HbRh-164, and HbRh-187; one in the Halfway River area: HbRi-33; six sites in the Farrell Creek area: HaRj-17, HaRj-26, HaRj-35, HaRj-40, HaRk-1, and HaRk-12; two sites in the Lynx Creek area: HaRk-5, and HaRk-48; and one in the Hudson's Hope area: HaRi-4. Alterations in the form of stripping was conducted in portions of the site to be impacted by the Project. Exposed ground surfaces and disturbed (i.e. stripped) soils in the form of windrows were inspected after ground disturbing activities within the site boundaries. Exposed ground surfaces within the site boundaries were inspected one final time following the removal of the windrows to designated archaeological stockpile areas. Concurrent monitoring was also conducted by an Ecofor crew during the ground disturbing activities at ten of the sites.

In 2021, five Chance Finds were reported by construction contractors to BC Hydro during construction activities for the Project and referred to Ecofor for assessment.

This document constitutes the annual report on archaeological investigations conducted under Permit 2016-0235 and archaeological site alteration inspections conducted under Permit 2019-0213 during the spring, summer, and fall of 2021. The results presented in this report are intended to collate and build upon information previously provided by the Golder, Wood, and Stantec teams in the Site C Clean Energy Project EIS Technical Appendix Volume 4, Appendix C: Heritage Resource Assessment Report (Golder and Amec 2012), the Site C Clean Energy Project Archaeology Program Year 4 (2013) Summary Report (Golder and Amec 2014), the Site C Clean Energy Project Archaeology Program Year 5 (2014) and Year 6 (2015) Summary Report (Golder and Amec 2016), the Site C Clean Energy Project – Archaeological Program Year 7 (2016) Summary Report (Golder and Amec 2017), the Site C Clean Energy Project – Archaeological Program Year 8 (2017) Summary Report (Golder and Amec

2018), the Site C Clean Energy Project – Archaeological Program Year 9 (2018) Summary Report (Golder and Wood 2019a), the Site C Clean Energy Project – Archaeological Program Year 9 (2019) Summary Report (Golder and Wood 2019b), Archaeological Program 2019 Annual Report - HCA Permit 2019-0218, Site C Clean Energy Project (Stantec 2020), and Archaeological Program 2019 Annual Report - HCA Permit 2019-0218, Site C Clean Energy Project (Stantec 2021).

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1.0 INTRODUCTION

1.1 General

At the request of BC Hydro, Ecofor Consulting Ltd. undertook archaeological investigations in the form of systematic data recovery (SDR) at one archaeological site and archaeological impact assessments (AIA) at ten areas not previously assessed within the Site C Clean Energy Project, Project Activity Zone (PAZ) under Permit 2016-0235. These site investigations and assessments are discussed in the body of this report. The archaeological sites and assessment areas are located within the proposed reservoir, the Highway 29 realignment, associated access roads, associated distribution line right-of-way (ROW), stockpile locations, off-site quarry related areas, and the transmission line ROW. Archaeological investigations and inspections occurred between May 2021 and November 2021. This report presents the results and final interpretation of these investigations. This report supersedes any preliminary results discussed in the associated interim reports where discrepancies may occur.

This report also describes the post-ground disturbance inspection (PGDI) conducted by Ecofor at the request of BC Hydro at fourteen archaeological sites that are to be altered for activities relating to the Project under Site Alteration Permit 2019-0213. These archaeological sites are located within the proposed reservoir, and along the Highway 29 realignment. Inspections occurred between January 2021 and December 2021. Additionally, archaeological results from Chance Finds reported under Permit 2019-0213 and further assessed under Permit 2016-0235 are presented in this report. Five palaeontological Chance Finds were reported by construction contractors to BC Hydro during construction activities for the Project and referred to Ecofor in 2021.

Section 1 introduces the scope and objectives of the project, the research questions driving the investigation, the physical environment of the Project area both past and present, the spatial boundaries of the project area, as well as summarizing Indigenous involvement during the 2021 field season. Section 2 outlines the methods used during the 2021 field season, both in the field and the lab. Section 3 describes the results of the SDR including post-field analysis and a discussion for each site excavated. Section 4 provides an interpretation and synthesis of survey, excavation, and analysis results for SDR work. Sections 5 describes and presents the results of the AIAs conducted by Ecofor. Section 6 presents the results from Post Ground Disturbance Inspections and site condition assessments. Section 7 presents the results from Chance Find Response within the PAZ. Section 8 presents a conditions assessment at one archaeological site.

Section 9 presents study limitations, directions regarding use of the report, errata, and a closure statement. References are provided in Section 10.

Five appendices are included at the end of the report. Appendix A contains the photos of sites excavated, key artifacts recovered, and site excavation maps. Appendix B contains stratigraphic profiles and plan drawings representative of each site subjected to SDR. Appendix C contains artifact catalogs for all artifacts recovered. Appendix D contains the AIA Mapping and Photodocumentation. Appendix E contains Post Ground Disturbance Inspections Mapping and Photodocumentation.

Maps were provided, and access was facilitated, by BC Hydro. The archaeological sites investigated through SDR under Heritage Investigation Permit 2016-0235 were selected based on a representative sample of sites assigned to classes according to an assessment of their complexity determined by site content, size and environmental setting as identified during the assessment phase (Golder 2019b, Stantec 2020, Stantec 2021, Stantec 2022). This was determined using criteria set forth in the British Columbia Archaeological Impact Assessment Guidelines, Appendices D and E (Archaeology Branch 1998) as well as through discussions with the Archaeology Branch. Further discussion may be found in Section 2 of this report.

1.2 Objectives and Scope of Work

The purpose of the investigation work under Permit 2016-0235 was to conduct systematic data recovery (SDR) at select archaeological sites within the Project Activity Zone (PAZ). This annual summary report primarily relates to the investigations undertaken at one site by the Ecofor team during the 2021 field season. The investigation approach undertaken was consistent with the Site C Heritage Resource Management Plan (BC Hydro 2018) and the methodologies employed in previous (#2014-0203) and concurrent (#2014-0274, #-2019-0218) *Heritage Conservation Act (HCA)* Section 12.2 (formerly 14) Heritage Permits to ensure consistent implementation.

In addition to SDR investigations, Amendment #4 to Permit 2016-0238 in 2019 allowed for the undertaking of archaeological impact assessment within the PAZ. The AIAs conducted were consistent with previous and concurrent Project HCA Section 12.2 Permits and the British Columbia Archaeological Impact Assessment Guidelines (BC Archaeology Branch 1998). A section is included in this report describing the methodology and results of the ten AIAs undertaken by Ecofor in 2021 under Permit 2016-0235.

The primary objectives of Permit 2016-0235 were to:

- 1) Mitigate Project-related impacts on archaeological resources by investigating a representative sample of archaeological sites in the Project area via SDR (as outlined in *HCA* Permit 2016-0235).
- 2) Assist in the elucidation of posed research questions via the results of the SDR investigations.
- 3) Complete the investigations prior to preparation for clearing and construction activities.
- 4) Identify, record, and evaluate archaeological sites located within the PAZ via AIA, assess potential impacts by the Project to these archaeological sites, and recommend appropriate impact management actions.
- 5) Conduct in field site assessments to determine the presence/absence of additional archaeological resources within the PAZ.

The following table summarizes the archaeological site SDR investigations during the 2021 field season. The table includes site location within the PAZ, the number of EUs excavated at each site, the site class and significance, as well as which component of the Project the site is located within.

Table 1: 2021 Systematic Data Recovery (Permit 2016-0235)

Borden Number	Scientific Significance	Site Class	Site Area (m ²)	Area Excavated in 2021 (m ²)	Percentage Excavated in 2021 (%)	Project Component	Archaeological Complex
HbRg-5	High	I	126,710	3*	0.0024	Eastern Reservoir	None

*72 m2 had been excavated in previous years.

In undertaking systematic data recovery of the one archaeological site summarized in the table, the following were explored:

- Methods for selecting the size, location and distribution of EUs with the goal of selecting EUs that are representative of the site content, will produce the most artifacts and faunal remains, and have the greatest potential to reveal features and activity areas within the sites.

Effective methods for:

- recovery of lithics, faunal and floral materials from features and living surfaces
- recording data during excavations
- analyzing artifacts and samples

Provide additional useful information, where applicable, on:

- local site formation processes
- the local cultural chronology, including possible associations among site complexes in the Peace River Valley
- the relationship between site concentrations in the complex
- evidence of features and living surfaces

1.2.1 Research Questions

The following questions have been developed to assist in improving the understanding of pertinent factors relating to the distribution, duration, and cultural context of archaeological resources within the PAZ, and Peace Region in general. While SDR undertaken during the 2021 field season by the Ecofor team may not answer all Project research questions, these questions will be used to guide the proposed investigation (HCA Permit 2016-0235).

What factors influence site size in the Project Activity Zone and how is this represented in the archaeological record?

In the Project Activity Zone, are sites in the valley larger than those on the plateau?

Do site distribution patterns in the Project Activity Zone reflect the pattern of traditional Indigenous use described in ethnographic accounts?

What is the relationship between these site complexes and biodiversity at these locations?

How are the few large sites formed and what do they represent?

What factors influence the distribution of large sites and site complexes?

Are sites more common on the north side of the Peace River Valley and why?

How does site content and distribution differ between the valley and the plateau?

What is the relationship between the many small sites found in the plateau wetlands?

Is it possible to identify a cultural historical sequence that is representative of the Peace River region rather than derivative of culture histories from surrounding regions?

Is it possible to identify temporal changes in the settlement pattern?

What is the role of fire in Indigenous occupation of the Project Activity Zone?

What is the relationship between climate change and Indigenous populations in the Project Activity Zone?

What cultural activities are represented by material remains from sites found in the Project Activity Zone?

What can the distribution of artifact types tell us about prehistoric site function and distribution?

Can the evidence from sites in the Project Activity Zone be used to identify features such as hearths and shelters?

Can any evidence of the burial remains reported by the Indigenous community be located in the Project Activity Zone?

Can bison pounds or kill sites be identified in the Project Activity Zone?

What is the best sampling strategy for small sites?

How does the presence and distribution of exotic materials, such as obsidian, relate to the cultural chronology of the study area?

1.3 Project Description

The Project is the third dam and hydroelectric generating station on the Peace River in northeast British Columbia. The dam will be located approximately 7 kilometres (km) southwest of Fort St. John, just downstream of the Moberly River. BC Hydro is building Site C as part of its overall program to invest in and renew the province's electricity system. Site C will provide up to 1,100 megawatts (MW) of capacity and produce about 5,100 gigawatt hours (GWh) of electricity each year (<https://www.sitecproject.com>). Please refer to the Site C Clean Energy Project Environmental Impact Statement Volume 1, Section 4 Project Description for full details (BC Hydro 2012).

1.3.1 Key Project Components

While the Project has many components, only Project components relevant to work undertaken during the 2021 field season are summarized below.

- An 83 km long reservoir that will be, on average, two to three times the current width of the Peace River
- The realignment of sections of Highway 29 and associated Highway 29 work zones and stockpile areas – Lynx Creek, Farrell Creek, Halfway River, and Cache Creek. Also included is the relocation of a section of the Distribution Line associated with Highway 29 realignment.
- Halfway River boat launch.
- Distribution line relocation ROW.

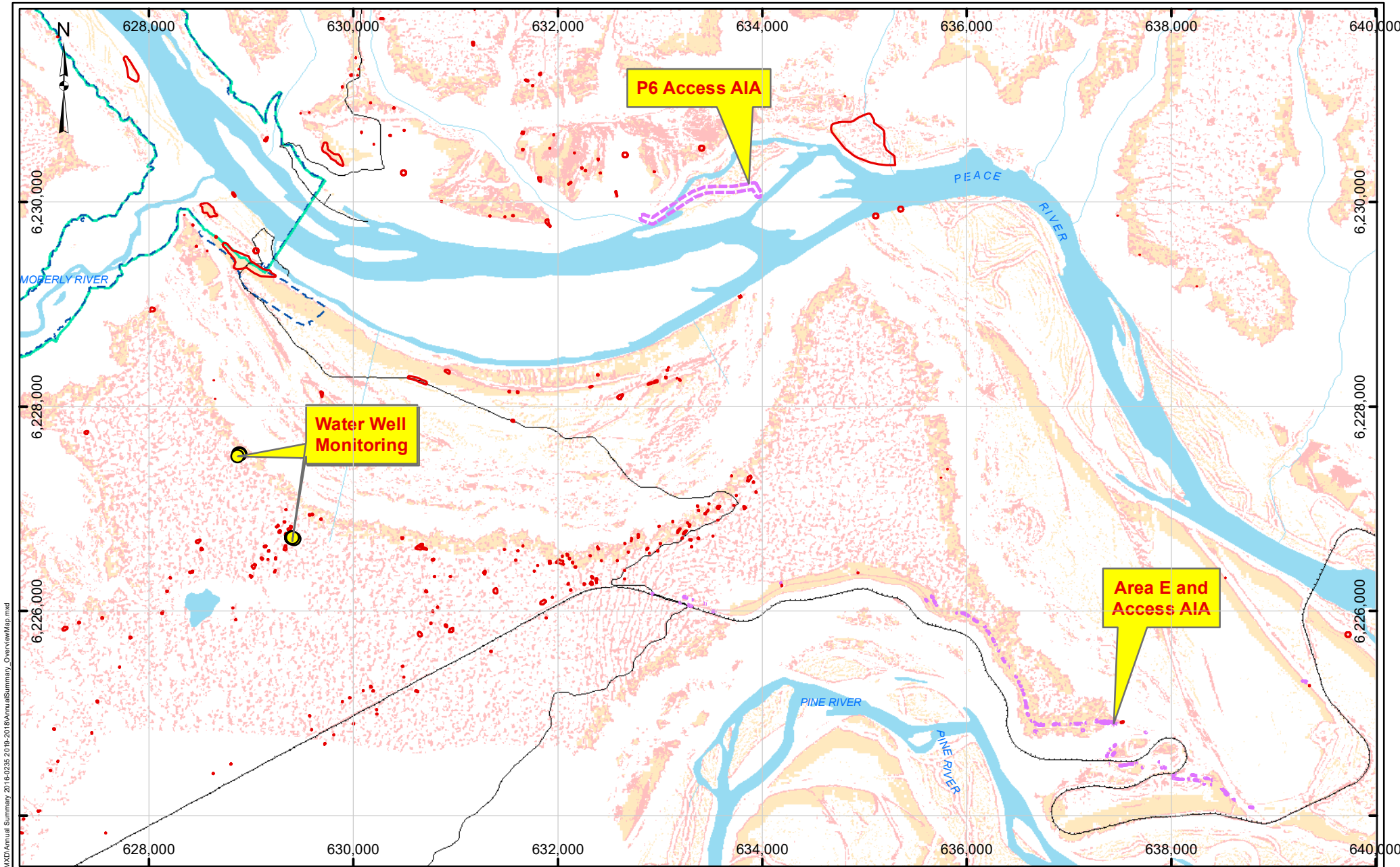
1.4 Spatial Boundaries

The project area zone (PAZ) is defined here as the area within which the Project components and activities will be located or will occur but does not include existing transportation infrastructure that will be used without modification to transport materials or personnel required for the Project. Therefore, the PAZ delineates areas where potential Project-related effects on archaeological sites are most likely to occur. Within the PAZ several Project components are proposed and have been the subject of previous archaeological work (Golder and Amec 2012, 2014, 2015, 2016, 2017, 2018, 2019, Stantec 2019, 2020, 2021 and Ecofor 2016, 2017, 2018, 2019 and 2020). This earlier work was aimed at identifying and characterizing new archaeological sites; and, where required, revisiting previously recorded archaeological sites.

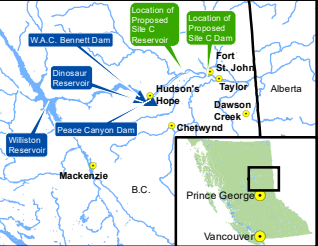
1.4.1 HCA Permit 2016-0235 Area

All sites and assessment areas investigated under this permit are located within the proposed Reservoir and associated access roads, Highway 29 realignment and Distribution Line relocation ROW, and Transmission Line ROW areas as shown in Figures 1 through 8. The one site investigated under Permit 2016-0235 during the 2021 field season, is located within the Eastern Reservoir, adjacent to Wilder Creek (see Figure 2).

Of the ten areas in which archaeological impact assessments were conducted under this permit, one is located within the Cache Creek area; one each on Parcel 240, Parcel 238.1 and Parcel 258, one at Area E Quarry/Access road, east of the Site C Dam, two at Halfway River/Highway 29 proposed Boat Launch area, one on the south bank within the Site C Footprint, one permitted Preliminary Field Reconnaissance which covers the entirety of Highway 29 for decommissioning and the tenth location on the Dam Site (P6 Road), see figures 1-8.



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- Map Notes:**
1. Datum: NAD83
 2. Projection: UTM Zone 10N
 3. Base Data: Province of B.C.
 4. Archaeological data provided by BC Hydro (2021, Sep 14)
 5. Proposed reservoir area generated from LIDAR data obtained from BC Hydro (October, 2016)
 6. 5-Year Beach Line obtained from BC Hydro (September, 2017)
 7. Proposed reservoir area generated from LIDAR data obtained from BC Hydro (October, 2016)
 8. Transportation realignment data provided by BC Hydro (July 20, 2019)

- Legend**
- City/District Municipality
 - Road
 - Highway
 - Highway Realignment
 - Railway
 - Well Location
 - Assessment Area
 - Archaeology Site
 - Proposed Reservoir (FSL 461.8m)
 - 5yr Beach Line
 - Right of Way
 - Archaeological Potential Model
 - Moderate
 - High

1:50,000

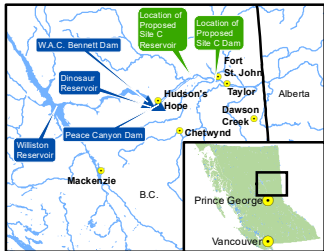
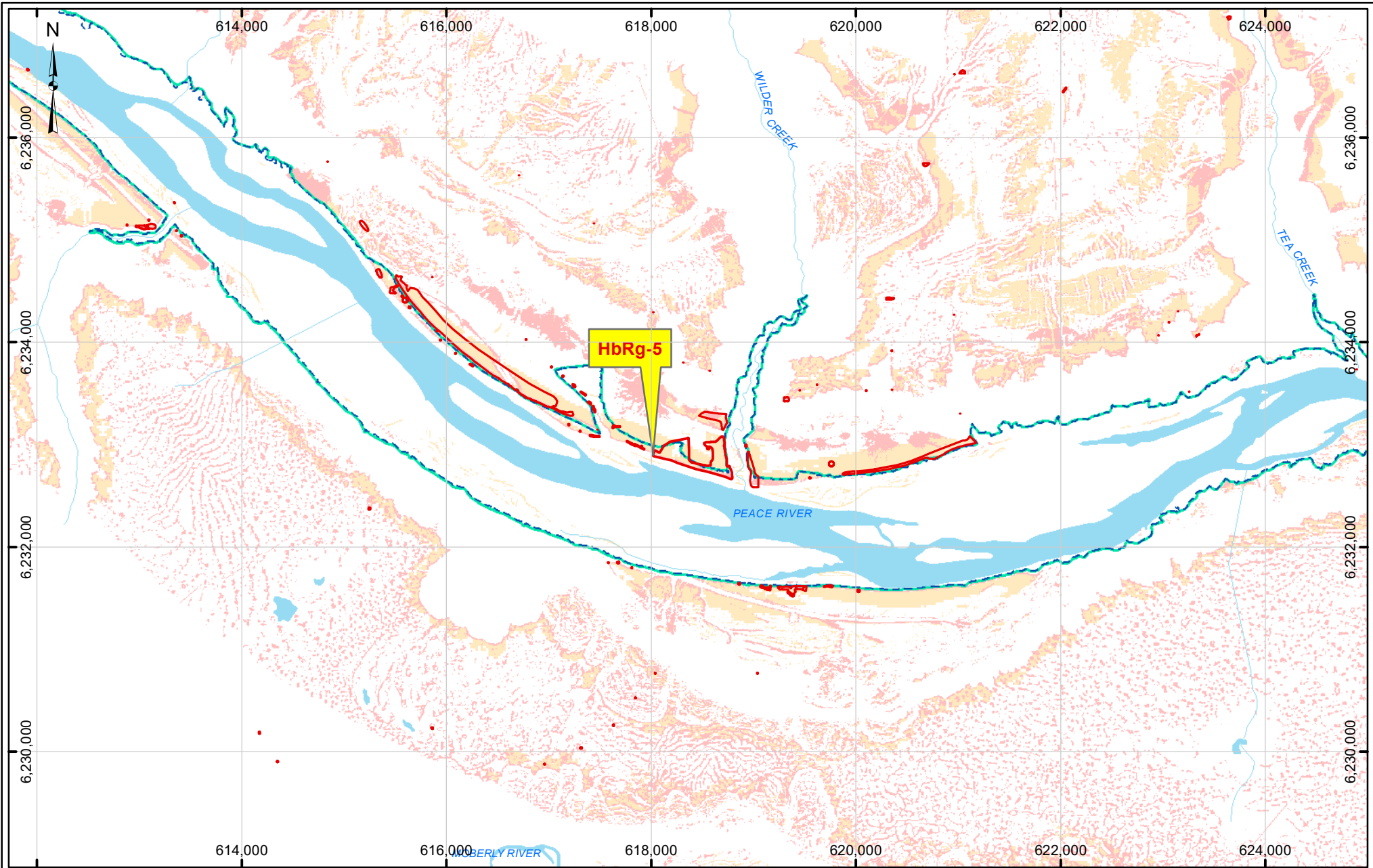
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Figure 1
BC Hydro Site C Clean Energy Project
2016-0235 and 2019-0218
Annual Summary Report (2021) Overview Mapping

DATE	2022-03-29	
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Construction of the Site C Clean Energy Project is subject to required regulatory and permitting approvals.

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Legend

- City/District Municipality
- Road
- Highway
- Highway Realignment
- Railway
- Assessment Area
- Archaeology Site
- Proposed Reservoir (FSL 461.8m)
- 5yr Beach Line
- Right of Way
- Moderate
- High

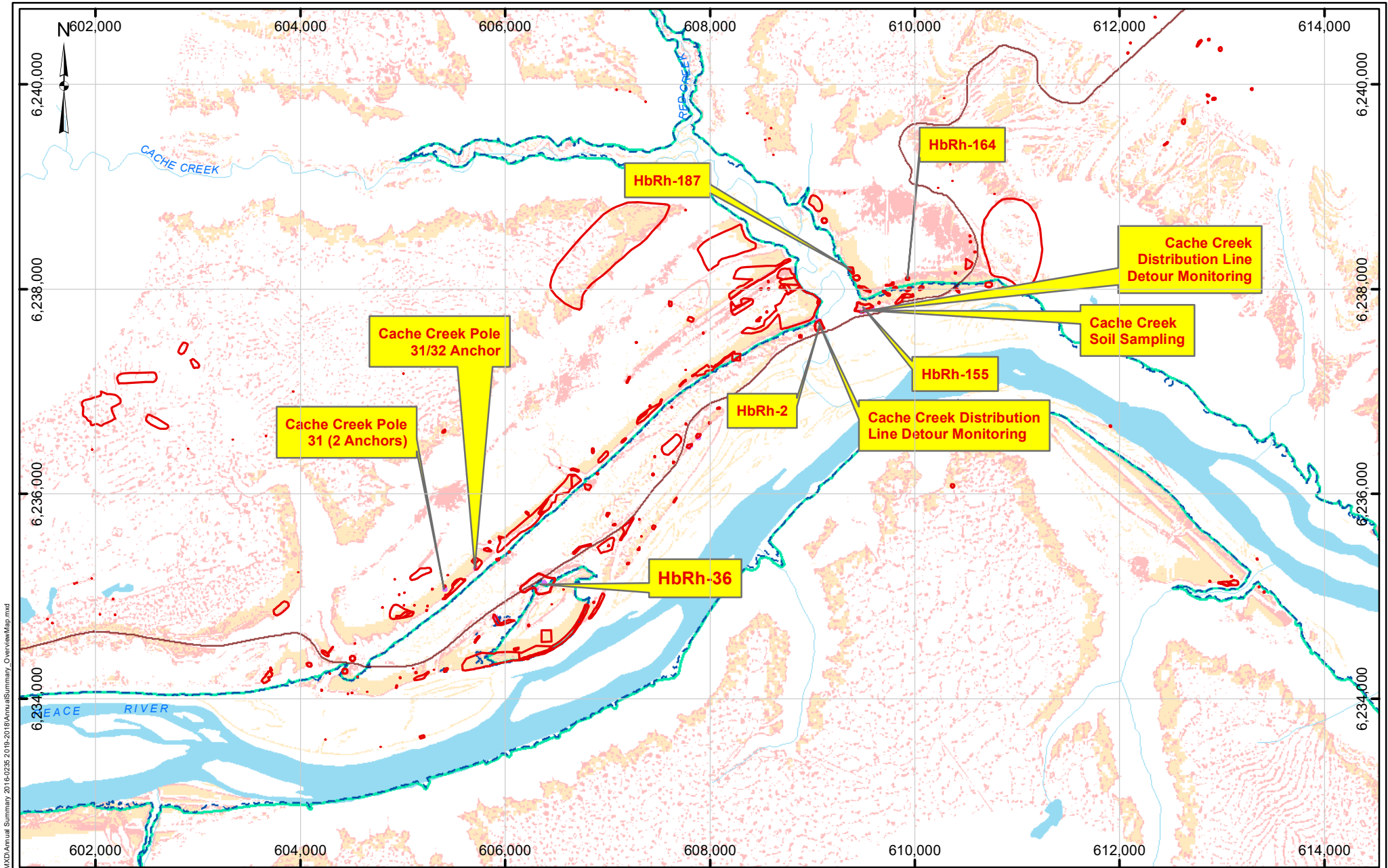
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Figure 2
BC Hydro Site C Clean Energy Project
2016-0235 and 2019-0218
Annual Summary Report (2021) Overview Mapping

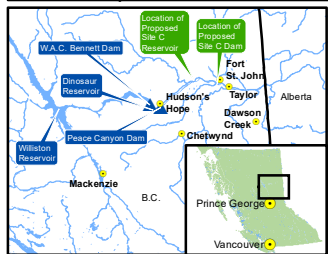
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This map is for information purposes only and accuracy is not guaranteed.

Construction of the Site C Clean Energy Project is subject to required regulatory and permitting approvals.



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Legend

- City/District Municipality
- Road
- Highway
- Highway Realignment
- Railway
- Assessment Area
- Archaeology Site
- Proposed Reservoir (FSL 461.8m)
- 5yr Beach Line
- Right of Way
- Archaeological Potential Model**
- Moderate
- High

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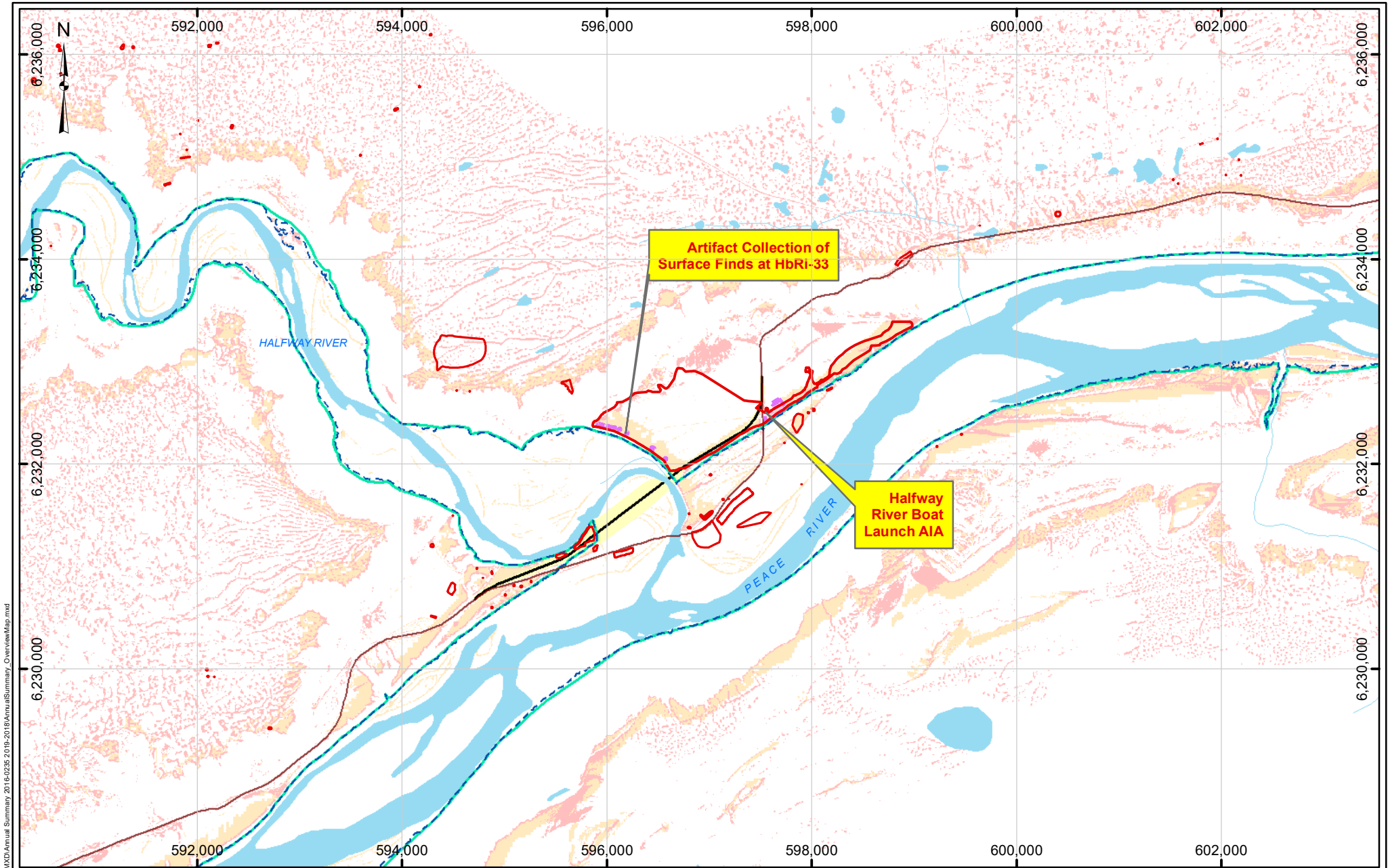
Figure 3
BC Hydro Site C Clean Energy Project
2016-0235 and 2019-0218
Annual Summary Report (2021) Overview Mapping

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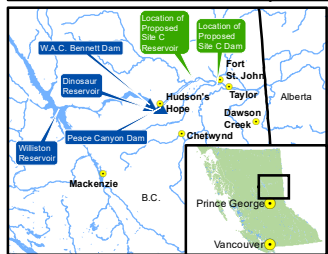


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- Map Notes:**
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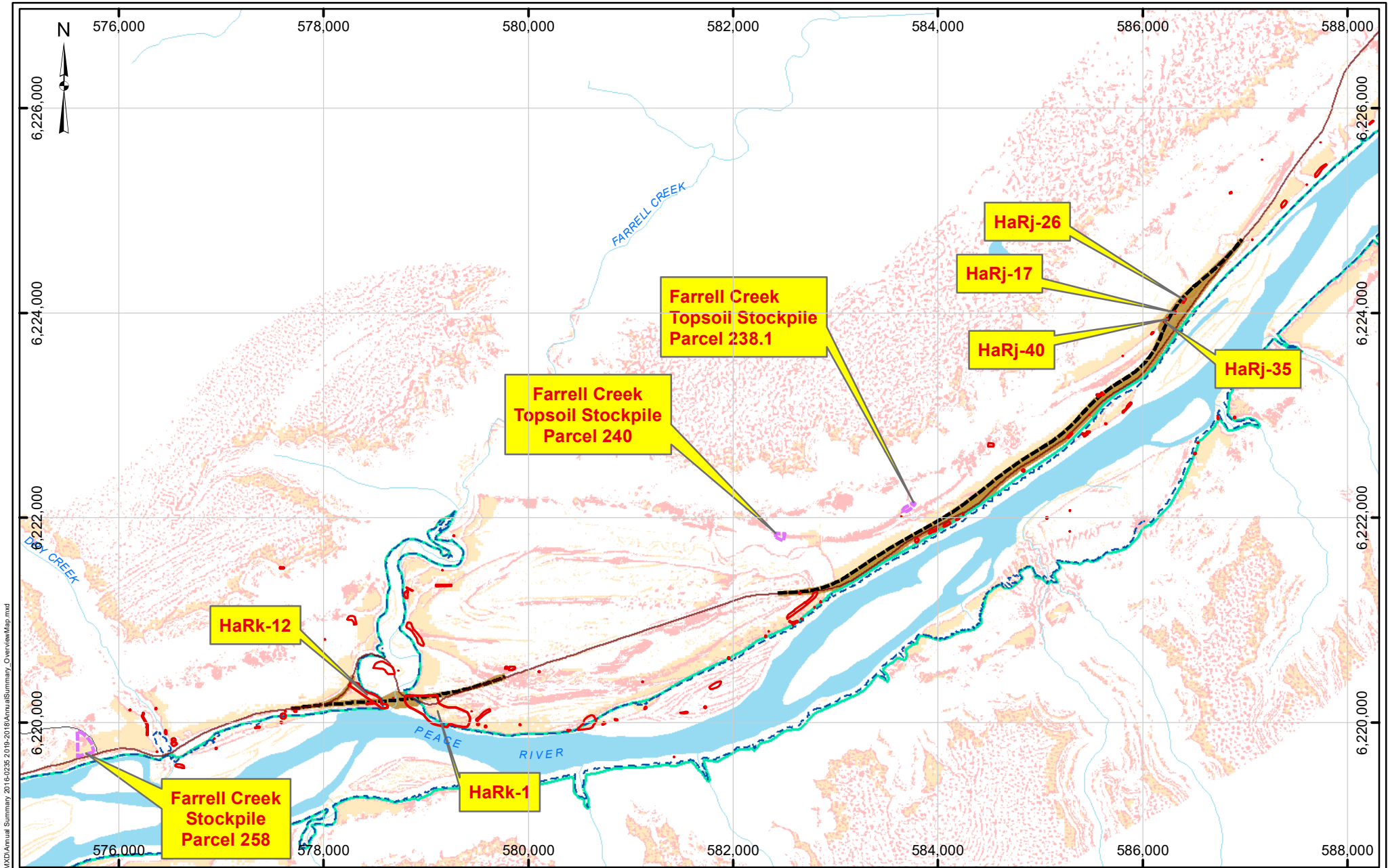
Figure 4
BC Hydro Site C Clean Energy Project
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Annual Summary Report (2021) Overview Mapping

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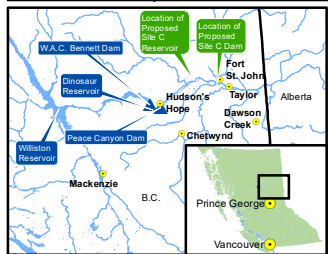


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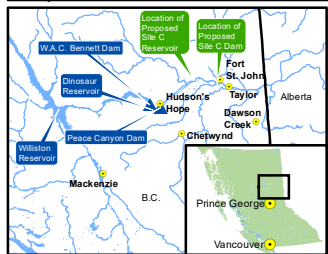
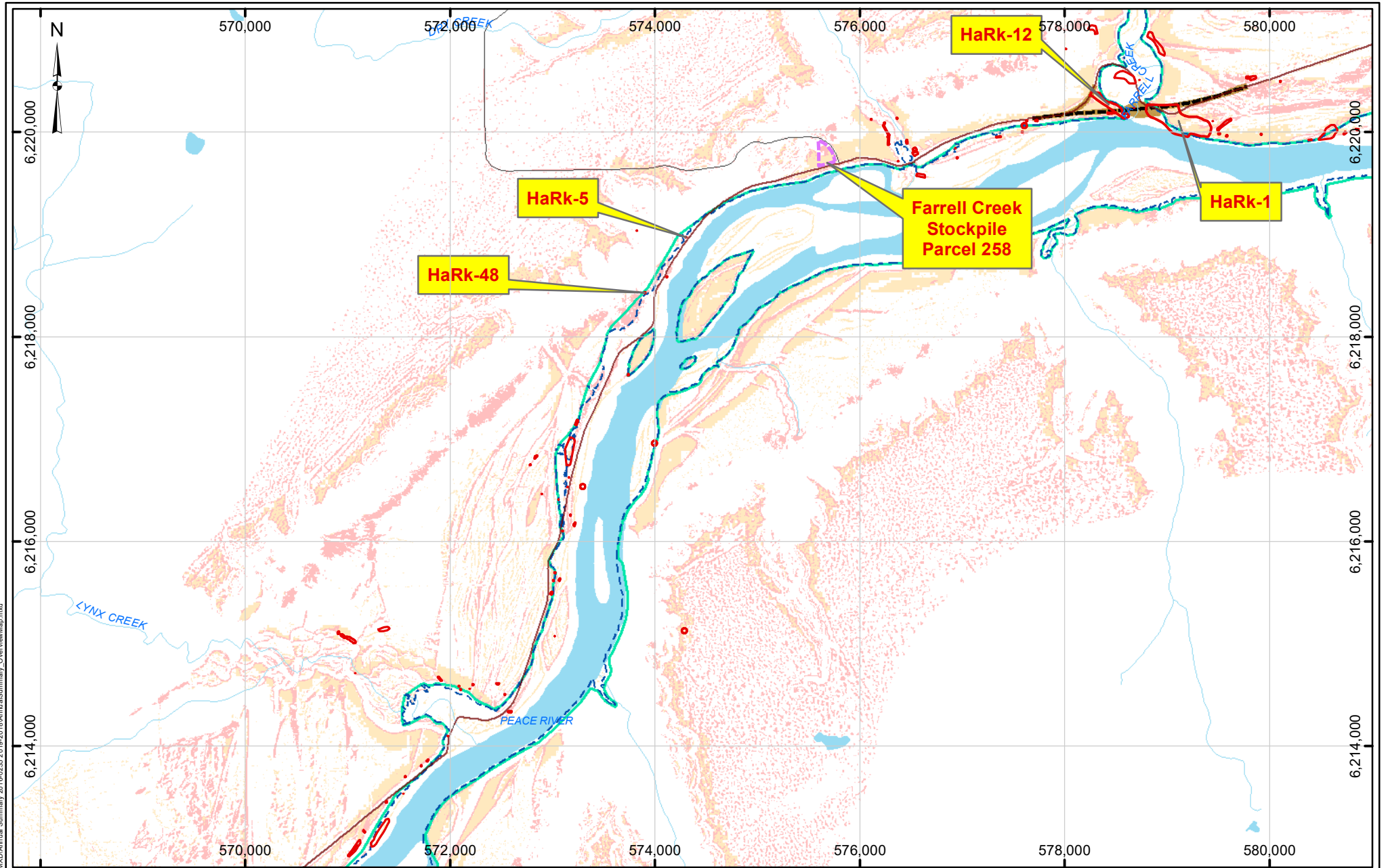
Figure 5
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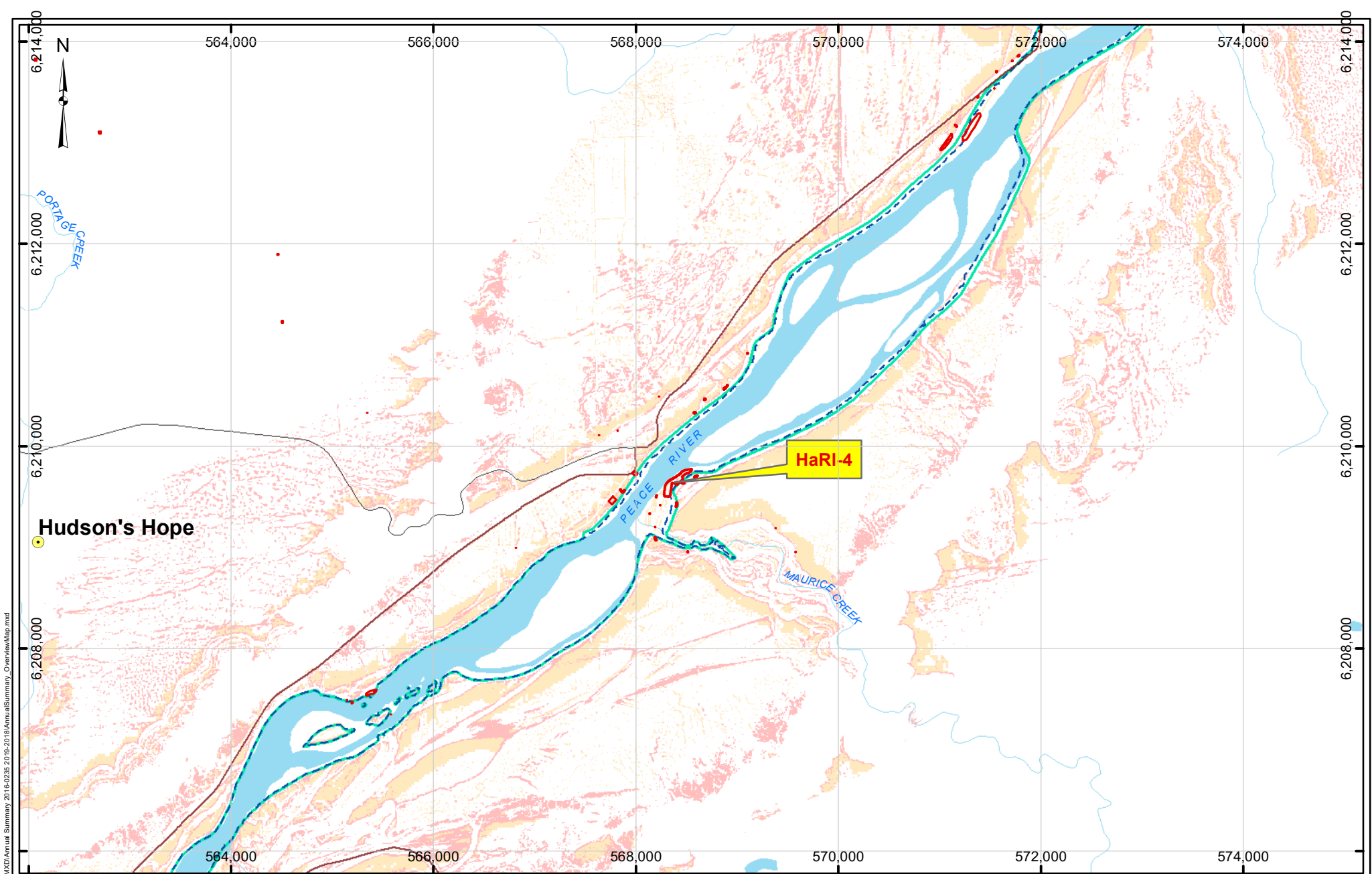


Figure 6
BC Hydro Site C Clean Energy Project
2016-0235 and 2019-0218
Annual Summary Report (2021) Overview Mapping

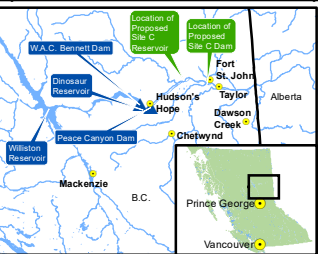
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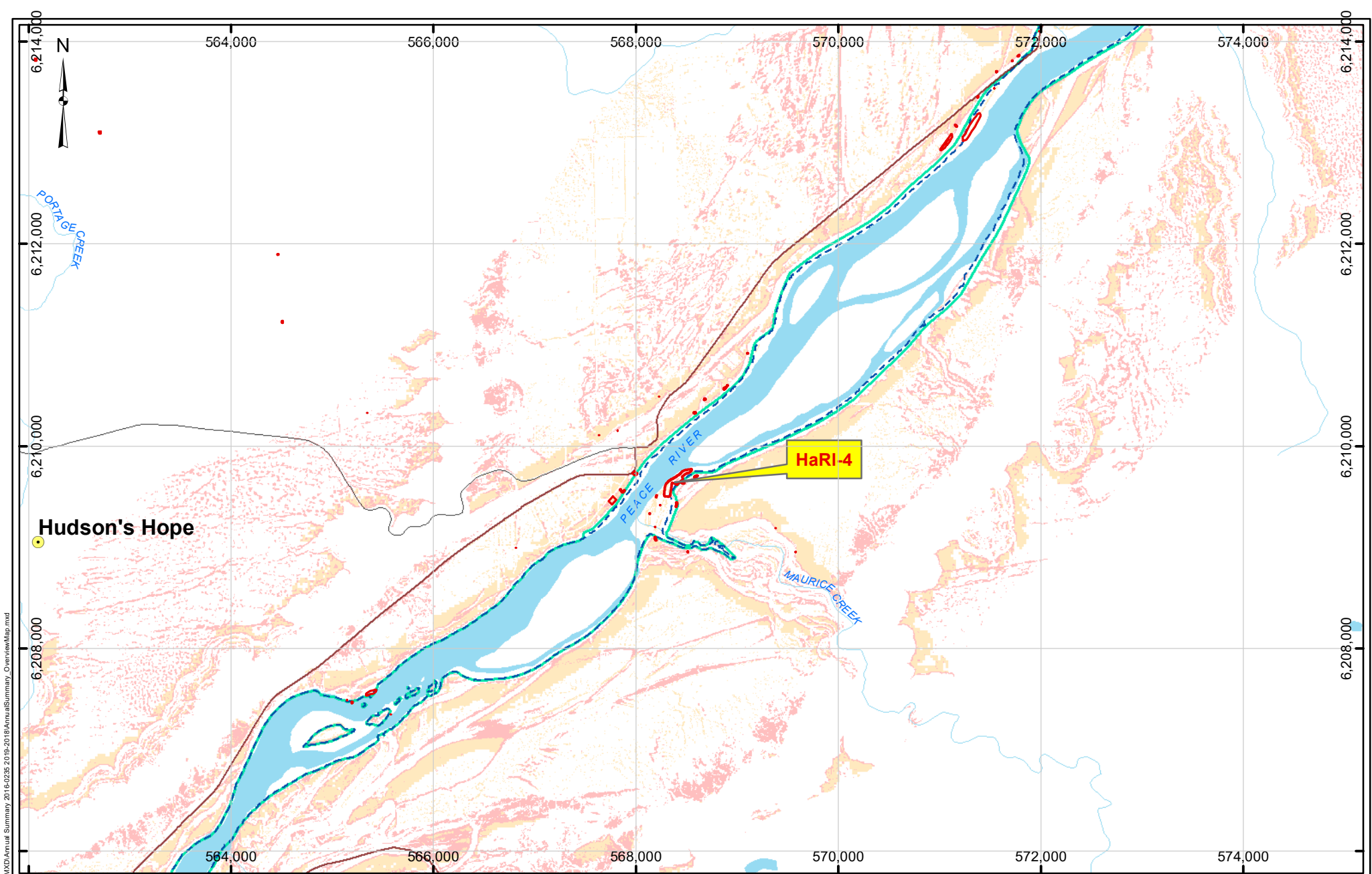
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Figure 7
BC Hydro Site C Clean Energy Project
2016-0235 and 2019-0218
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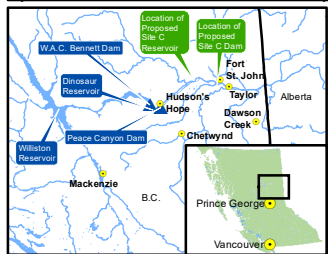
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Figure 8
BC Hydro Site C Clean Energy Project
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1.5 Biophysical Setting

1.5.1 Biogeoclimatic Zone

The region falls within the Peace River Basin Ecoregion of the Boreal Plains Ecoprovince and within the Boreal White and Black Spruce (BWBS) Biogeoclimatic Zone. The BWBS is a mixture of two main ecosystems: upland forests and wetlands/muskeg. Upland forests are most common in better-drained parts of the Alberta Plateau in the east and in mountainous parts of the zone in the west. The term “muskeg” describes the peatland combination of bogs and nutrient poor fens that cover extensive parts of the northeast portion of British Columbia (Medinger and Pojar, 1991). Wetlands and muskeg are most extensive on the poorly drained northeast lowlands. In terms of the project area, the wetland/muskeg ecosystems are generally confined to the plateaus surrounding the Peace River valley (Golder and Amec, 2012). In addition, prairie grassland and aspen parkland are present within and adjacent to the Peace River valley (Burley et al, 1996:9; Cannings and Cannings, 2004:257; Mackinnon et al, 1992:6). BWBS landscapes are characterized by long, cold winters and short, dry, and warm summers. The region is subject to natural reforestation through forest fire cycles.

1.5.2 Topography and Drainages

The Peace River is a meandering river that is the predominant drainage in the region. It flows east downstream from an origin point in the Rocky Mountains and drains the northern portion of the Rocky Mountain Trench. The Peace River flows into Lake Athabasca in northeast Alberta and becomes a part of the Arctic drainage system through the Mackenzie River watershed.

Sometime between 27 400 and 22 020 BP, the Laurentide ice sheet advanced over the Peace River valley, inundating the valley with Glacial Lake Mathews (Hartman and Clague, 2008). As the Laurentide ice sheet retreated, Glacial Lake Mathews emptied somewhat, creating smaller ice-dammed lakes, including Glacial Lake Peace. A unique topography was formed at this time, due to glaciolacustrine deposits forming mounded or hummocky topography on the uplands of the Peace River valley. As Glacial Lake Peace started draining around 13 970 BP, the Peace River began incising into the upper Peace River Valley, stabilizing to near present levels by 10 500 BP (Hartman and Clague, 2008:560). Topography within the valley has been largely influenced by the down-cutting of the Peace River and its tributaries into fluvial, glacial and interglacial deposits, and underlying sedimentary bedrock (Hartman and Clague, 2008; Mathews, 1978). Periods of down-cutting were interspersed with periods of deposition, creating the terraces that are present in the valley today (Mathews,

1978). Geomorphic processes have included, and continue to include, various forms of mass movement (i.e. landslides), fluvial erosion and deposition, glaciolacustrine erosion and deposition, and aeolian erosion and deposition (Golder and Amec 2012; Hartman and Clague, 2008; Mathews, 1978).

1.5.3 Flora and Fauna

Predominant flora in the region includes overstory species consisting of white spruce, trembling aspen, Balsam poplar, lodgepole pine, paper birch, black spruce, and tamarack (Mackinnon et al, 1992:6). Soil moisture and edaphic factors dictate and influence the prevalence and absence of each species on the landscape. Understory species include various willow species, alders, shrubs, high and low bush berries, sedges, rushes, mosses and grasses (Mackinnon et al, 1992).

Predominant fauna includes moose, white tail and mule deer, woodland caribou, elk, grizzly and black bear, mountain sheep, wolf, lynx, beaver, lagomorphs, marten, various rodents, and various resident and migratory avian populations. Of the predominant faunal species, ungulates consisting of moose, elk, woodland caribou, white tail and mule deer are well represented in the region and their associated ranges often overlap. In addition, bison were present in the region until pressure from the early fur trade precipitated their extinction (see Burley et al, 1996).

1.5.4 Paleoclimatic Background

Much work has been done in the region with regards to paleoclimatic history. A review of White and Mathewes (1982) provides an excellent summary of the paleoclimatic history of the Peace River valley. White and Mathewes made use of sediment core data from Fiddler's Pond, in the transitional area between the upper terrace of the upper Peace River valley and the adjacent uplands. The pond is located approximately 25 km upstream from the confluence of the Peace and Pine Rivers and as such, it is assumed to reflect an accurate portrayal of the paleoclimatic history of the project area.

Analysis of the core data indicates that between 8200 – 6300 BP (the oldest data available from the core), the climate was much drier than it is today, an interpretation shared by similar studies (White and Mathewes, 1982: 566). At the time, Fiddler's Pond may have been an ephemeral pond, becoming mostly dry and muddy in the summertime (White and Mathewes, 1982: 564). White and Mathewes further note that there is no evidence of extensive grasslands for this period, but rather that closed coniferous forests prevailed (1982: 565).

The next period, from 6300 – 3480 BP, is characterized by a likely increase in precipitation or a decrease in evapotranspiration, making Fiddler's Pond a more

permanent body of water than it had been previously, but still with intermittent drying. There was also a likely increase in local grasslands during this period (White and Mathewes, 1982: 565).

Between 3480 – 1200 BP, the climate became more wet, establishing Fiddler's Pond as a permanent body of water without the intermittent drying noted earlier. The level of forest cover remained the same as in the previous period (White and Mathewes, 1982: 565-566). Both this and the previous period can be marked as transition periods to modern day climatic conditions (White and Mathewes, 1982: 568).

The last period noted in the sediment core ranges from 1200 BP to present. This period is representative of modern climatic conditions, which are unchanged throughout the entire period (White and Mathewes, 1982: 566-568).

Of particular note within this paleoclimatic background, is the interpretation by White and Mathewes that by about 5100 BP, a fringe of sedges and willow had appeared around Fiddler's Pond, suggesting the development of permanent wetlands, making it a prime habitat for ungulate and avian populations, and in turn for human populations (1982: 568). It can then be inferred that many other small, permanent ponds and wetlands were formed in topographic lows surrounded by corresponding mounds or hummocks (MacDonald, 1987:315; White and Mathews, 1982:568), particularly along the uplands of the Peace River valley and associated tributaries, following the drainage of Glacial Lake Peace.

1.6 Crew Composition

Archaeological field work conducted during the 2021 field season was carried out by a series of crews (the Ecofor team). Each crew was comprised of two to three archaeologists that included a crew lead, one or two junior archaeologists and one or two Indigenous field assistants from the region. The crew leads and junior archaeologists were qualified archaeologists from Ecofor Consulting Ltd. During SDR conducted on larger sites, multiple crews worked in concert to conduct field work; whereas, on smaller sites or assessment areas, only one crew conducted the work.

1.7 Indigenous Participation

Indigenous participation was important to the overall success of the archaeological program. Indigenous communities and organizations with asserted interests in the vicinity of the Project were provided with several avenues to contribute to the archaeological program, including a 30-day review period of the British Columbia *Heritage Conservation Act* permit application or amendments, associated archaeological field analysis, and reporting methods.

In addition, these communities were offered field work employment opportunities with the Ecofor Team.

1.7.1 Indigenous Participation in the 2021 Field Season

Several Indigenous communities and organizations were identified by the Archaeology Branch during the review of the permit and the amendment in 2019 for permit 2016-0235 and the review of permit application 2019-0213, as having interests in the Project. These communities and organizations are Blueberry River First Nations (BRFN), Dene Tha' First Nation, Doig River First Nation (DRFN), Fort Nelson First Nation (FNFN), Halfway River First Nation (HRFN), Horse Lake First Nation, McLeod Lake Indian Band (MLIB), Prophet River First Nation (PRFN), Sauleau First Nations (SFN), West Moberly First Nation (WMFN), Metis Nation BC, Kelly Lake Cree Nation, and Kelly Lake Metis Settlement Society.

In 2021, the following Indigenous communities and affiliated businesses were subcontracted by Ecofor to provide archaeological assistants during SDR and AIAs conducted under permit 2016-0235 and PGDI conducted under permit 2019-0213: Blueberry River First Nation, Doig River First Nation and Halfway River First Nation. Ecofor signed sub-contract agreements with Indigenous communities or affiliated Indigenous businesses to provide community assistants to participate in the archaeological field work as indicated above.

Table 2 provides a summary of the Indigenous communities who participated in the archaeological field program in 2021 during the SDR, AIA and PGDI programs. It includes the number of assistants employed from each of the Indigenous communities, the total equivalent person-days of employment by community, followed by the total hours of employment by community. Duration of employment for individuals varied depending on availability.

Table 2: Summary of Indigenous Assistants Employed in 2021

Indigenous Community	Number of Community Members	Person-Days of Employment	Total Hours
Blueberry River First Nations	5	10	96
Doig River First Nations	5	23	223.75
Halfway River First Nations	3	3	28.5
Prophet River First Nations	0	0	0
Saulteau First Nations	0	0	0
West Moberly First Nations	0	0	0
TOTAL	13	36	348.25

2.0 Methodology

The field and data analysis methods described herein, are based on the methodology presented in the application and 2019 amendment for Permit 2016-0235, specifically for SDR, and employed during the 2021 field season. Details concerning Permit 2016-0235 AIA and Permit 2019-0213 PGDI methodology, results, and conclusions will be discussed in Section 6 and Section 7 of this report.

2.1 Systematic Data Recovery

The work conducted under Permit 2016-0235 represents systematic data recovery as defined in the British Columbia Archaeological Impact Assessment Guidelines (Archaeology Branch 1998).

Upon completion of previous archaeological field seasons in the PAZ, reviews of the methodology and approach were conducted (Golder and Amec 2016:477-483) to determine effectiveness, suitability, and/or the potential for any improvement in methodology and approach to better capture archaeological data within the PAZ. The review of previous work led to the updating of methods for allocating the number of SDR excavation units at sites. The updated allocation approach was developed and utilized to determine the minimum standards and level of effort of SDR to be undertaken at each of the remaining sites selected for SDR. Implementation of this updated allocation is described in Ecofor's application for Permit 2016-0235; see Golder and Amec (2016:475-476; 2017) for additional detail regarding the updated allocation approach. In addition to the updated allocation approach, excavations at each site were also guided by the cultural materials discovered, lithic densities, and the judgment of field directors and/or archaeological site leads in the field.

2.1.1 Site Selection Strategy

The heritage resources found in the PAZ have been assigned to classes according to an assessment of their heritage significance. This was determined using criteria set forth in the British Columbia Archaeological Impact Assessment Guidelines, Appendices D and E (Archaeology Branch 1998) as well as through discussions with the Archaeology Branch. These classes are defined as follows:

Class I archaeological sites are rated as having high to moderate significance with high artifact counts (>20) and four or more lithic tools (cores or retouched artifacts) and utilized flakes. These sites also include one or more of the following: a variety of artifact types, "exotic" raw materials, stratified cultural deposits denoting multiple occupations, or faunal remains.

Class II sites are subdivided into four subclasses as follows:

Class IIa represents moderate to low significance archaeological sites, with 21 or more artifacts, three or fewer lithic tools and utilized flakes, and one or more of the following attributes: exotic lithic raw materials, faunal remains, or evidence of multiple occupations.

Class IIb represents low-to-moderate significance archaeological sites, composed of 20 or fewer artifacts with two or fewer formal or utilized tools, and the presence of exotic lithic raw materials, or faunal remains.

Class IIc represents low significance archaeological sites, with two to 20 flakes. These sites do not contain any evidence of tools, utilized flakes, exotic lithic raw materials, or faunal remains.

Class IId represents low significance archaeological sites that have either been destroyed (that is, a “legacy site”) or are composed of a single flake (isolated find). By definition, these sites do not contain any evidence for lithic tools or utilized flakes, exotic raw materials, multiple occupations, or faunal remains.

The site classification process identifies those sites that have the greatest potential to answer questions about the prehistory of the PAZ. As the primary mitigation measure, SDR will be undertaken for all Class I archaeological sites and for a sample of Class II sites (subclasses IIa, IIb, and IIc) in the PAZ. Using a table of random numbers, a random sample of Class IIa, IIb and IIc sites were selected for SDR. The sample size is approximately 40% of Class IIa sites, 20% of Class IIb sites, and 15% of Class IIc sites (HCA Permit 2016-0235).

2.2 Field Methods

Archaeological excavation methods are outlined in Heritage Permit 2016-0235. Prior to undertaking fieldwork, a sampling strategy was developed in order to best provide the data necessary to meet the aforementioned objectives and best address the posed research questions.

2.2.1 Excavation Sampling Strategy

The sampling strategy was designed to maximize the recovery rate for tools (especially diagnostic artifacts), fauna, features, and living surfaces or activity areas. This strategy is based upon the strategy developed by the Golder team during previous work in the PAZ in order to maximize the recovery rate for tools, fauna, features, and/or activity areas. Locations with high densities of cultural materials identified during the inventory stage of the program were targeted. These locations were targeted using a grid block excavation method. Initial EU placement was based on known artifact densities identified previously, during the

inventory stage. Subsequent EU placement was based on artifact yields from excavated units, with additional EUs extending from EUs with high information yields. This methodology maximized capturing the most informatively productive areas of a site and contributed to the spatial understanding of artifact clusters. EUs typically measured 1 m by 1 m in size, however smaller EUs (e.g., 100 cm by 50 cm) can also be employed depending on the density and distribution of artifacts, physical obstacles, and features at the sites.

Where initial EU locations proved to be less productive than anticipated (i.e., where no significant cultural materials were encountered, or where artifact counts were low), these areas were abandoned in favour of locations with higher artifact returns and/or judgmental subsurface testing was conducted to search for additional archaeological remains and/or define artifact concentrations prior to placement of EUs so that blocks of EUs targeted significant clusters of cultural material within a site. In some instances, where repeated negative results were achieved, excavations were concluded at a site prior to reaching the recommended number of EUs. Conversely, if required, additional EUs would have been excavated at sites where higher than expected artifact or faunal returns were achieved, rare discoveries were made, or further work was likely to produce datable or diagnostic cultural material.

For sites where the recommended number of excavated units were truncated (scale-down), or if required exceeded (scale-up), the following points were considered in advance, as outlined in the application for Permit 2016-0235:

Excavation units are labour intensive. Excavation units will be placed in areas with a demonstrated ability to yield buried archaeological materials.

Before determining the location of any excavation unit or block, it will be established that the location has a demonstrated ability to contain buried archaeological materials by:

- Checking the results of the shovel testing program under Permit 2010-0378, or 2014-0274 with respect to the proposed excavation location
- Conducting additional shovel testing to identify areas of a site with buried cultural material, or
- Evaluating the likelihood that significant buried cultural materials extended from a completed excavation unit into the immediately adjacent area.
- Shovel testing or surface inspection will be used as an exploratory method for unproven areas of a site, rather than EUs.

If a completed EU is “sterile” for archaeological material (including but not limited to a complete lack of lithics, faunal materials, carbon samples, hearths), excavation will cease in the vicinity. The next EU will be placed adjacent to “proven” artifact units, or shovel testing will be conducted for additional artifact-bearing areas of the site prior to identifying the next EU location.

If EUs at a particular site generate an artifact assemblage that is of limited scientific and cultural significance (i.e., no data that expands our understanding of the site), consideration will be given to discontinuing work at the site once the minimum number of excavation units (i.e., 3 m²) has been reached. This includes sites which yield exceptionally small numbers of artifacts (i.e., less than 10 artifacts per m²), as well as sites from which a large sample of artifacts has been recovered but where the completion of additional excavation units is expected to yield undifferentiated results. Based on past SDR work, this should be considered particularly for sites where the target number of EUs is between 3 m² and 15 m². Similarly, requests may be made to the Archaeology Branch for the number of excavation units to be increased beyond the target number if a site continues to yield significant amounts of unique archaeological information and the proposed target number of units is approaching completion.

When approaching the target number of completed excavation units, increasing the number of excavation units beyond the proposed target will be considered only if a site is continuing to yield comparatively rare archaeological results (i.e., high scientific significance), such as formal tools or activity area features that have not been documented from elsewhere at the site, and the cultural deposits show evidence of continuing beyond the completed units. Consideration will be given to results that are indicative of site age, unique functions, seasonality, or cultural subsistence strategies.

Increasing excavation beyond the recommended number of excavation units may not be recommended, even if the site is productive but the materials recovered are consistent with what has already been recovered.

When recommendations are made to increase the number of excavation units beyond the proposed target, the focal area of the additional units will be established, either through the results of completed adjacent excavation units or supplemental shovel testing.

The truncation of excavations prior to reaching the recommended number of EUs and excavation exceeding the recommended number of excavation units was done in consultation with and with the approval of the Archaeology Branch of BC. However, the one site excavated in 2021 did not require a scale-up or scale-down from the initial recommended number of EUs.

2.2.2 Review of Existing Information

Prior to the start of the 2021 field season, an excavation plan was developed that identified the best locations to place the excavation units (as described in Section 2.2.1), and information on the selected SDR site was compiled for the field crews. Previous permit reports and journal articles relevant to the project were reviewed, and a comprehensive, Project-specific archaeological field manual was developed. These documents were used to communicate specific research goals, to provide a comprehensive set of existing site data and methods to field staff, and to frame the project and its goals within a regional framework.

2.2.3 Mapping, Horizontal and Vertical Control

The investigated archaeological site undergoing SDR during the 2021 field season was visited by a professional land surveyor prior to undertaking excavations. The purpose of this visit was to acquire precise 3D coordinates, identify target areas for EU placement, and to geo-reference the initial excavation grid. During the excavation stage, field crews were provided with information from previous assessments (i.e., reports, site summaries, maps). The excavation grid was tied to the UTM NAD 83 datum using a Trimble unit provided and operated by Vector Geomatics. Horizontal control was maintained at each site by numbering EUs on the grid established by the surveyor, using either the last three digits of the easting and northing in UTM coordinates, or an arbitrary numbering system (e.g. 100 E 100N), both of which increase by one digit to the north and east, at 1 m intervals.

Vertical control during excavation was maintained using a series of intra-site datums. These intra-site datums were tied to the SW corner of each EU and measured using depth below datum (DBD) or depth below surface (DBS). When archaeological remains were identified *in situ*, they were measured using grid coordinates and DBD or DBS, using two decimal places (i.e., centimetre accuracy). In addition, to further assist with horizontal control, EUs were excavated in discrete 50cm by 50cm quadrants. These quadrants were screened separately by level. Soil layers within EUs were removed manually following the methods outlined below.

2.2.4 Excavation methods

Excavation within each EU consisted of trowelling and/or shovel shaving 10 cm arbitrary levels (i.e., depths) in quadrants. Excavations were conducted in this manner until a definitive, non-archaeological matrix, was reached. Excavation ceased no less than one, 10 cm level below the deepest recovered artifact-bearing level in each EU, or when sterile sediments were reached, or when a minimum 30 cm DBD (depth below datum) was reached in negative units. Excavated sediments were carefully removed by trowelling and/or shovel testing and then screened through 6 mm mesh according to quadrant and level. Detailed notes, level forms, mapping, stratigraphic profiles, and photographic records were maintained.

2.2.5 Data Collection

Artifacts were collected and minimally recorded by EU, quadrant, arbitrary level, and stratigraphic layer. Field data collection and recording was achieved using Apple iPad tablets running the Formotus application as the user interface. Where tools were identified *in situ* during hand excavation, 3D provenience was maintained and recorded on forms developed specifically for the Project using Formotus. Collected artifacts were bagged according to their provenience and information was recorded on tags that accompanied each bag of artifacts or

sample. Where encountered during excavation, fire-altered rock (FAR) was counted and recorded by level and layer, weighed, and then reburied on site.

All collected artifacts and samples were sent to Ecofor's laboratory for cataloguing and analysis. Any collection of samples for specialized analysis, including select artifacts, would have followed specific methods depending on the anticipated type of analysis to be conducted. These collection methods are discussed in the sections that follow within the respective type of analysis.

In addition to artifact and sample collection, plan and profile drawings of EUs were prepared to scale. Plan drawings were prepared where features remained intact, anomalies in stratigraphy were observed while excavating or at the interface between arbitrary levels and/or stratigraphic layers, where appropriate. Profile photos and drawings showing EU walls, or longer profiles that extend along one wall of a block excavation were prepared to scale. Features or possible features were also photographed and drawn to scale in plan and profile view, where encountered.

2.3 Cataloguing and Analysis

The archaeological materials recovered during 2021 SDR investigations of the PAZ consist of a range of lithic artifacts. These archaeological assemblages were analyzed on a site by site basis and depending on content, a variety of analytical techniques were relied upon to maximize observations and interpretations of inter- and intra-site assemblage variability. The degree of archaeological variability, as evidenced by cultural assemblages, within and between archaeological sites (i.e. spatially) provides insight into the cultural and technological adaptations of past occupants to their environment and the resources within it. Variability is also assessed temporally to further archaeological understandings of how cultural adaptations change through time or were otherwise maintained. Standardized methods and procedures for archaeological analysis were employed and aimed towards fulfilling the Project's research questions.

2.3.1 Lithic Data Analysis

Post field recovery, lithic artifacts not subject to additional analysis requiring quarantine (i.e. Protein Residue Analysis) were cleaned, weighed, measured, and catalogued following standardized archaeological practice. They were then

organized and stored in compliance with the repository requirements established by the *North Peace Historical Society and Fort St. John North Peace Museum*.

Lithic data analysis began with the classification of artifacts within a typological framework reflective of the study region's expected archaeological assemblage (see Table 3). The classification *Grouped Class* allows for immediate inferences regarding site type, occupation intensity by deducing the range of activities and the degree to which those activities were practiced. Assemblages containing only debitage suggest that tool maintenance occurred. The presence of core materials indicates tool manufacture occurred. Expedient tools are manufactured quickly and easily, suggesting minimal production effort. Typically, they are produced on site for the specific task at hand and discarded after a single use. Formal tools require more planning and effort in manufacture and are indicative of specialization in regard to tool function and manufacturing techniques.

Lithic artifacts were further classified into an *Artifact Class*. This classification allows further assessment of the overall assemblage variability. For instance, *Formal Tools*, tools made as a result of extra effort in their production (Andrefsky 1998), include three *Artifact Classes*, 1) Bifaces/Projectile Points, 2) Unifaces/Scrapers, and 3) Specialized Tools. Each classification indicates the presence of certain site activities (bifaces indicating heavy duty cutting and chopping tools, projectile points indicating hunting activities, unifaces and scrapers indicating soft material processing, etc.). *Expedient tools*, tools made with little or no production effort (Andrefsky 1998), are further classified into five *Artifact Classes*. The larger the number of distinct *Artifact Classes* present, the more diverse the range of activities that occurred at each investigated site.

Artifact Type is the final classification category. This distinction allows for further interpretation or assignment of tool function and the overall variability of site activities. Formal Tools are divided into thirteen specific *Artifact Types*. Most Expedient Tool artifact types are distinguished based on the presence or absence of retouch excluding choppers which are classified as either unifacial or bifacial, and ground stone tools which include hammer stones, anvil stones and abraders.

Debitage followed the same overarching classification scheme. Debitage analysis was based on the stage of reduction, or *the triple cortex typology* (Andrefsky 1998:115-118). In summary, primary flakes were classified based on the presence of 100% cortex on the dorsal surface and indicate initial stage reduction, secondary flakes have less than 100% cortex and indicate medial stage reduction, and tertiary flakes exhibit 0% cortex and represent final stage reduction and/or maintenance. Further debitage analysis included metrics. Lots (more than one) were given a lot weight (g) whereas individual flakes were fully measured (length, width, thickness and weight). Flake shatter was further analyzed for portion (proximal, medial, and distal). Additional debitage types that

are classified as non-flakes but are clearly archaeological in deposition were also recorded and include angular shatter, cobbles/split cobbles and pebbles/split pebbles.

Core analysis distinguished between multidirectional and unidirectional cores (Andrefsky 1998). Unidirectional cores are almost always represented highly formalized core types whereas multidirectional core types can include both formal and informal core types. Because raw material is generally assumed to be both widely distributed and easily procured throughout the PAZ, core types are reflective of this abundance and are largely informal, multidirectional cores. Core metric analysis included length, width, thickness and weight.

2.3.1.1 Raw Material Analysis

Lithic raw material types were determined based on the visual, macroscopic inspection of individual artifacts. In addition, attributes such as colour, grain size, and/or texture were also considered. On the occasion a rare or uncommon material was present in the artifact assemblage, documentary research was undertaken in order to search for other occurrences of the material in the region.

Across the Peace Region of northeast BC and adjacent parts of Alberta, archaeologists have often used the terms “Peace River chert”, “black chert” and “ubiquitous black chert” to describe a fine-grained black rock broadly associated with lithic artifacts from the region. The material ranges from a fine-waxy appearance with quartz inclusions to a rough and dull material with felsic mineral inclusions. Upon microscopic examination of grain size and mineral composition, an in-house geologist approached by the Golder team determined that the range of materials represented in the “black chert” category, included materials of igneous origin, such as dacite and basalt, in addition to true cherts, which are characteristically sedimentary in origin. (Golder and Amec 2016).

Previous studies in the Peace Region (e.g., Spurling 1980), as well as past work by various consulting firms, have identified several of the most common lithic material types encountered in archaeological contexts. These studies and past work provide valuable reference information for the current study. The predominant lithic material present in lithic assemblages is chert that occurs in a variety of colours. Solid black and black and grey banded variants are the two most common chert types found during previous studies in the region. The grain size or texture of regional chert types ranged widely from very fine to coarse. In addition to cherts, other lithic materials are present in varying frequencies within the PAZ. These include other crypto- and micro-crystalline silicates, such as chalcedony, quartzite, and other quartz-based rocks, obsidian and other igneous rocks such as basalt and dacite, as well as a variety of silicified siltstones. (Golder and Amec 2016).

Table 3: BCH SDR 2021 – Lithic Typology

Grouped Class	Artifact Class	Artifact Type
Formal Tool:	Biface/Projectile Point	Biface Projectile Point Preform
	Uniface/Scraper	Side Scraper End/Thumb Scraper Combination Scraper Blade Microblade
	Specialized Tool	Combination Tool Graver/Burin Drill Spokeshave Wedge Awl
Expedient Tool:	Spall Tool	Retouched Edge Modified
	Flake Tool	Retouched Edge Modified
	Core Tool	Retouched Edge Modified
	Chopper	Unifacial Bifacial
	Ground Stone Tool	Hammer Stone Anvil Stone Abrader
Debitage:	Flake	Shatter Primary Secondary Tertiary
	Non-Flake	Angular Shatter Cobble/Split Cobble Pebble/Split Pebble
Core	Core	Unidirectional Multidirectional Bipolar
	Core Fragment	Unidirectional Multidirectional Bipolar
	Tested Cobble	

2.3.1.2 Artifact Cross Dating

On occasion, artifact morphology may be used to infer a relative site date based on stylistic and morphological similarities with artifacts from other sites with known dates. These artifacts, such as projectile points, are known to change over time through the influence of various agents, and therefore are temporary distinct. These artifacts are considered to be ‘diagnostic’ and the practice of assigning a relative site date based on the diagnostic properties of recovered artifacts is referred to as artifact cross-dating. (Golder and Amec 2016).

The age range for many projectile point styles has already been established within cultural sequences supported by absolute dating of associated cultural materials. Projectile point sequences within the cultural sequences of several regions neighbouring the PAZ are well known (Spurling 1980; Richards and Rousseau 1987; Kooyman 2000; Carlson and Magne 2008; Howe and Brolly 2008). In areas like the PAZ, where organic preservation is rare and datable organic materials are uncommon, the presence of a projectile point at an archaeological site can provide an approximate date range for the occupation of that site.

All diagnostic artifacts were compared to similar artifacts from the PAZ and surrounding regions. Past research has documented cultural affiliations between the upper Peace River region and cultural sequences from the northern interior (including the NWT and Yukon), northern plains, and central interior of British Columbia (Howe and Brolly 2008; Spurling 1980).

2.3.2 Faunal Analysis

No faunal materials were recovered during the 2021 field season, however, previous faunal specimens recovered were submitted to Pacific Identifications Inc. The samples were then analyzed and provided information pertaining to taxa represented, skeletal elements present, and well as number of identified specimens present (NISP) and the minimum number of individuals (MNI). In addition, the presence of burnt and calcined samples was also noted, as were taphonomic processes indicative of acts such as butchering and processing.

2.3.3 Specialized Analyses

When samples of cultural and natural materials were encountered during excavation that indicated the potential for additional analysis, they were purposefully collected following specific methods to facilitate additional analysis. The type of analysis conducted varied across sites based on the archaeological material recovered and its suitability for additional analysis. Specialized analysis was conducted in order provide information an order of magnitude higher than what would normal be possible in the region, in addition to also assisting in the

elucidation of questions relating to chronology, tool function, and source locations for lithic raw material (Golder and Amec 2016). Methods associated with field collection techniques, interim sample storage, selection for analysis, and laboratory methods are described below for each type of specialized analysis undertaken during the 2021 field season.

2.3.3.1 Radiocarbon Dating

In the event charcoal or other carbon-based items were encountered during excavation, provenience was established and recorded, and the material was collected. Identified samples were collected using a trowel, and subsequently placed directly into a tinfoil wrapper. The provenience of the sample was recorded on a descriptor tag and included with the sample. In addition, sample locations were recorded the applicable unit form in Formotus.

Sediment samples collected from cultural features were submitted to Paleo Research Institute in Golden, Colorado for analysis using accelerator mass spectrometry (AMS) dating of microcharcoal, as were faunal samples.

AMS is an absolute dating method which uses an accelerator-based mass spectrometer to determine the age of carbonaceous material. As the naturally occurring radioisotope Carbon-14 in organic material declines at a fixed exponential rate due to the radioactive decay of Carbon-14, this rate of decay can be compared to atmospheric C-14, allowing for the age of the sample to be determined based on the comparison. (Golder and Amec 2016).

2.3.3.2 Residue Analysis

Complete or partial lithic tools recovered from intact deposits were considered as potential candidates for residue analysis. The artifacts were isolated during collection and quarantined from outside agents to reduce the potential for sample contamination. Artifacts were immediately placed in separate plastic artifact bags, and they were not wiped off or washed. The bags were kept in a cool and dry location. No samples from the 2021 field season were selected for analysis, in previous years, the samples would have been submitted to Paleo Research Institute in Golden, Colorado. The results of submitted samples will be guided by a table of qualifiers based on each samples reaction to a series of antiserums each sample will be tested against.

2.3.3.3 X-Ray Fluorescence

X-Ray Fluorescence (XRF) is an analytical tool used to determine the source loci of obsidian samples. XRF is a non-destructive material sourcing process in which the geochemical composition of the obsidian is determined through examining the emission of fluorescent X-Rays that result from exciting the subject material

through X-Ray bombardment. The resulting geochemical fingerprint of the material can then be compared to samples from known obsidian source locations (Golder and Amec 2016). One obsidian artifact was identified during the 2021 field season, during an AIA assessment at HbRi-33. As it was discovered as a surface find it was not sent for further testing. In previous years, in which obsidian artifacts were recovered, the artifacts were collected and bagged individually in the field, and provenience of the collected artifacts was recorded as per permit methodology. In the lab, artifacts were washed, catalogued, and prepared for submission to Northwest Research Obsidian Laboratory in Corvallis, Oregon for analysis.

2.3.3.4 Bulk Matrix Sample and Flora Sample Analysis

Bulk matrix samples were collected where the potential for additional analysis based on the presence of small artifacts, faunal remains, flora remains, or a cultural feature was identified. The suitability for the collection of samples was at the discretion of the field director and/or archaeological site lead. No samples were collected during the 2021 field season, however previous samples were collected using trowels and were placed in large plastic bags labeled with provenience information (Golder and Amec 2016). Sediment samples collected from cultural features were submitted to Paleo Research Institute in Golden, Colorado to be subject to flotation analysis to recover macrofloral remains for identification and/or radiocarbon analysis. Flora samples collected from cultural features were submitted to Ursus Heritage Ltd. in BC for specialized palaeoethnobotanical analysis.

3.0 Results of Systematic Data Recovery

A total of one archaeological site was subject to SDR during the 2021 field season. The approach was framed within a set of established research questions and included archaeological excavation work on a sample of archaeological sites of varying complexity (i.e. Class I, IIa, IIb, and IIc sites) that were classified according to site content (i.e., identified archaeological remains), size, and environmental setting following Golder and Amec (2014). The site is located on the north bank of the Peace River in the Wilder Creek area. The site is located within the eastern reservoir of the project, the Wilder Creek shoreline enhancement component, and the OLTC 7 Wilder Road development.

Site descriptions in relation to the size of site follow the qualifier values (large, medium, small, very small) developed during previous work by the Golder team in the PAZ. These values are assigned based on the demonstrated artifact count at each site. To qualify as a large site, a site must exhibit an artifact assemblage greater than 501 artifacts, a medium site must exhibit an artifact count between 101-500 artifacts, a small site must exhibit an artifact count between 11-100 artifacts, and a very small site between 1-10 artifacts (Golder and Amec, 2012:155).

The results of the archaeological investigations undertaken at the site, along with detailed artifact analysis and specialized analysis results are presented in the subsequent section. The analysis presented in this report is considered to be the final, detailed, analysis. Any previous analysis (i.e., Ecofor 2021 interim reports) is considered preliminary and superseded by the analysis presented below.

EU allotment for the site was based on area and significance. EUs were initially placed in the most probable areas for high information yields at a site determined by previous AIA work for the Project. Due to the EU allotment system for the site, not all artifact cluster and feature boundaries were defined, especially in outer units. SDR was previously conducted at this site to the Southwest of the present SDR. An additional allotment of EUs was issued in 2021 at this site at the discretion of BC Hydro to include the expanded boundaries of the Project area further into the site boundaries.

Additional detailed site information may be found in Appendix B at the end of this report which contains the stratigraphic profiles and plan and feature drawings for the site including figures depicting the horizontal distribution of artifacts, as well as in Appendix A, which contains the photo documentation of the site.

Table 4 provides a brief summary of the results from the site excavated during the 2021 field season, while Table 5 provides a summary of lithic tools and tool

counts from the site excavated. Table 6 provides results and artifact totals from all work conducted at the site to date.

Table 4: 2021 SDR Summary

Borden Number	Site Type	Site Class	Site Area (m ²)	Recommended Excavation Area (m ²)	Area Excavated in 2021 (m ²)	Percentage Excavated in 2021 (%)	Shovel Tests	Artifacts/Samples Recovered
HbRg-5	Surface and subsurface lithic scatter and fauna	I	126, 710	3	3*	0.0024	0	48 Lithics

*72 m2 had been excavated in previous years.

Table 5: 2021 SDR Summary – Lithic Tools

Borden Number	Objective	Formed Tools											Expedient Tools					
		Bifaces/Points			Unifaces/Scrapers			Specialized Chipped										
		Core/Core Fragment	Biface	Projectile Point	Preform	Uniface	Scraper	Blade/Microblade	Combination Tool	Graver/Burin	Drill	Spokeshave	Wedge/Awl	Flake Tool	Core Tool	Chopper	Ground Stone Tool	Spall Tool
HbRg-5	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1	0	0	4

Table 6: Site Summary – Previous, Current, and Total Artifact Counts

Site Name	Site Type	Simon Fraser University 1974 – 1979, 1987	Golder Associates Ltd. Permit # 2014-0274	Stantec Consulting Ltd. Permit # 2019-0218	Ecofor Consulting Ltd. Permit # 2016-0235	Total Artifact Counts
HbRg-5	Surface and subsurface lithic scatter and fauna	293 Lithics	2011-2012 808 Lithics 9 Fauna 2016 8079 Lithics 206 Fauna 5 FAR 2017-2018 459 Lithics	2021 11 Lithics	263 Lithics previously, 48 Lithics in 2021	>9913 Lithics >215 Fauna 5 FAR

3.1 HbRg-5

Previous archaeological work identified HbRg-5 as a Class I surface and subsurface lithic and fauna scatter. The site is located 13.3km southwest of the community of Fort St John and approximately 500m northwest of the confluence of the Peace River and Wilder Creek. The site is situated on an intermediate terrace on the north bank of the Peace River and the west bank of Wilder Creek and sits approximately 43m above the current level of the Peace River. The site measures approximately 815m (E-W) x 376m (N-S) and is 126,710 m².

3.1.1 Background

HbRg-5 was originally recorded in 1974 during field work conducted by Simon Fraser University archaeologists, with the discovery of subsurface debitage that was left in situ. In 1978 SFU returned to the site and excavated a total of 36 test units, of which identified 13 pieces of cultural material. 14 additional 1m x 1m units were excavated on the geographic point directly north of the confluence of Wilder Creek and the Peace River. In total, the 1978 excavations recovered 293 lithic artifacts, including two projectile points, four cores, one uniface tool, five retouched flakes, five utilized flakes and 34 potential flake tools. One of the projectile points resembles a Duncan type point of the McKean complex, (4,500-3,000 BP), of the Northern Plains cultural sequence (Golder, 2017, p.183).

In 2010 Golder relocated the site and conducted an inventory testing in 2011-2012. A total of 478 grid, judgmental and adaptive tests were excavated, finding of which 86 were positive for cultural material. In total, 808 lithic artifacts were recovered, including six biface fragments, two uniface tool and one end scraper. Nine faunal remains were recovered including bone and tooth fragments. None

were to the species level; however, four tooth fragments and a maxilla fragment were identified as belonging to a large ungulate (Golder, 2017, p.205).

Golder revisited to the site in 2016 and identified a total of 10 surface finds and completed a total of 61 EUs (61m²) (Golder 2017). The EUs were located in seven different blocks within the southeastern portion of the site where the previous inventory had yielded the greatest number of cultural artifacts. In total, the 2016 excavations uncovered 8,069 lithic artifacts 206 faunal remains and five pieces of fire-altered rock. The lithics consisted predominantly of debitage but included 110 lithic tools, comprised of 29 cores, two core tools, two spall tools, five projectile points/projectile point fragments, seven bifaces/biface fragments, five end scrapers, three side scrapers, six end/side scrapers, and 51 utilized flakes/flake tools.

In 2017 the Golder team revisited the site for the AIA of the OLTC 7 Eastern Reservoir Clearing Access Roads project component where a total of 54 lithic artifacts were recovered from subsurface tests (Golder, 2017). The artifacts consisted of one projectile point, one end scraper, two cores, one retouched flake, and 49 pieces of lithic debitage. Due to environmental constraints the Golder team were not able to complete their excavation in 2017 and had to return in 2018. In 2018 Golder conducted the remaining testing and recovered 405 pieces of lithics including two biface fragments, six cores, and five retouched flakes. There was a variety of raw materials including obsidian. Due to the results of the 2018 Golder work a subsequent site boundary expansion precipitated the recommendation of excavation of an additional 11m² which was conducted by Ecofor in 2018 (Ecofor, 2019). A total of 215 lithic artifacts were recovered from 10 positive EUs and consists of debitage, one core and one blade fragment.

Portions of HbRg-5 and surrounding areas were then visited by Stantec in 2021 which resulted in the site boundary extensions to the north to include identified surface finds and positive shovel tests. Stantec recovered a total of 11 surface artifacts and two positive shovel tests out of the 40 that were conducted (Stantec 2021). All the recovered artifacts from the Stantec excavations were identified as black chert and composed of debitage and one core.

3.1.2 Investigation

The Ecofor team excavated three EUs, consisting of three 1m x 1m units for a total of 3 m² allotted for the site. EUs were excavated to a maximum depth of 30 cm DBD with artifacts recovered to a maximum depth of 20 cm DBD. EUs were placed across one excavation Block located in the NE corner of the site.

Heavy disturbance due to previous and present agricultural use in the area was observed. The site is located within an agricultural field, the excavation took place following harvest. Due to the continuous agricultural disturbance of the site

many of the artifacts have been horizontally and vertically displaced up to the surface, and were recovered as surface finds.

3.1.3 Stratigraphy

Stratigraphic layers were relatively uniform across the investigated portion of the site with moderate variations in soil types and lenses present due to previous agricultural disturbances. Representative stratigraphy is taken from EU 1 E98 N106, with the inter-datum located in the NE corner of the EU. The stratigraphy of EU 1 consists of a plough zone and organic layer, which contained 30%-40% rounded and sub-rounded cobble, pebbles, and boulders (Layer A, 0-7cm DBD), a layer of tan silty clay containing 75%-80% rounded and sub-rounded cobble, pebbles, and boulders (Layer B, 7-23cm DBD), and a brown silty sand with 20% boulders, 30% cobble, and 35% pebble inclusions (Layer D, 23-30cm DBD). An additional layer of reddish-brown clay trace silt with 20% pebble inclusions is present in some portions of the EUs below Layer B (Layer C, ~24-30cm DBD). (See Appendix B for Stratigraphic Profiles).

Table 7: HbRg-5 Artifact Counts by Stratigraphic Layer

Stratigraphic Layer	Lithic Artifact Count	Fauna Count
A	21	0
B	7	0
C	0	0
D	0	0
Total	28	0

Table 8: HbRg-5 Artifact Counts by Stratigraphic Layer – Surface Finds

Stratigraphic Layer	Lithic Artifact Count	Faunal Count
Surface	20	0
Total	20	0

3.1.4 Artifact Description and Analysis

2021 Excavations at HbRg-5 yielded a total of 48 lithic artifacts, 28 lithic artifacts recovered from 3 EUs, and 20 lithic artifacts recovered as surface finds. A total of 44 pieces of debitage were recovered making up 91.67% of the artifact assemblage. The lithic assemblages consisting of debitage represented all stages of lithic reduction in addition to lithic tools recovered from the site. The artifacts are created out of varied types of materials, predominantly different types of chert, however, one quartzite tool was also recovered. The artifacts were recovered mainly in Layer A, with a low yield of artifacts uncovered in Layer B.

During the 2021 excavations a total of four (4) lithic tools were recovered through unit excavation and surface transects. One formal tool was collected through the excavation of EU1 (E98, N106), and three (3) lithic tools were identified during the visual inspection of the surface exposure. These four (4) tools include one projectile point, one uniface fragment, one expedient quartzite chopper, and one expedient flake tool. No cores, core fragments, FAR, or faunal remains were recovered during excavation.

Table 9: HbRg-5 Counts and Percentages of Total Artifact Assemblage by Class

Artifact Class	Count	Percentage
Debitage	44	91.66
Expedient Tools	2	4.17
Formal Tools	2	4.17
Cores and Core Fragments	0	0.00
Faunal Remains	0	0.00
Total	48	100.00

3.1.5 Debitage

Debitage representing all stages of lithic reduction was recovered at HbRg-5, including primary, secondary, and tertiary flakes, as well as angular shatter. A total of 44 pieces of lithic debitage were recovered during 2021 excavations. Most of the debitage was recovered through the surface finds (n=17), then EU 2 yield the most debitage (n=14) through excavation, followed by EU 1 (n=7), and finally EU 3 (n=6).

Table 10: HbRg-5 Lithic Debitage Counts and Percentages

Debitage Type	Count	Percentage (%)
Shatter	6	22.22
Primary	0	0.00
Secondary	7	25.93
Tertiary	14	51.85
Total	27	100.00

Table 11: HbRg-5 Lithic Debitage Counts and Percentages – Surface Finds

Debitage Type	Count	Percentage (%)
Shatter	5	29.41
Primary	3	17.65
Secondary	1	5.88
Tertiary	8	47.06
Total	17	100.00

3.1.6 Tools

The 2021 excavation at HbRg-5 yielded low tool counts (n=4). The majority of lithic tools were recovered as surface finds (n=3), while also being recovered from excavations of EU 1 (n=1). Lithic tools make up 8.33% of the total lithic assemblage recovered at HbRg-5.

3.1.6.1 Formal Tools

In total, 2 formal tools were recovered during the 2021 excavation, representing 4.17% of the total lithic assemblage, and 50.00% of the lithic tools recovered. One of the formal tools represented the class bifacial tools and projectile points (n=1), This was identified as a projectile point. The other representing the class of uniface and uniface fragments (n=1). All the formal tools are made of the material type of black chert.

3.1.6.1.1 Bifacial Tool and Projectile Points

A total of one projectile point fragment was identified during the 2021 excavation, as a surface find, a proximal end fragment composed of black chert (HbRg-5:8) as a surface find. HbRg-5:8 has been determined as an unfinished and abandoned projectile point that is non-diagnostic.

Table 12: HbRg-5 Bifacial Tool and Projectile Point Metrics by Provenience Summary – Surface Finds

Artifact #	Artifact Type	UTM Coordinates	Level/Layer	Length (mm)	Width (mm)	Thickness (mm)	Weight (g)	Comment
HbRg-5:8	Projectile Point Fragment	See Map	Surface	10.54	15.95	4.85	0.88	Proximal fragment; Black chert

3.1.6.1.2 Unifacial Tools and Scrapers

A single unifacial tool fragment (HbRg-5:6) was collected from the site during the excavation of EU 1. HbRg-5:6 was made of the material of black chert, and had visible retouch on the edge.

Table 13: HbRg-5 Unifacial Tool and Scraper Metrics by Provenience Summary

Artifact #	Artifact Type	UTM Coordinates	Level/Layer	Length (mm)	Width (mm)	Thickness (mm)	Weight (g)	Comment
HbRg-5:6	Uniface Fragment	98E 106N	2/A	41.59	27.91	10.60	11.58	Unifacial edge modification; Retouched; Black chert

3.1.6.2 Expedient Tools

In total, 2 expedient tools were recovered during the 2021 investigations, representing 50.00% of the overall lithic tool assemblage and 4.17% of the total lithic assemblage. Expedient tools included one retouched flake tool (n=1) and a chopper (n=1). The retouched flake tool was composed of black chert and the chopper was composed of white quartzite. Both of these expedient tools were located and collected as surface finds.

3.1.6.2.1 Flake Tools

In total, one (1) flake tool was recovered during 2021 excavations (HbRg-5:15). It was recovered as a surface find and was made of black chert. It is a distal portion of a flake tool and shows some form of use wear and/or retouching along the lateral edge.

Table 14: HbRg-5 Flake Tool Metrics by Provenience Summary – Surface Finds

Artifact #	Artifact Type	UTM Coordinates	Level/Layer	Length (mm)	Width (mm)	Thickness (mm)	Weight (g)	Comment
HbRg-5:15	Retouched	498E 493N	Surface	35.38	21.50	8.89	6.22	Retouch on left lateral margin; Black chert

3.1.6.2.2 Choppers Tools

One nearly complete chopper tool was recovered as a surface find (HbRg-5:20). HbRg-5:20 is unifacial chopper tool composed of white quartzite. It shows wear from use along the lateral and distal edges.

Table 15: HbRg-5 Chopper Tool Metrics by Provenience Summary – Surface Find

Artifact #	Artifact Type	UTM Coordinates	Level/Layer	Length (mm)	Width (mm)	Thickness (mm)	Weight (g)	Comment
HbRg-5:20	Unifacial	571.95E 476.81N	Surface	149.82	116.64	31.51	733.00	Unifacial reduction; White quartzite

3.1.7 Description of Raw Material Types

A diverse collection of lithic raw materials was collected at HbRg-5. The majority of the assemblage consists of black chert (n=40), representing 83.33% of the total raw materials collected. The remainder of the collection is comprised of grey banded chert (n=5), representing 10.41% of the total raw materials; white quartzite (n=1), representing 2.08% of the total raw materials; grey mudstone (n=2), representing 4.17% of the total raw materials.

Table 16: HbRg-5 Lithic Raw Material Counts and Percentages

Raw Material Type	Count	Percentage (%)
Chert	26	92.86
Black	23	82.14
Grey Banded	3	10.71
Mudstone	2	7.14
Grey	2	7.14
Total	28	100.00

Table 17: HbRg-5 Lithic Raw Material Counts and Percentages – Surface Finds

Raw Material Type	Count	Percentage (%)
Chert	19	95.00
Black	17	85.00
Grey Banded	2	10.00

Quartzite	1	5.00
White	1	5.00
Total	20	100.00

3.1.8 Discussion

HbRg-5 is located approximately 500 m northwest of the confluence of the Peace River and Wilder Creek and is situated along an intermediate terrace on the north bank of the Peace River. The eastern edge of the terrace overlooks the Wilder Creek, while a fluvial plain extends to the west along the Peace River located approximately 120m to the south. It is likely that during the time of occupation the water level of the Peace River would have been higher thus promoting easy river access. The site's proximity to these two waterways and their confluence would have been greatly advantageous, as HbRg-5 overlooks a major channel that served as a travel corridor to facilitate movement of people and animals throughout the Peace Region.

The terraced nature of the site would have ensured a prominent lookout over this portion of the Peace River Valley, and HbRg-5 was likely a favourable location for lithic procurement and subsistence practices for past peoples. 2021 excavation by the Ecofor team added to the cultural assemblage and the dimensions of the site. 2021 excavation yielded a total of 48 lithic artifacts. The lithic assemblage included 2 formal tools, 2 expedient tools, in addition to 44 pieces of debitage.

The 2021 excavation conducted by Ecofor represents the northeast corner of the large site of HbRg-5. The previous investigations conducted by Simon Fraser University, Golder, Ecofor and Stantec illustrate the significance of this site as a location for tool crafting and procurement, throughout multiple occupations. The lithic tools recovered are of limited diagnostic value, including a flake tool, non-diagnostic projectile point fragment, unifacial tool and a chopper tool. The presence of the projectile point and unifacial chopper are indicative of the lithic reduction process. Whether the high percentage of lithic artifact recovered as surface finds (41.67%) this is related to the overall agricultural disturbance to the site is inconclusive.

3.1.9 Temporal Considerations

No temporally diagnostic tools were identified during the 2021 investigation for HbRg-5. However, previous work at the site led to the recovery of projectile points which demonstrated a span between 4500-1350BP for site occupations. Previous excavations led to the collection of samples for specialized analysis, including eleven OSL and one thermoluminescence samples that were collected by Golder. In addition to these there as a radiocarbon sample, yielding a date of

3790 ± 27BP. Based on these results it is believed that HbRg-5 was occupied at various times and for various lengths of occupation between the mid to late Holocene.

3.2 External Analysis Results for 2021 Sites

No samples suitable for AMS radiocarbon analysis were collected from HbRg-5, excavated during the field season in 2021. Residue analysis samples were not collected or submitted for analysis due to artifacts being discovered on the surface, therefore washed by weather events.

4.0 Interpretation and Synthesis

4.1 Cultural Chronology

An attempt to better understand and define a pre-contact cultural sequence representative of the Peace River region is one of the guiding research questions considered throughout SDR investigations. Excavations in 2021 were limited to one archaeological site, which did not yield any artifacts with diagnostic properties. No datable materials were collected from the site. Site lithic assemblages tended to reflect similar yields as past investigations; predominately comprised of debitage with limited to no diagnostic tool yields (see Golder and Amec, 2016, 2017, 2018; Ecofor 2017, 2018, 2019, 2020). Also reflective of other sites in the region is the lack of tools, especially diagnostic tools, on small sites comparatively to larger sites.

The one site investigated in 2021 is considered a large site, that yielded four tools. Two expedient tools (no diagnostic properties), two formed tools, one of which is a uniface fragment, with no diagnostic properties and a projectile point but was fragmented which prevents diagnosing with confidence. These low yields reflect the transient and temporary habitation pattern typical to the region and like most sites of this nature, lacked evidence to create a cultural sequence. This site did not produced samples suitable for AMS dating methods or strata suitable for OSL samples. As observed in previous years, the depositional and preservation biases, and the highly mobile nature of past populations within the PAZ and surrounding areas tend to impede the development of a regionally specific cultural sequence. Therefore, 2021 results are only supplemental to previous findings in the PAZ and the refinement of our understanding of a Peace Region sequence is purely speculative.

The current chronology for the region is composed of three temporal frames consisting of the Early Pre-Contact Period (12000 – 7500 BP), the Middle Pre-Contact Period (7500 – 1500 BP) and the Late Pre-Contact Period (1500 – Contact). Defining characteristics and summaries of these periods can be found in Driver et al, 1996; Golder and Amec, 2015, Howe and Brolly, 2008; Vickers-Redhead and Brewer, 2016; and Ecofor, 2016. As only one site was investigated in 2021, limited data was produced concerning the pre-contact cultural sequence of the PAZ.

4.2 Settlement Patterns

Several research questions guiding the SDR work address the need for a greater understanding of prehistoric settlement patterns within the PAZ. Results from archaeological work conducted by Golder and Amec for the Project between 2011 and 2018 and by Ecofor during SDR investigations between 2016 and 2020 have established and outlined issues inhibiting the analysis of prehistoric settlement patterns in the PAZ (Golder and Amec 2016:458; Ecofor 2017:158-163). These same issues are applicable to the information gathered by Ecofor during 2021 excavations. Artifact assemblages are dominated by lithics with few diagnostic, datable, and exotic materials limiting the information that can be drawn regarding our understanding of settlement patterns within the PAZ. Additionally, since the majority of the PAZ is situated inside the Peace River Valley, the majority of known sites are also situated within the valley. This prevents comparative analysis with sites outside of the valley and inhibits our overall understanding of the movement of pre-contact populations throughout the region.

The 2021 SDR conducted by Ecofor was limited to one site, which is located within the Peace River Valley along a lower intermediate terrace of the river. This location included:

- A lower intermediate terrace on the north bank of the Peace River along the west bank of the Wilder Creek.

Artifact assemblages collected from the one site reflected patterns previously established for the PAZ. The observed settlement pattern in the PAZ demonstrates diachronic continuity through each period, in which the landscape has been utilized in similar ways over time. In the Peace River Valley, the nature of known sites reflects a pattern indicating large, seasonal base camp type sites, located within areas where a series of resources overlap, interspersed with smaller, more transient sites and use areas between such larger camps. The smaller transient camps are often located on intermediate terraces, away from major or additional water sources. They often have limited artifact assemblages that represent few to one time occupation use. HbRg-5 is reflective of a larger base camp type site, situated along the confluence of the Peace River and Wilder Creek.

HbRg-5 is situated on a lower intermediate terrace feature north of the Peace River and along the west bank of Wilder Creek. Located at the confluence of the Peace River and Wilder Creek, the site is part of the composition of the Wilder Creek-Jim Prairie complex. HbRg-5 represents a larger and reoccurring occupation site. Previous work at the site has established the significance of the

site with 2021 results further supporting previous interpretations. Specifically, work in 2021 was focused within the northeast portion of the site along the margin of the Wilder Creek.

Based on previous results at this one site and proximal sites and in consideration with our current understanding of the paleoenvironmental setting and terrace exposures within the valley, current results reflected patterns observed from previous analyses in the PAZ. The distribution and representation of both large and small site patterns are manifestations of the same driving factors behind settlement and mobility of past hunter-gatherer populations within the Peace River Valley; access to resources and travel corridors. The majority of site assemblages within the PAZ are reflective of subsistence practices and other transient task orientated activities, as well as resource extraction and procurement. The nature of these site types suggest that smaller sites may be the function of smaller groups engaging in subsistence activities widely across the landscape, and/or task groups operating on the peripheral edges of residential loci, coupled with the availability of exploited resources (i.e. game animals). Larger sites appear to be located within areas where several resources and travel corridors overlap which allow for a more intensive and/or recurrent occupation of a location.

One subject discussed in previous reports is the possible patterns regarding group size over time within the PAZ. Unfortunately, due to the minimal number of sites investigated in 2021, the lack from which datable materials were collected, and the display of heavy contextual disturbance, no additional data can be drawn on the subject. An additional aspect requiring further analysis is the relationship between activity areas within large site and to adjacent smaller sites. Overall continuity in the expressed settlement patterns may be observed through time, however factors dictating the function and concurrency of a site are poorly understood since the preservation of temporal data within multiple proponents of a site and adjacent sites is rare. Lastly, additional comparative analysis of sites outside of the PAZ is required in order to better understand the dynamic factors influencing site function and landscape use to help refine settlement patterns.

4.3 Resource Use

Analysis and consideration of all artifact types within an assemblage can provide insight regarding not only the function of the artifacts but also the function of the site. The variety of artifact and raw material types collected during the 2021 SDR season was small and impeded by the limited number of sites and EUs excavated. Quantities were also limited as the site was representative of a temporary occupation and a small number of EUs were excavated. Due to

preservation biases and the transient nature of pre-contact populations, assemblages within the PAZ are typically dominated by lithic materials, specifically by a locally sourced type, black chert. Results from 2021 site investigations mirror these assemblages. No exotic materials were identified this field season, however a handful of tools were recovered and no faunal remains were recovered from the site.

The presence of faunal remains can provide insight into subsistence practices including the species being hunted as well as processing techniques. No faunal remains were collected from the one site excavated in 2021, however, in excavations from previous years the faunal remains collected and documented have added to the knowledge and understanding of the site.

Typical of faunal assemblages within the PAZ, the majority of remains are fragmentary and/or burnt/calced which inhibits identification to the species level. Therefore, insight into specific species present at a site can also be deduced from residues preserved on lithic tools. As the tools recovered in the 2021 field season were mostly fragmentary, the likelihood of them containing traces of protein/DNA are low. No tools recovered from 2021 were selected for submission for external protein residue analysis.

The type and variety of raw lithic materials recovered from a site can be indicative of travel and trade routes practiced by pre-contact populations. The lithic assemblage recovered from the site excavated during 2021 investigations indicated a heavy reliance on locally available resources. An abundance of black chert lithics is typical of sites located within the PAZ. Also common to PAZ assemblages is the presence of other lithic materials including basalt, chalcedony, siltstone, quartzite, and other visually distinct varieties of chert. These material types are typically recovered in much smaller quantities which was the case for 2021 assemblage. The lithic assemblage produced from HbRg-5 was composed mainly of black and grey chert, with the exception of a chopper made of white quartzite. The presence and/or varying proportions of other material types to black chert within a site may imply separate occupational events or distinct activity zones. These observations at HbRg-5 further imply the importance and continued use of this locale throughout the pre-contact era.

The artifact assemblages recovered from the site excavated in 2021 reflect those of previous findings in the PAZ; a significant reliance on locally available resources including raw lithic materials for lithic manufacturing, and animal species for hunting and subsistence. Additional interpretation and insight into observed patterns of resource use in the PAZ is unfortunately, inhibited by preservation biases. Overall, the resource use implied by the 2021 site assemblages are indicative of mobile hunter-gatherer settlements typical to the region.

4.4 Trade and Exchange

Within the Peace Region, a common indicator of trade and exchange in an archaeological context is the presence of non-local, or exotic, materials. Although rare, obsidian has been recovered from sites within the Peace Region. The recovery of this exotic material within an archaeological context implies that the inhabitants of the site engaged in long-distance travel and/or trade networks. The amount of trade and exchange a society engages in can be a reflection of the sociocultural complexity of a given society (Coon 1948). Obsidian artifacts can be traced to the source from where the raw material originated through X-Ray Fluorescence (XRF) analysis. By identifying the source of an obsidian artifact found from a site in the region, implications regarding geographical relation and networks of First Nations groups during the Pre-Contact era can be made. Furthermore, the presence of diagnostic artifacts and datable elements can contribute to the temporal understanding of the development, changes, and extent of these trade and travel networks over time.

Unfortunately, no exotic materials were recovered during SDR work in the 2021 season. This may be in part be due to the limited number of sites and EUs excavated this year. However, one obsidian artifact was recovered during the AIA work in 2021 at HbRi-33 (results from the AIAs will be discussed further in Section 5). It is important to include the obsidian finding in this section as it adds to our understanding of this site from work conducted in previous years including SDR in 2020 by Ecofor (2021). HbRi-33 is located on an ancient fluvial terrace adjacent to the confluence of the Halfway River and the Peace River. The obsidian recovered from HbRi-33 was collected as a surface find, and very small and therefore was not sent away for X-Ray Fluorescence (XRF analysis).

4.5 Archaeological Complexes

Four archaeological site complexes have been previously identified within the PAZ.

- The Plateau Wetland Complex
- The Cache Creek-Watson Slough Complex
- The Cache Creek-Bear Flats Complex
- The Wilder Creek-Jim Rose Prairie Complex

Systematic Data Recovery was conducted at one site during the 2021 field season, HbRg-5 is associated with The Wilder Creek-Jim Rose Prairie Complex,

however due to the minimal artifact recovery, additional information regarding this complex, is not available.

4.6 Research Questions Revisited

The research questions developed for the project are addressed below. The discussion below is primarily based on the Ecofor 2021 SDR Study Area, consisting of one site within the proposed eastern reservoir. As the one site investigated during the 2021 field season only represent a small sample of the overall sites investigated for the Project, some questions will be addressed more thoroughly in the final report in consideration of all investigated sites.

1. What factors influence site size in the Project Activity Zone and how is this represented in the archaeological record?

Based on 2021 SDR, factors influencing site size are site location including surrounding environment, landform, degree of availability of floral and faunal resources, and access. The one site excavated in 2021 is located within the valley located directly on the confluence of the Peace River and Wilder Creek. Reflective of findings in previous years, site size is indicated through the density and spatial (both horizontal and vertical) distribution of the recovered cultural assemblage. This may represent recurrent yet distinct occupational events as well as additional factors based on biodiversity and location discussed below.

2. In the Project Activity Zone, are sites in the valley larger than those on the plateau?

No sites excavated during the 2021 season were located on the plateau of the Peace River during the SDR work. Due to the small sample size of sites excavated in 2021, this question will be addressed in the final report.

3. Do site distribution patterns in the Project Activity Zone reflect the pattern of traditional Indigenous use described in ethnographic accounts?

The archaeological record in general is consistent with ethnographic accounts for the region (Golder and Amec, 2016:469). However, ethnographic records are limited and are not available for specific sites within the PAZ. Based on results of the 2021 investigations undertaken by the Ecofor team, settlement patterns in the PAZ appear to be reflective of highly mobile hunter gatherers whose group size varied dependant on available resources. This appears to be in agreement with patterns of traditional Indigenous use described ethnographically. General patterns of subsistence and land-use from the ethnographic record are reflected in the archaeological record by the artifact assemblages, lithic tools, and faunal

material. Based on past findings, faunal assemblages identified are dominated by mammals, in particular larger ungulates. This is consistent with ethnographic accounts highlighting the important role of mammals (e.g. Goddard 1916). Taphonomic processes likely contributed to the limited quantity of faunal material recovered as well as the preferential preservation of mammal remains over fish and avian remains. Additionally, evidence of recurrent occupation over time supports the ethnographic accounts of long term, continuous use of the region.

4. What is the relationship between these site complexes and biodiversity at these locations?

2021 investigations included a site within the area of the Wilder Creek and Peace River confluence. This represents a convergence (i.e. a nexus) of several key landscape factors including a concentration of biotic resources, locally available raw material sources, proximity to primary and secondary travel corridors, and landforms suitable for occupation (i.e. terraces). The presence of a large site interspersed with smaller sites indicate that the area was frequently occupied. This is likely the result of favourable, localized biodiversity present in a location that are less abundant in adjacent areas of the Peace River valley. Areas demonstrating a well-developed terrace system, as well as heterogenous, localized yet diverse ecologies, promote the idea of various resource concentrations within the PAZ. The location of large sites in relation to smaller sites is indicative of a settlement pattern of mobility between these areas. Areas exhibiting a higher degree of biodiversity and other factors (i.e. a nexus) are where larger sites are located and smaller sites located either between or within less productive concentrations. These ecological and topographic factors promote heterogenous vegetation due to varied edaphic factors which is reflective of a diverse ecosystem (i.e. a wide range of flora and fauna). In addition to these factors, a locale in proximity to the confluences of the river would have allowed for short range lithic procurement due to exposure of alluvial materials within the Peace River and adjacent tributaries. As well as facilitate access to upland resources. Given all these factors, the level of biodiversity within a given concentration appears to be proportional to settlement pattern and relative size of sites within the concentration and adjoining areas. This type of correlation is not seen in areas of the valleys where the biodiversity is less favourable and as such, sites in those areas appear to be more indicative of temporary campsites or field stations during travel in between biodiverse patches.

5. How are the few large sites formed and what do they represent?

Results reflect previous findings suggesting large sites were formed through recurrent occupational events including singular, intensive occupations based on site function/task. These may indicate a preferential use of geographical areas over time. In addition, large sites appear to be located within the nexus of not

only several different resources but also transportation corridors. These sites appear to represent residential base camps where many activities occurred rather than temporary camps including kill sites, field stations, and lithic reduction loci.

6. What factors influence the distribution of large sites and site complexes?

The one large site investigated by the Ecofor team in 2021 indicates that distribution of larger sites is likely influenced by location. The site (HbRg-5), is situated along an extensive terrace feature and located in proximity to or directly at the confluence of the Peace River and its tributaries. This location likely presented several habitats of targeted resources, as well as being in proximity to raw material sources which are available within the Peace River and associated tributaries. These sites are ideally situated for subsistence practices allowing for the targeting of several different species, lithic procurement, as well as access to various local and regional travel corridors facilitating movement throughout the region. Regional redundancies in hunter-gatherer mobility, settlement, and land use patterns indicate connections with localized abundance of lithic materials and/or game animals (Amick, 2017).

7. Are sites more common on the north side of the Peace River Valley and why?

Only a small sample of sites were investigated during the 2021 field season. This question will be addressed in the final report.

8. How does site content and distribution differ between the valley and the plateau?

Based on the small sample size of sites excavated in 2021, this question will be addressed in the final report.

9. What is the relationship between the many small sites found in the plateau wetlands?

No sites within the plateau wetlands were excavated during the 2021 season by Ecofor. This question will be addressed in the final report.

10. Is it possible to identify a cultural historical sequence that is representative of the Peace River region rather than derivative of culture histories from surrounding regions?

Based on the archaeological record it is not yet possible to identify a cultural historical sequence representative of the region that is distinct from the surrounding culture histories. Through the data collected from SDR, as well as a

synthesis of other relevant site data from archaeological sites and collected materials from the PAZ (i.e. other AIA work, private collections, previous non-program related work) and building upon the initial synthesis of the region's prehistory by Howe and Brolly (2008) a cultural historical sequence representative of the Peace River region will be possible. However, the sequence will certainly include derivatives of neighbouring regions since from 2021 and previous investigations we know there is a strong influence from cultures from the east, north, and south. This is supported by the nature of the Peace River region as a travel corridor. Thus, the cultural historical sequence of this region would reflect this. The emergence of shared characteristics and temporal sequences between site assemblages will be discussed in the final report.

11. Is it possible to identify temporal changes in the settlement pattern?

This question will be addressed in the final report.

12. What is the role of fire in Indigenous occupation of the Project Activity Zone?

There was no evidence of fire and hearth features recovered during the 2021 SDR conducted, or previous excavations of HbRg-5 recovered. The presence of these artifact varieties indicate that fire could have been used for subsistence practices. However, no hearth features were identified. The additional roles of fire by Indigenous groups in the PAZ are speculative. This question will be further addressed in the final report.

13. What is the relationship between climate change and Indigenous populations in the Project Activity Zone?

The data recovered and the sample size of sites excavated in 2021 was insufficient to address this research question. Analyses of existing paleoclimate data in conjunction with archaeological data from the PAZ. Overall, a limited number of sites within the PAZ have provided temporal data, specifically with tight temporal control. A larger sample of sites with concrete date ranges in the PAZ would be required to interpret the relationship between Indigenous populations and the climate over time. In addition to limited temporal data, very few sites within the PAZ have yielded flora and charcoal samples largely due to a preservation bias. Micro and macroflora analyses would also assist in addressing this research question.

14. What cultural activities are represented by material remains from sites found in the Project Activity Zone?

Cultural activities are inferred and limited to the type and form of materials that remain in the archaeological record at a site. Assemblages recovered in the PAZ

are typically comprised of lithics and fauna which was the case for HbRg-5. The artifact assemblages from the one 2021 SDR site suggest that several stages of lithic procurement occurred. Although no fauna remains were recovered in the excavations of 2021, previous excavations of HbRg-5 resulted in a large amount of fauna remains. Additional external analyses of artifacts can also provide more insight into site activities. Unfortunately, no lithic tools were submitted for protein residue analysis from 2021 excavations.

15. What can the distribution of artifact types tell us about prehistoric site function and distribution?

The density and frequency of lithic types in conjunction with the presence or absence of fauna and FAR at a site can be indicative of site function. Since only one site was subjected to SDR in 2021, this will be addressed in the final report.

16. Can the evidence from sites in the Project Activity Zone be used to identify features such as hearths and shelters?

The infrequent presence of charcoal and cultural features at sites in the PAZ indicate that it is rare for the identification of features. The role of forest fires as the main agent of forest renewal may impede the identification of features such as hearths due to precipitating concentrations of naturally produced FAR as well as natural burn lenses. Agricultural activity in portions of the PAZ may have also impacted the archaeological visibility of potential shelter features (i.e. Teepee rings) and hearth features known ethnographically. No hearth or pre-contact shelter features were identified during 2021 SDR.

17. Can any evidence of the burial remains reported by the Indigenous community be located in the Project Activity Zone?

Further feedback from the Indigenous community is required to address this research question.

18. Can bison pounds or kill sites be identified in the Project Activity Zone?

Kill sites or bison pound site were not identified in the Project Activity Zone by Ecofor in the 2021 field season.

19. What is the best sampling strategy for small sites?

Sampling strategies undertaken in 2021 was similar to SDR conducted in previous years by the Ecofor team. Strategies employed for small sites was to target artifact clusters based on previous positive shovel test locations, and subsequently base placement of excavation units on defined artifact clusters.

20. How does the presence and distribution of exotic materials, such as obsidian, relate to the cultural chronology of the study area?

The presence and distribution of exotic materials, such as obsidian, can provide insight into the use and exchange of resources and long-distance procurement strategies demonstrated in the study area. Lithic assemblages recovered during 2021 excavations were comprised entirely of locally available materials. This question will be further addressed in the final report.

5.0 Results of Archaeological Impact Assessment

Archaeological fieldwork conducted in 2021 under BC Hydro Permit 2016-0235 included Archaeological Impact assessment (AIA) conducted for ten proposed developments within the PAZ not previously assessed for the Project. These developments, referred to as the “assessment areas” herein, fall within portions of the Project situated on private, Crown, and BCH land and are described below.

The *Farrell Creek Topsoil Stockpile Parcel 240* assessment area comprises Parcel 240, located east of Farrell Creek for the proposed development of a new topsoil stockpile associated with the Highway 29 realignment at Farrell Creek. The assessments were conducted in May of 2021.

The *Farrell Creek East Topsoil Stockpile Parcel 238.1* assessment area comprises Parcel 238.1 located east of Farrell Creek for the development of a stockpile location associated with Highway 29 realignment at Farrell Creek. The assessment was conducted in May 2021.

The *Farrell Creek Stockpile Parcel 258* assessment area comprises Parcel 258 located west of Farrell Creek for the development of a stockpile location associated with Highway 29 realignment at Farrell Creek. The assessment was conducted in October 2021.

The *P6 Access* development component is for a proposed haul route and 30m wide corridor, 15m on each side of the road to the P6 material source. The P6 island was not assessed as it is located in modelled low potential (see also Golder 2018) Ecofor conducted the assessment of the proposed access in November 2021.

The *Area E and Access* development is associated with the proposed material source and haul route located south of the Peace River and southeast of the Site C Dam. The assessment was conducted in October 2021.

The *Halfway River Boat Launch* assessment area is located east of the Halfway River, associated with the Highway 29 realignment component. The assessment was conducted in November 2021.

The *Cache Creek Power Pole 31 Monitoring* area comprises of the placement of power pole 31 along the existing Highway 29 ROW. Monitoring of the instalment of the power pole was conducted in July of 2021.

The *Cache Creek Power Pole Soil Sampling* area consisted the testing of contaminated soils for removal of power poles located North east of Cache creek. Monitoring was conducted in November 2021.

The *Groundwater Well Monitoring* assessments were located in two locations along the south bank of the Peace River, located within and in proximity to the Site C Transmission Line. A total of 13 boreholes were assessed between the two locations. This assessment was conducted in April 2021.

The *Halfway River Boat Launch Geotechnical Investigation* area is located east of the Halfway River, is the proposed location of the new Halfway River boat launch in conjunction with the Highway 29 realignment associated with the Site C Dam project. The assessment was conducted in May 2020 and April 2021.

The *Highway 29 Decommissioning Preliminary Field Reconnaissance (PFR)* assessment area is located within the existing Highway 29 MOTI right of way. The assessment was conducted in areas to be decommissioned within the Cache Creek, Halfway River, Farrell Creek East, Farrell Creek, Dry Creek, and Lynx Creek locations. The assessment was conducted in September 2021. This assessment was designed to only identify areas of potential which may exist within the existing highway (culverts and adjacent fence lines) right of way, for future decommissioning.

5.1 Assessment Area Locations & Background

The ten AIAs conducted by the Ecofor team in 2021 captured areas not previously assessed within the PAZ for the Project. However, portions of the developments and access routes, and power poles are located in areas previously assessed for the Project and are located directly within site boundaries of HbRi-33, HbRh-155, HbRh-146, HbRh-36, HbRh-37, HbRh-65, HbRh-124, and HbRh-122. The Provincial Heritage Register was searched along with recent archaeological reports to determine if registered archaeological sites were present within, or adjacent to, all assessment areas.

5.1.1 Farrell Creek Topsoil Stockpile Parcel 240

The development component is located on a well-defined intermediate terrace on the north bank of the Peace River and is located approximately 18.4 km northeast of the community of Hudson's Hope, BC. The terrain is gently sloping toward the Peace River. Vegetation consists of grasses and mosses, as the site exists within a previously cleared pasture area devoid of an overstory. The

assessment area has been previously disturbed through land clearing and ongoing agricultural activities.

5.1.2 Farrell Creek East Topsoil Stockpile Parcel 238.1

The assessment area is located on a well-defined intermediate terrace on the north bank of the Peace River and approximately 22 km northeast of the town of Hudson's Hope, British Columbia. The terrace gently slopes to the southeast/south-southeast towards the Peace River. The vegetation consists of an overstory or sparse immature popular and an understory of rose and grasses and is poorly to moderately well drained. The assessment area is partially disturbed with ongoing agricultural activities as a livestock field and dirt road cut through the area. One archaeological site is located in the proximity of the assessment area, HaRj-1 is located approximately 75 m to the southwest of the assessment area.

5.1.3 Farrell Creek Stockpile Parcel 258

The assessment area is located along an intermediate terrace on the north bank of the Peace River, west of Farrell Creek approximately 3 km, and approximately 10 km east of the town of Hudson's hope BC. The terrain is gently sloping to the SE, with an increasing slope to the south. The assessment area was modelled as high potential, however, due to the slope and featureless terrain of the majority of the assessment area it was deemed to be low potential. The vegetation consists of agricultural grasses and no overstory, the area has been previously disturbed and is located in an agricultural field.

5.1.4 P6 Access

The assessment area is situated almost entirely on a low-lying island consisting of floodplain within the Peace River. A small western-most portion of the project is located on the shore of the north (left) bank of the Peace River. It is located approximately 6km east of the Moberly River and 2km southwest of the Old Fort. Terrain is generally low-lying and level, to gently sloping to the south. The overstory consists of mature cottonwood, regenerated and immature popular, immature white spruce, and the understory includes willow, alder, prickly rose and mixed grasses. The area has been previously disturbed by natural fluvial processes, trail construction and use of a cabin. There is an abandoned recent cabin (not of historical significance) and fence located near the center of the project along the northern boundary. There are multiple known archaeological sites in the proximity of 500m to the assessment area.

5.1.5 Area E and Access

The assessment area is located along an intermediate and an upper terrace overlooking the Pine River to the south and on an intermediate terrace overlooking the Peace River to the northeast, and located on the south (right) bank of the Project. Terrain is generally flat to steeply sloping towards the Peace River and the Pine River. The assessment area varies between open areas of cleared land and forest cover consisting of mature, immature and regenerated poplar, scattered immature and regenerated white spruce, alder, prickly rose, mosses, and mixed grasses. There are some sections of the assessment area that exhibit signs of heavy previous disturbances from road clearing and construction and railway infrastructure.

5.1.6 Halfway River Boat Launch

The assessment area is located along an intermediate terrace above the north (left) bank of the Peace River, approximately 1km from the current river levels. Located approximately 2km northeast of the confluence of the Peace River and Halfway River, and west-southwest of Cache Creek. The terrain is gently to steeply sloping to the SE toward the Peace River. The vegetation is comprised of grasses, alder, and prickly rose, and devoid of any over story due to its location along the margin of a tilled agricultural field. The area has been previously impacted by agricultural and land clearing activities. The assessment area is located within the boundaries of archaeology site HbRi-33.

5.1.7 Cache Creek Power Pole 31 Monitoring

The assessment area is located on an intermediate terrace overlooking the north (left) bank of the Peace River. The terrain is gently sloping to the east. There is evidence of previous disturbances from the ongoing highway realignment and construction. The vegetation includes forest cover with regenerated poplar and an understory of grasses and kinnikinnick. The installed power pole 31 and one Anchor (Anchor 1) are placed on a disturbed berm in which undisturbed soils were not reached until 147 cm below surface and not reached by Anchor 1. Site HbRh-64 is located approximately 20 m or greater from the power pole and Anchor 1 and was not impacted. Pole 32 Anchor 2 was placed on partially disturbed ground within the site boundary of HbRh-146. The assessment area has evidence of past disturbances due to recreational activities.

5.1.8 Groundwater Well Monitoring

The assessment area is located along the south bank of the Peace River, with two locations tested within and in proximity to the Site C Transmission Line. Groundwater Well BR2 boreholes are located along the south bank,

approximately 2.2 km south-southwest of the Peace River, 2.6 km southeast of the Moberly River, and approximately 5.4 km northwest of the Pine River. The terrain is gently sloping (3-6°) to the southeast. The vegetation consists of aspen/poplar with mixed scattered birch, dense patches of willow and grasses. The second location of Groundwater Well boreholes known as area PR are located on the south bank of the Peace River, on the Site C Transmission Line ROW approximately 2.6 km south of the Peace River, approximately 3.2 km southeast of the Moberly River, and approximately 4.7 km northwest of the Pine River. Terrain is gently sloping (3-6°) to the southeast. The vegetation consists of aspen/poplar with mixed scattered birch, and dense patches of prickly rose, willow, sedges, and grasses. There have been no previous ground disturbance activities in either of the areas.

5.1.9 Halfway River Boat Launch Geotechnical Investigation

The assessment area is located along an intermediate terrace above the north (left) bank of the Peace River, approximately 1km from the current river levels. Located approximately 2.1km northeast of the confluence of the Peace River and Halfway River, and approximately 36 km west of the City of Fort St John, and approximately 24 m east of Highway 29. The terrain is gently level atop of the intermediate terrace edge that steeply slopes to the southeast towards the Peace River. The vegetation is comprised of a cultivated field consisting of grasses, with no overstory present. The area has been previously impacted by agricultural and land clearing activities. The assessment area is located within the boundaries of, or in close proximity to the boundaries of the archaeology site HbRi-33.

5.1.10 Highway 29 Decommissioning (Preliminary Field Reconnaissance)

The assessment area consists of the re-alignment areas for the decommissioning of Highway 29 for the Cache Creek, Halfway River, Farrell Creek East, Farrell Creek, Dry Creek, and Lynx Creek, associated culverts and fencing along the project, and sections of the old highway in the Halfway River area. All of these areas fall within the MOTI Highway 29, and include markers from 0 to 78.5, 89 to 103, 109 to 133, 164 to 191.5, 324 to 363, and 438 to 523. The vegetation of these areas is generally devoid of overstories and contain understories that are comprised mostly of grasses and agricultural fields

5.2 AIA Methods

Field methods followed those outlined in HCA Section 12.2 (formerly 14) Permit 2016-0235. Where portions of the development components were located within and in proximity to known archaeological sites, concurrent archaeological monitoring was conducted to HCA Permit 2019-0213 methods. Fieldwork

consisted of pedestrian survey to inspect available exposures, conducting subsurface tests on a grid plotted over areas of modelled high archaeological potential, judgmental assessment of areas with archaeological potential, pedestrian survey to inspect areas that are not within the modelled area, and judgmental subsurface testing where landforms of archaeological potential were encountered that were either not captured by the model or not within the modelled area. All ten, of the assessment areas fall within the archaeological potential model.

Archaeological impact assessment was limited by the boundary of the development areas, which was established in the field using handheld GPS devices with an accuracy of approximately 3 m. Subsurface tests were located and recorded using GPS devices with an accuracy of approximately 3 m. Where artifacts were recovered, site boundaries were determined by the extent of negative grid, judgmental, and adaptive testing as outlined in the Permit. Additional field methods as per the Permit were implemented in several of the assessment areas due to factors such as small size of the assessment area, previous heavy disturbance, proximity to known sites, and location and access within known sites. These additional field methods are described below.

5.2.1 Farrell Creek Topsoil Stockpile Parcel 240

Archaeological inspection was conducted with a pedestrian surface inspection; no shovel testing was conducted due to project being cancelled once the site was located with surface finds. The site boundary is based on location of surface finds only and the site has not been fully assessed to project standards. The boundary measured 6m N-S, and 6m E-W around the location of surface finds. This preliminary inventory assessment was not considered a full AIA assessment, due to the discovery of a surface site, which cancelled the project.

5.2.2 Farrell Creek East Topsoil Stockpile Parcel 238.1

The archaeological inspection was conducted based on the model provided, with the use of the GPS coordinates to find recommended location of the shovel tests. The project was cancelled after positive shovel tests were discovered, so site was not fully tested or delineated to project standards. A site boundary of a 10m circle around the positive shovel test (observed boundary), has been recorded during the preliminary inventory assessment.

5.2.3 Farrell Creek Stockpile Parcel 258

The assessment area was predicted by the project model to be in high archaeological potential, however during the field evaluation it was determined to be low to moderate potential. Shovel test locations were determined with the use of a GPS with accuracy of approximately 3m, and the waypoint average feature.

Most shovel tests were placed in the northwest area of the project as it was considered moderate potential, the rest was determined to have low potential with sloping and featureless terrain.

5.2.4 P6 Access

The AIA was conducted in snow covered conditions with approximately 5-10cm of ground cover, still allowing for reliable landform identification. A field visit was conducted to observe the presence of archaeological potential for all areas within the development boundary. Areas of potential were observed, and due to frozen ground conditions at the time, no shovel testing was conducted and the assessment could not be completed. Monitoring during construction has been recommended..

5.2.5 Area E and Access

The assessment area within the material source area and access road was predetermined based on the archaeological model,. The assessment area varies between open grassland, unvegetated terrain and well forested areas. Several areas are in proximity to and cross railroad tracks. A total of 12 shovel tests were excavated at eight locations throughout the assessment area. The remaining areas were deemed to be of low archaeological potential during the field assessment.

5.2.6 Cache Creek Power Pole 31

The AIA consisted of concurrent monitoring during the installation/removal of power poles and associated anchors. Pole locations selected to be monitored included areas of archaeological potential determined by the model and at pole locations in proximity to known archaeological sites.

Power Pole 31 – monitoring the excavations of a power pole and two anchors with a backhoe. Three excavations were opened and examined by for archaeological material, then after installation soils returned in backfill to the area.

5.2.7 Groundwater Well Monitoring

The AIA consisted of monitoring a total of 13 bore holes that were conducted with a hand auger between two work locations. The first location known as BR consisted of six boreholes conducted by hand auger, approximately 7.5cm in diameter. The locations of bore holes BR2-C-MW, BR2-C-SP, and BR2-C-DP were on good ground in close proximity to a wetland so soils were screened, and hand sorted. The locations of bore holes BR2-A, BR2-B, and BR2-C were in

lower areas that were not well drained and did not have archaeological potential. The ground conditions were partially frozen at the time of the assessment however hand screening and hand sorting was effectively conducted in the field. Soils were screened and hand sorted to a maximum depth of 50 cm DBS with negative results for the recovery of cultural materials. The second location, known as PR consisted of seven bore holes conducted by hand auger, approximately 7.5 cm in diameter. The locations of bore holes PR-C-MW, PR-C-SP, and PR-C-DP were located on good ground in close proximity to HbRf-187 and a wetland. All soils were subject to screening, and hand sorting. The locations of bore holes PR-A-MW, PR-A-SP, PR-B-MW, and PR-D-MW were located within low-lying, saturated areas with no archaeological potential. The assessment was conducted with approximately 5 cm of snow ground cover.

5.2.8 Halfway River Boat Launch Assessment and Geotechnical Investigation

The AIA involved a surface survey conducted in the northern section of the project area, located in a tilled field where ground visibility was 100%. The southern section of the project area along the terrace edge consisted of one (1) shovel test location that is separated into two sections due to disturbance of sloping and build up separating them. The first section of the shovel test location along the southeast section of the terrace edge consisted of 16 shovel tests. The second section along the southwest area of the terrace consisted of 9 shovel tests for a total of 25 shovel test in this location.

The geotechnical investigation of the assessment area involved a total of fifteen test locations in 2020 and 2021. The tests consisted of four excavator test pits located 32m, 110m, 187m, and 240m, and two drill holes located 44m and 47m north of the north boundary of HbRi-33, two excavator test pits, and five drill holes located within the boundary of HbRi-33, and two excavator test pits located 4m, and 9.5m south of the south boundary of HbRi-33. The monitoring of these tests included the screening of 25% of the soils from the excavator test pits.

5.3 AIA Results

Three of ten assessment areas conducted in 2021 by Ecofor were positive for the recovery of cultural materials. Two new archaeological sites were identified during the assessment of development components Farrell Creek Topsoil Stockpile Parcel 240, **HaRk-84**, and Farrell Creek Topsoil Stockpile Parcel 238.1, **2016-0235-21B** (temporary site name). During assessments and monitoring for developments under Permits 2016-0235 and 2019-0213, eight sites were

revisited including **HbRh-146, HbRh-36, HbRh-37, HbRh-65, HbRh-124, HbRh-155, HbRh-122** and **HbRi-33** with artifacts recovered. Detailed AIA results produced from these 10 sites are presented in the below tables and Appendix D.

Table 18: Archaeological Site Information from 2021 AIA/Monitoring Results

Borden Number: HbRh-155		Temporary Number: n/a			
Site Class: I		Site Type: Cultural materials (subsurface lithic artifacts)			
UTM Zone: 10V	NTS Mapsheet: 94A/04	Approximate Dimension: 112 m (N-S) x 178 m (E-W)	Surface Area:		
Easting: 567867			19936.00 m ²		
Northing: 6209558			(0.933961ha)		
Site Access: The site is located on the north side of Highway 29, on the east terrace of Cache Creek.					
Location, Background and Setting: HbRh-155 was identified during the 2016 AIA phase of the Project. A total 2,617 lithic artifacts manufactured from chert, obsidian, quartzite, and an unknown igneous rock were recovered. Artifacts include one projectile point fragment, one biface, four biface fragments, one uniface fragment, one microblade fragment, six scrapers, one wedge, 22 flake tools, and 10 cores, and 399 bone fragments were recovered. Red ochre, fire-altered rock, and a historic purple glass fragment were also recovered.					
In 2016 during SDR, Golder excavated a total of 33.5m ² . The 2016 SDR work recovered 10,635 lithic artifacts, including 69 lithic tools and 10,566 pieces of debitage. The tools collected from the site include 1 adze, 15 utilized flake tools, 6 retouched flake tools, 23 cores, 1 spall tool, 4 end scrapers, 2 side scrapers, 5 biface fragments, 1 complete biface, 1 uniface, 2 projectile points, and 8 projectile point fragments. A total of 3,541 bone fragments were also recovered most was burned or calcined and could not be identified to species.					
Lithic Artifacts: Three pieces of black chert debitage were recovered from two anchors and one power pole excavation.					
Faunal Remains: No faunal materials were recovered.					
Historic Artifacts: Zero (0) historic artifact were recovered.					
Cultural Stratum: Stratigraphy consisted of raked/screened soils from 0-50cm throughout the proposed project area due to previous disturbance.					
Site Boundary Determination: The previously established site boundary for HbRh-155 is being extended to the south with a 5m buffer to include the three new locations into the site.					
Significance Assessment:	Scientific	Public	Economic	Historical	Ethnic
	Moderate	Low	Low	Low	High

Borden Number: HbRi-33		Temporary Number: n/a			
Site Class: I		Site Type: Surface and Subsurface lithic scatter and Fauna			
UTM Zone: 10V Easting: 596954 Northing: 6232512	NTS Mapsheet: 94A/04	Approximate Dimension: 880 m (N-S) x 2765 m (E-W)	Surface Area: 1,006,443 m ²		
<p>Location, Background and Setting: HbRi-33 is located approximately 36 km west of the City of Fort St John, BC, approximately 13.4 km west-southwest of Cache Creek, and approximately 1.7 km northeast of the confluence of the Halfway and Peace Rivers. The site is situated on an intermediate terrace of the north bank of the Peace River and east bank of the Halfway River. HbRi-33 was originally identified in the 1970's by Simon Fraser University as five separate sites. In 2010, HbRi-9 was merged with HbRi-33 based on results from work conducted by Millenia. In 2010 and 2011, Golder and Archer conducted AIAs for the BC Hydro meteorology monitoring station and associated power poles/line. This resulted in the expansion of HbRi-33 site boundaries in addition to combining HbRi-6, HbRi-34, and HbRi-36 with the site. Portions of HbRi-33 were then subject to AIAs by Golder in 2012, 2015, and 2018, and Stantec in 2019 and 2020. SDR by Ecofor was conducted for the Project in 2018 and 2020. In addition, PGDIs were conducted for the Project in 2015 resulting in 5.8% of the site impacted and in 2020 with 3.16% impacted. Geotechnical work at HbRi-33 for the Project in 2020 resulted in a small site boundary extension to encompass a positive drill hole approximately 25m from the previous site boundary. Ecofor returned to the site in 2021 to conduct and AIA on the stripping stockpile to check on the condition and recover any artifacts exposed due to conditions.</p>					
Lithic Artifacts: Zero (0) lithic artifacts were recovered.					
Faunal Remains: No faunal materials were recovered.					
Historic Artifacts: Zero (0) historic artifacts were recovered.					
Cultural Stratum: Stratigraphy was not determined at this site as artifacts were surface finds and no surface testing occurred.					
Site Boundary Determination: Site boundaries did not change as a result of current work.					
Significance Assessment:	Scientific	Public	Economic	Historical	Ethnic
	Moderate	Low	Low	Low	High

Borden Number: HaRk-84		Temporary Number: 2016-0235-21A			
Site Class: IIc		Site Type: Cultural materials (subsurface lithic artifacts)			
UTM Zone: 10N Easting: 582486 Northing: 6221817	NTS Mapsheet: 94A/04	Approximate Dimension: 12 m (N-S) x 10 m (E-W)	Surface Area: 120 m ²		
<p>Site Access: From the town of Fort St John, BC, drive north on the Alaska highway for approximately 11 km. Turn left onto Don Phillips Highway (Hwy 29) for 45.7 km. Turn north into the privately owned parcel along field access for 300m. Follow the UTM coordinates to arrive on</p>					

site.					
Location and Setting: The site is located on a well-defined intermediate terrace on the north bank of the Peace River, at an elevation of ~503-504m asl. The site is approximately 18.4 km northeast of the town of Hudson's Hope British Columbia, 495m north of the Don Phillips Way/BC-29, and approximately 53km southwest of Fort St. John, British Columbia. The terrace gently slopes south towards the Peace River. Overall the terrain is moderately well drained. Vegetation consists of grasses and mosses, as the site exists within a previously cleared pasture area devoid of any overstory.					
Lithic Artifacts: A total of total of two (2) lithic artifacts were recovered, both artifacts being tertiary flakes. Debitage raw material consisted of banded grey and black chert. The lithic components are protected under the <i>Heritage Conservation Act</i> due to pre-1846 date ranges.					
Faunal Remains: Zero (0) faunal remains were recovered.					
Historic Artifacts: Zero (0) historic artifacts were recovered.					
Cultural Stratum: Stratigraphy was not determined at this site as artifacts were surface finds and no subsurface testing occurred.					
Site Boundary Determination: The observed site boundary is determined by two buffered 5m surface finds, approximately 1m apart for a total of 1105 x 10m.					
Significance Assessment:	Scientific	Public	Economic	Historical	Ethnic
	Moderate	Low	Low	Low	High

Borden Number: TBD	Temporary Number: 2016-0235-21B		
Site Class: Ilc	Site Type: Cultural materials (subsurface lithic artifacts)		
UTM Zone: 10N Easting: 583710 Northing: 6222106	NTS Mapsheet: 94A/04	Approximate Dimension: 10 m (N-S) x 10 m (E-W)	Surface Area: 100 m ²
Site Access: From the town of Fort St John, BC, drive north on the Alaska highway for approximately 11 km. Turn left onto Don Phillips Highway (Hwy 29) for 52.8 km. Turn north into the BC Hydro laydown area, and drive 55m north to the metal gate. Enter the gate and follow the dirt trail 300m up to the top of the hill. Follow the UTM coordinates to arrive on site.			
Location and Setting: The site is located on a well-defined intermediate terrace on the north bank of the Peace River, at an elevation of 504-505m asl. The site is approximately 22km northeast of the town of Hudson's Hope, British Columbia, 270m north of Don Phillips Way/BC-29, and approximately 65km southwest of Fort St. John, British Columbia. The terrace gently slopes to the SE/SSE towards the Peace River. The terrace is poorly to moderately well drained. Vegetation consists of an overstory of sparse immature poplar and an understory of rose and grasses.			
Lithic Artifacts: A total of total of ten (10) lithic artifacts were recovered, including nine (9) tertiary flake and one (1) piece of angular shatter. Debitage raw material consisted of black chert. The lithic components are protected under the <i>Heritage Conservation Act</i> due to pre-1846 date			

ranges.					
Faunal Remains: Zero (0) faunal remains were recovered.					
Historic Artifacts: Zero (0) historic artifacts were recovered.					
Cultural Stratum: Stratigraphy consisted of 0-14 cm of duff; 14-28 cm light brown clay; 28-50 cm reddish-brown fine sand trace silt with heavy cobbles and 20 percent rounded/subrounded pebbles from 14-28cm and 80 percent rounded/subrounded cobbles and pebbles below 50cm. Stratigraphy was relatively uniform across the site with minor variations of stratum depth and varying levels of disturbance.					
Site Boundary Determination: The observed site boundary is a 10m circle around the individual positive shovel test, located on the northeastern corner of the natural terrace. The site may extend West and Southwest of the observed boundary where testing was not conducted as the client pulled the project out of the area and no further testing was done.					
Significance Assessment:	Scientific	Public	Economic	Historical	Ethnic
	Moderate	Low	Low	Low	High

Table 19: Site Impact Assessment from 2021 AIA Positive Results

The preliminary assessment of impacts to the archaeological site covered in this report is presented below. These two archaeological sites identified during preliminary inventory assessment are being fully avoided by the Project and there are no plans to impact these sites. Nonetheless, the method of impact assessment presented below follows Archaeology Branch criteria. Should future archaeological assessment to Project standards be completed at these sites, then final determination of site classifications and the ‘magnitude’ of the level of effect would include consideration of any planned systematic data recovery and post ground disturbance inspection or concurrent archaeological monitoring of the resources, which help to offset negative impacts at each site, in accordance with HCA permits 2016-0235 and 2019-0213.

Site	Level-of-Effect	Assessment
HaRk-84	Magnitude	To be determined if and when future archaeological impact assessment of the site is completed.
	Severity	Irreversible
	Duration	Long-term
	Range	Site-specific
	Frequency	Multiple
	Diversity	To be determined if and when future archaeological impact assessment of the site is completed.
	Cumulative Effect	To be determined if and when future archaeological impact assessment of the site is completed.
	Rate of Change	Immediate

2016-0235-21B	Magnitude	To be determined if and when future archaeological impact assessment of the site is completed.
	Severity	Irreversible
	Duration	Long-term
	Range	Site-specific
	Frequency	Once
	Diversity	To be determined if and when future archaeological impact assessment of the site is completed.
	Cumulative Effect	To be determined if and when future archaeological impact assessment of the site is completed.
	Rate of Change	Immediate

The following table provides a summary of these results including detail of the size of each assessment area and size of modelled archaeological potential within each where shovel testing was conducted. The number and type of shovel tests (STs) conducted within each assessment area based on archaeological potential is also included. Numbers that are identified in brackets represent a positive shovel test.

Table 20: 2021 AIA Archaeological Potential and Results

Archaeological Potential and 2021 Assessment Results						
Component	Archaeological Potential	Area (m ²)	No-Tests	Grid STs	Judgmental STs / Adaptive STs	Total Excavated STs
Farrell Creek Topsoil Stockpile Parcel 240	High	1963.5 m ²	0	0	0	0
	Moderate	0 m ²	0	0	0	0
	Low	2770.25 m ²	0	0	0	0
	Total	5023.32 m²	0	0	0	0
Farrell Creek Topsoil Stockpile Parcel 238.1	High	2227.32 m ²	2	5 (1)	0	5 (1)
	Moderate	880.53 m ²	0	1 (0)	0	1 (0)
	Low	1652.52 m ²	0	1 (0)	0	0 (0)
	Total	5023.32 m²	0	7 (1)	0	7 (1)

Archaeological Potential and 2021 Assessment Results						
Component	Archaeological Potential	Area (m²)	No-Tests	Grid STs	Judgmental STs / Adaptive STs	Total Excavated STs
Farrell Creek Stockpile Parcel 258	High	6566.807164 m ²	31	15 (0)	0	15 (0)
	Moderate	14688.5672 m ²	0	0	0	0
	Low	5079.985638 m ²	0	0	0	0
	Total	26335.36 m²	31	15 (0)	0	15 (0)
P6 Access AIA	High	4847.898059 m ²	0	0	0	0
	Moderate	2546.658183 m ²	0	0	0	0
	Low	71217.22376 m ²	0	0	0	0
	Total	78611.78 m²	0	0	0	0
Area E and Access AIA	High	7670.21 m ²	0	12 (0)	0	12 (0)
	Moderate	0 m ²	0	0	0	0
	Low	0 m ²	0	0	0	0
	Total	7670.21 m²	0	12 (0)	0	12 (0)
Halfway River Boat Launch AIA	High	4599.851917 m ²	0	25 (0)	0	25 (0)
	Moderate	7783.93516 m ²	0	0	0	0
	Low	3273.732923 m ²	0	0	0	0
	Total	15657.52 m²	0	25 (0)	0	25 (0)
Cache Creek Pole 31 Monitoring	High	96.771565 m ²	0	3	0	3
	Moderate	463.757623 m ²	0	0	0	0
	Low	115.480812 m ²	0	0	0	0
	Total	676.01 m²	0	3	0	3
Cache Creek Soil Sampling	High	1189.143556 m ²	0	8	0	8
	Moderate	0 m ²	0	0	0	0
	Low	1312.676444 m ²	0	0	0	0
	Total	2501.82 m²	0	0	0	0
Total	High	29,161.502261 m ²	33	70 (1)	0	70 (1)

Archaeological Potential and 2021 Assessment Results						
Component	Archaeological Potential	Area (m ²)	No-Tests	Grid STs	Judgmental STs / Adaptive STs	Total Excavated STs
	Moderate	13,143.448166 m ²	0	0	0	0
	Low	85,421.869577 m ²	0	0	0	0
	Total	127,726.82004 m²	33	70 (1)	1	70 (1)

5.4 AIA Recommendations

No further archaeological work is recommended where negative results for cultural materials were identified within the assessment areas. BC Hydro and their contractors are advised to follow the Heritage Resources Management Plan (HRMP) and Construction Environmental Management Plan (CEMP) for the Project.

Avoidance, if feasible, is the preferred recommendation for each of the archaeological sites assessed during 2021 AIAs. No mitigation recommendations (i.e., for systematic data recovery) are provided because the sites have not been fully assessed and no further Project activity is proposed at the sites. Further assessment to Project AIA standards under an HCA permit is recommended should project design change to include any portion of **HaRk-84 and 2016-0235-21B**.

For sites **HbRh-36, HbRh-122, and HbRi-33**, the Class I site classifications has not changed as a result of the current work, and as Class I sites, have already been subject to SDR. The recommendations previously provided for these sites following the SDR included no further work prior to construction, and a post ground disturbance inspection or archaeological monitoring during or after site-altering construction activities. These recommendations remain unchanged.

The work conducted at archaeological sites **HaRh-146, HbRh-37, HbRh-65, HbRh-155, and HbRh-124** did not identify any new cultural materials however, should future planned impacts occur at this site, mitigation recommendations specific to the archaeological site is provided below. In addition, BC Hydro and their contractors are advised to follow the Heritage Resources Management Plan (HRMP) and Construction Environmental Management Plan (CEMP) for the Project.

Based on the results of past and current work, HaRk-84 and 2016-0235-21B were assigned a preliminary site “Class” rating consistent with classification criteria described in HCA Section 12.2 Permit 2016-0235 and Section 12.4 Alteration Permit 2019-0213.

Recommendations for systematic data recovery (SDR) were made based on site significance, size, class, and application of a systematic data recovery allocation approach¹. All Class I, IIa, IIb, and IIc sites within impact areas would be subject to post ground disturbance inspection (PGDI) or concurrent construction monitoring, regardless of SDR sample selection results.

Recommendations specific to each of the archaeological sites visited and/or discovered during 2021 AIAs are provided below.

Table 21: 2021 Positive AIA Site Recommendations

Site	Size	Class Designation	Artifacts	Recommendations
HaRk-84	120 m ²	IIc	2 Lithic Artifacts	HaRk-84 is a Class IIc site. Surface inspections were complete and two (2) lithic artifacts were collected. No further assessment has been completed as proposed project was moved by the client once the surface artifacts were found. No mitigation (SDR) recommendations are provided because the site has not been fully assessed and no further Project activity is proposed at the site. Should project design change to include any portion of HaRk-84, further assessment to Project AIA standards under an HCA permit is recommended
Temporary Site 2016-0235-21B	100 m ²	IIc	2 Lithic Artifacts	2016-0235-21B has been assigned the class designation of a Class IIc site. Surface inspections and shovel tests were conducted, with ten (10) lithic artifacts recovered. Clients chose to move the proposed project after the positive shovel test was discovered. Systematic shovel testing and delineation of the positive shovel test have not been completed. No mitigation (SDR) recommendations are provided because the site has not been fully assessed and no further Project activity is proposed at the site. Should project design change to include any portion of 2016-0235-21B, further assessment to Project AIA standards under an HCA permit is recommended

¹ See Golder Associates Ltd. and Amec. 2017. Site C Clean Energy Project – Archaeological Program Year 7 (2016) Summary Report – HCA Permits 2014-0274 & 2015-0193. Unpublished report on file with the BC Archaeology Branch, Ministry of Forests, Lands, Natural Resource Operations and Rural Development. Victoria, BC.

6.0 Results of Alterations (Post Ground Disturbance Inspection and Monitoring)

In 2021, alteration in the form of stripping, tree felling/bunching, power pole and anchors installation, power pole removal, stockpile inspection, with concurrent monitoring, and Post Ground Disturbance Inspections (PGDI) was conducted at fourteen (14) archaeological sites within the PAZ. The alterations and inspections were conducted under Site Alteration Permit 2019-0213. Stripping of an entire site or portions of a site was conducted by Subcontractors of BC Hydro for the Project at 14 of the sites. Concurrent monitoring of the stripping was conducted by an Ecofor crew at the majority of the sites and PGDI was conducted at all altered sites. PGDI sites were altered (i.e., stripped) to an optimal depth as determined by Heritage Specialists based on previous AIA or SDR at these sites. The purpose of the optimal depth of stripping was to identify the average depth below surface where higher volumes of artifacts would be expected, and if present, in situ features. This would allow for the effective observation or artifacts and features, and collection of archaeological materials (if present) after site alterations.

Five of the sites were located within the Cache Creek area were altered by contractors subcontracted by BC Hydro. Three of the sites were altered through stripping conducted by contractor, Kingston Construction Ltd., with procedures outlined in their specific Environmental Protection Plan for this work scope. The other two sites in the Cache Creek area site were altered through the installation of Power Pole 005 with three anchors at HbRh-155, and the partial removal of power pole 184 at HbRh-2 were completed with concurrent monitoring.

One site in the Halfway River area (HbRi-33) consisted of the inspection of stripped stockpiles of HbRi-33, from the previous years stripping. This inspection was conducted in compliance after a Nation's representative observed possible artifacts. The assessment consisted of collection and recording of artifacts observed within previously disturbed soil piles. No ground disturbance was conducted, as the artifacts were discovered in exposed soil stockpiles.

Six sites within the Farrell Creek and Farrell Creek East areas were inspected and monitored during the 2021 PGDI assessments. Four of the sites were altered (i.e., stripped) by the contractor, Formula Contractors Ltd, with procedures outlined in their specific Environmental Protection Plan for this work scope. After one accidental unmonitored alteration at HaRk-1, by the contractor, Flatiron Constructors Canada Ltd., an Ecofor crew conducted an inspection. 2021

inspections of previously frozen soils from HaRk-1 and HaRk-12 (stripped in 2020) were completed.

A total of two sites within the Lynx Creek area were altered (i.e., stripped) by the contractor, Thompson Construction Group, with procedures outlined in their specific Environmental Protection Plan for this work scope. Following completion of PGDI by Ecofor, the archaeological sediments from HaRk-48 and HaRk-5 were removed from the site and stockpiled in a designated location.

One site in the Hudson’s Hope area was visited multiple times for concurrent monitoring and post ground disturbance inspections. The alterations consisted of tree felling/bunching and soil stripping for road and bridge construction, conducted by the contractor, Duz Cho, with procedure outlined in their specific Environmental Protection Plan for this work scope. Following completion of the PDGI by Ecofor, the archaeological sediments from HaRI-4 were moved to the side of the proposed access, and kept in the project area.

For all sites subject to alteration (archaeological monitoring and PGDI) in 2021, summaries are provided below describing the scope and results of work conducted at each site. PGDI results for all sites visited and all artifacts recovered during 2021 PGDI are also included in the tables below.

Table 22: PGDI 2021 Results Summary

(Site Type	Site Class	Site Area (m ²)	Percentage of Site Altered in 2021 (%)	Maximum Stripping Depth (cm)	Artifacts/Samples Recovered
HaRj-17	Surface and Subsurface lithic scatter	Ila	294.146617	100	15 cm	2 Lithics
HaRj-26	Surface and Subsurface lithic scatter	Ilc	474.721018	100	20 cm	13 Lithics
HaRj-35	Surface lithic scatter	Ild	89.075649	100	10 cm	5 Lithics
HaRj-40	Surface and Subsurface lithic scatter with fauna	Ild	78.141587	100	15 cm	None
HaRk-1	Surface and Subsurface lithic scatter	I	113952.518 5	3.1174	20 cm	9 Lithics

	with fauna					
HaRk-5	Surface and Subsurface lithic scatter	lld	0.990321	100	20 cm	None
HaRk-12	Surface and Subsurface lithic scatter	lla	22021.5072 7	22.53065298	0 cm	5 Lithics
HaRk-48	Surface and Subsurface lithic scatter	llc	75.889007	100	10 cm	None
HaRl-4	Historical surface and subsurface cultural materials, cultural depressions, and habitation features; pre-contact cultural depression, and surface and subsurface lithic scatter; fauna	l	20816.5012 9	3.591477914	15 cm	1 Lithic
HbRh-36	Subsurface lithic scatter	l	40131.0578	2.918761677	30 cm	64 Lithics
HbRh-155	Subsurface lithic scatter	l	9343.97	0.001	200 cm	3 Lithics
HbRh-164	Subsurface lithic scatter	lla	507.672361	48.59061989	15 cm	None
HbRh-187	Subsurface lithic scatter	llb	1792.70737	73.23103012	20 cm	2 Lithics
HbRi-33	Surface and subsurface	l	1 006 443	0	0 cm	807 Lithics

	lithic scatter					
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Table 23 : PGDI 2021 Results Summary -Lithic Tools & Debitage

Borden Number	Object ive Core/Core Fragment	Formed Tools											Expedient Tools					Debit- age		Total
		Bifaces/ Points			Unifaces/ Scrapers			Specialized Chipped					Flake Tool	Core Tool	Chopper	Ground Stone Tool	Spall Tool	Shatter	Flakes	
		Biface	Projectile Point	Preform	Uniface	Scraper	Blade/Microblade	Combination Tool	Graver/Burin	Drill	Spokeshave	Wedge/Awl								
HaRj-17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
HaRj-26	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	9	13
HaRj-35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5
HaRj-40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HaRk-1	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	4	9
HaRk-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HaRk-12	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	5
HaRk-48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HaRl-4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
HbRh-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HbRh-36	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	9	54	64
HbRh-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3
HbRh-164	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HbRh-187	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
HbRi-33	29	1		2		5	1			1			2 2		1			223	522	807

6.1 HaRj-17

HaRj-17 is located on a sparsely forested terrace, 300m west of, and 80m above a back channel of the Peace River. The site is 670m west of the Peace River. The site was identified and recorded in 1977 by a crew from Simon Fraser University as a subsurface lithic scatter. One scraper and one flake were identified in a gravel pit. The site location was more accurately determined in 2010 by Millennia Research. The Golder team revisited the site in 2012, and identified subsurface lithic artifacts including one chert shatter, one chert core too, one medium-grained grey banded chert core tool, and one chert uniface.

HaRj-17 was subject to alteration (i.e., stripping) under SAP 2019-0213 by the contractor, WSP Global Inc., on April 21st, 2021, as part of preparation activities for bridge construction for the realignment of Highway 29. Various members of the Ecofor team including Taylor Kruk, Rob Steeves, Rob Paterson, Nancy Chipesia representing Blueberry River First Nations, Bernice Lilly representing Halfway River First Nations, and Natasha Attachie representing Doig River First Nations conducted concurrent monitoring during the stripping activities at the site.

Alterations consisted of stripping 100% of the site to a depth of 15 cm DBS, the stripped sediments were re-deposited in windrows directly beside the site, outside of the site boundaries. The exposed surface and windrows were then subject to surface inspection, raking, and screening. Following final surface inspection of the designated area, windrow sediments were hauled to the designated stockpile (HaRI-56) within the altered site boundaries.

- 100% of the stripped portion of the site was subject to surface inspection following alteration
- Nearly 100% of the windrows and exposed surface were raked and inspected

During monitoring and PGDI of HaRj-17, a total of 2 lithic artifacts were recovered, both were pieces of black chert debitage. No archaeological features were identified during monitoring and PGDI. No further archaeological work is recommended for site HaRj-17 in advance of the next stage of construction.

6.2 HaRj-26

HaRj-26 is located on the north side of the Peace River, 80m above a back channel. The site was identified and recorded in 1977 by a crew from Simon Fraser University as a surface find where a single chert flake was collected. This site was originally part of HaRj-17. HaRj-26 was given a discrete Borden number as the artifact find at this site was 170m away from HaRj-17. The location of HaRj-26 was more accurately determined in 2010 by Millennia Research. In 2012, the Golder team conducted subsurface testing and a single chert flake was recovered from a positive grid test.

The entirety of HaRj-26 was subject to alteration (i.e., stripping) under SAP 2019-0213 by the contractors, Thompson Construction Group, on April 21st, 2021, as part of preparation activities for bridge construction for the Highway 29 realignment. An Ecofor Team crew consisting of Rob Paterson, Taylor Kruk, Rob Steeves, Nancy Chipesia representing Blueberry River First Nations, Natasha Attachie representing Doig River First Nations, and Bernice Lilly representing Halfway River First Nations conducted concurrent monitoring and post ground disturbance inspection.

100% of the site was altered (i.e., stripped) to a depth of 20cm while the Ecofor crew was present.

Following stripping to the recommended depth (20 cm DBS), stripped sediments were re-deposited in windrows within the altered portions of the site. The exposed surface and windrows were then subject to surface inspection, raking, and screening. Windrow sediments were then hauled to the designated stockpile off-site (HaRI-56) and a final surface inspection of the stripped site area was conducted.

- 100% of the stripped portion of the site was subject to surface inspection following alteration
- Approximately 25% of the windrows were screened
- Nearly 100% of the windrows and exposed surface were raked and inspected

During inspections, thirteen lithic artifacts were recovered including two chert bifacial/biface fragments and nine pieces of chert debitage. No archaeological features were identified during monitoring and PGDI. No further archaeological work is recommended for site HaRj-26 in advance of the next stage of construction.

6.3 HaRj-35

HaRj-35 is located 110m above a back channel of the Peace River, along the north bank of the river, 9.2km downstream (east) of Farrell Creek. The site was identified and recorded in 2012 by the Golder team. This lithic scatter was located in a positive subsurface test. A single element of chert shatter was recovered.

The entirety of HaRj-35 was subject to alteration (i.e., stripping) under SAP 2019-0213 by the contractors, Thompson Construction Group, on April 21st, 2021, as part of preparation activities for bridge construction for the Highway 29 realignment. An Ecofor Team crew consisting of Rob Paterson, Taylor Kruk, Rob Steeves, Nancy Chipesia representing Blueberry River First Nations, Natasha Attachie representing Doig River First Nations, and Bernice Lilly representing Halfway River First Nations conducted concurrent monitoring and post ground disturbance inspection.

100% of the site was altered (i.e., stripped) to a depth of 10cm while the Ecofor crew was present.

Following stripping to the recommended depth (10 cm DBS), stripped sediments were re-deposited in windrows within the altered portions of the site. The exposed surface and windrows were then subject to surface inspection, raking, and screening. Windrow sediments were then hauled to the designated stockpile off-site (HaRI-56) and a final surface inspection of the stripped site area was conducted.

- 100% of the stripped portion of the site was subject to surface inspection following alteration
- Approximately 25% of the windrows were screened
- Nearly 100% of the windrows and exposed surface were raked and inspected

During inspections, five lithic artifacts were recovered all composed of black chert debitage. No archaeological features were identified during monitoring and PGDI. No further archaeological work is recommended for site HaRj-35 in advance of the next stage of construction.

6.4 HaRj-40

HaRj-40 is located on an intermediate terrace overlooking the Peace River to the southeast. The site is approximately 50km west-southwest of Fort St. John, 22.7km northeast of Hudson's Hope, and 8.5km east-northeast of the confluence of the Peace River and Farrell Creek. HaRj-40 was recorded as an isolated chert flake surface find by the Ecofor team in 2019 during archaeological monitoring of Project-related geotechnical work. In 2019, the Stantec team conducted assessment of the site; no additional cultural materials were identified.

The entirety of HaRj-40 was subject to alteration (i.e., stripping) under SAP 2019-0213 by the contractors, Thompson Construction Group, on April 21st, 2021, as part of preparation activities for bridge construction for the Highway 29 realignment. An Ecofor Team crew consisting of Rob Paterson, Taylor Kruk, Rob Steeves, Nancy Chipesia representing Blueberry River First Nations, Natasha Attachie representing Doig River First Nations, and Bernice Lilly representing Halfway River First Nations conducted concurrent monitoring and post ground disturbance inspection.

100% of the site was altered (i.e., stripped) to a depth of 15cm while the Ecofor crew was present.

Following stripping to the recommended depth (15 cm DBS), stripped sediments were re-deposited in windrows within the altered portions of the site. The exposed surface and windrows were then subject to surface inspection, raking, and screening. Windrow sediments were then hauled to the designated stockpile off-site (HaRI-56) and a final surface inspection of the stripped site area was conducted.

- 100% of the stripped portion of the site was subject to surface inspection following alteration
- Approximately 25% of the windrows were screened
- Nearly 100% of the windrows and exposed surface were raked and inspected

No artifacts were recovered and no archaeological features were identified during monitoring and PGDI. No further archaeological work is recommended for site HaRj-40 in advance of the next stage of construction.

6.5 HaRk-1

HaRk-1 was first identified in 1952 and subsequently recorded by University of Washington archaeologist, Richard Daugherty, in 1954. HaRk-1 is located approximately 54 km west-southwest of Fort St John, BC, approximately 14 km northeast of Hudson's Hope, and approximately 150 m east of the confluence of Farrell Creek and the Peace River. The site is located on partially cleared portions of both an intermediate and a lower terrace of the north bank of the Peace River, overlooking the confluence of Farrell Creek and the Peace River to the west.

The site was identified during an early reconnaissance of the Peace River valley in 1952 and recorded in 1954 as a surface lithic scatter associated with faunal remains near the confluence of Farrell creek and the Peace River by Richard Daugherty of the University of Washington. The site was revisited by Simon Fraser University archaeologists in 1974 at which time cultural materials were observed in stratified deposits exceeding 1m in the exposed cut bank of the terrace (Fladmark 1975). Simon Fraser University archaeologists revisited the site again in 1976, resulting in the expansion of the site boundary north of Highway 29. HaRk-1 was then subject to archaeological excavations by Simon Fraser University archaeologists in 1977 through 1979 (Spurling, 1980). In addition to expanding the site boundary to the east, as well as west to incorporate a lower terrace, the Simon Fraser excavations confirmed the stratified nature of the site. The excavations resulted in the recovery of 8064 cultural materials, including a distinct faunal assemblage, exotic lithic raw materials, and formal tools.

The excavations undertaken by SFU yielded radiocarbon dates for four of the cultural components identified, in addition to producing diagnostic artifacts. Component One yielded a radiocarbon date of 2790±95 BP from a charcoal sample however the sample was rejected (see Spurling 1980:266). Component One also produced a projectile point fragment that tentatively conforms to similar styles from the Late Pre-Contact Period of the Northern Plains Cultural sequence. Component Two yielded radiocarbon dates of 1530 ±70 BP and 1630±100 BP, in addition to five projectile points (complete and fragments). Three of the points are stylistically similar to points from the Besant phase of the Northern Plains Cultural sequence dating the to transition between the Middle Pre-contact Period and the Late Pre-Contact Period. Component Three yielded a date of 2486±130 BP as well as a projectile point stylistically similar to the Oxbow point form. While the Oxbow-like point occurs in a later temporal context at HaRk-1 than the traditional dates of the phase on the plains, it still falls within the Middle Pre-Contact Period. Component Four yielded a radiocarbon date of 590±100 BP however the date was rejected (see Spurling, 1980:283). This Component also produced a projectile point similar to points from the Mummy

Cave Complex, dating to the mid Middle Pre-Contact Period. Basal dates from the earliest occupation at HaRk-1 suggest an initial occupation around 4400 years BP.

In 2011, the Golder team revisited the site to conduct subsurface testing in the portion of the site within the proposed reservoir. No cultural material was identified, and the site boundary did not change at the time of the visit. The Golder team revisited the site again in 2012 to conduct subsurface testing north of Highway 29, beyond the site boundary, and identified additional cultural materials, including seven lithic artifacts and four fragments of calcined bone collected from eight subsurface tests. Due to the recovery of additional cultural materials beyond the previous site boundary of HaRk-1 the site boundaries were expanded to include the positive tests (Golder and Amec, 2012). The Golder team once again revisited the site in 2018 and conducted a total of thirteen subsurface tests within the existing site boundary. All tests conducted at this time were negative for the recovery of cultural materials and the site boundary did not change.

The Ecofor team visited the site in 2018 to conduct SDR investigations and excavated 58 m² (consisting of 51 1 m x 1 m EUs, two 0.75 m² EUs, and 11 1 m x 0.5 m EUs), to a maximum depth of 130 cm DBD. In addition to the EUs, 73 subsurface tests were excavated with a total of 15 being positive for the recovery of cultural materials. All investigation undertaken by the Ecofor team in 2018 occurred in the west portion of the site within and directly adjacent to the PAZ. Artifacts were found to a maximum depth of 120 cm. The investigation undertaken at HaRk-1 by the Ecofor team during the 2018 field season yielded a total of 1184 lithic artifacts and 857 faunal samples from the EUs and subsurface tests.

Ecofor returned in the Fall of 2020 to conduct concurrent archaeological monitoring of a portion of HaRk-1 that was subject to alteration (i.e., stripping) under SAP 2019-0213 by the contractors, Thompson Construction Group. Approximately 5.70% of the site was altered (i.e., stripped) to a depth of 20cm as part of preparation activities for bridge construction as part of the Highway 29 realignment. Following stripping to the recommended depth (20cm DBS), stripped sediments were re-deposited in windrows within the altered portions of the site. The exposed surface and windrows were then subject to surface inspection, raking, and screening. Windrow sediments were then hauled to the designated stockpile off-site and a final surface inspection of the stripped site area was conducted. No archaeological materials or features were identified during monitoring and PGDI, including during examination and raking of the soil stockpile. No further archaeological work is recommended within the stripped portion of HaRk-1 in advance of the next stage of construction.

In May 2021 Ecofor conducted archaeological monitoring of the HaRk-1 stockpile, located off-site in a designated area approximately 850m east/northeast of HaRk-1. An Ecofor crew consisting of Rob Steeves, and Alanna McKenzie on May 28th and 31st of 2021. The stockpile stood approximately 9-12 feet high, the investigation was conducted by completing surface inspections and raking of the soils along the base and sides of the stockpile. The contractor knocked the pile over with a bulldozer and Ecofor crew returned to complete the survey.

- Nearly 100% of the exposed surface of the stockpile was raked and inspected
- Approximately 25% of the stripping pile was screened

During inspections, eight lithic artifacts were recovered including two chert bifaces/bifacial fragments, one flaked tool, five pieces of chert debitage. No archaeological features were identified during monitoring and PGDI. No further archaeological work is recommended within the stockpile portion of HaRk-1 unless further disturbance is required.

A portion of HaRk-1 was subject to alteration (i.e., stripping) under Ecofor SAP 2019-0213 by the contractors, WSP, on June 3rd and June 7th, 2021, as part of preparation activities for the construction of a bridge as part of the Highway 29 realignment. An Ecofor Team crew consisting of Rob Steeves and Alanna McKenzie conducted concurrent monitoring and post ground disturbance inspection.

Approximately 3.0976% of the site was altered (i.e., stripped) to a depth of 20 cm while the Ecofor crew was present.

Following stripping to the recommended depth (20 cm DBS), stripped sediments were re-deposited in windrows within the altered portions of the site. The exposed surface and windrows were then subject to surface inspection, raking, and screening. Windrow sediments were then hauled to the designated stockpile off-site (Temporary Site DCSP) and a final surface inspection of the stripped site area was conducted.

- 100% of the stripped portion of the site was subject to surface inspection following alteration
- Approximately 25% of the stripping pile was screened
- Nearly 100% of the windrows and exposed surface were raked and inspected

During inspections, one lithic artifact was recovered in the form of a black chert flake. No archaeological features were identified during monitoring and PGDI. No further archaeological work is recommended within the stripped portion of HaRk-1 in advance of the next stage of construction.

A portion of HaRk-1 was subject to alteration (i.e., stripping) under Ecofor SAP 2019-0213 by the contractors, Flatiron Constructors Canada Ltd., on October 12th, 2021, as part of preparation activities for the construction of a bridge as part of the Highway 29 realignment. The stripping was conducted without notifying Ecofor and without concurrent archaeological monitoring. BC Hydro and Ecofor were notified of the incident and Ecofor Project Manager Rob Paterson conducted a post ground disturbance inspection area on October 13th, 2021.

Approximately 0.0198% of the site was altered (i.e., stripped) to a depth of 10 cm while the Ecofor crew were not present.

Following stripping the stripped sediments were piled up to the east of the stripped area. The exposed surface and stripping pile were subject to surface inspection, raking, and screening. Wood framing was placed around and through the area to pour concrete in disturbed area.

- 100% of the stripped portion of the site was subject to surface inspection following alteration
- Approximately 25% of the stripping pile was screened
- Nearly 100% of the stripping pile and exposed surface were raked and inspected

During inspections, no lithic artifacts were recovered, and no archaeological features were identified during monitoring and PGDI. No further archaeological work is recommended within the stripped portion of HaRk-1 in advance of the next stage of construction.

6.6 HaRk-5

HaRk-5 is located on the north side of the Peace River, 5.8km northeast of the mouth of Lynx Creek. It is situated on a small rise west of Highway 29, approximately 13m above the river. The site was identified in 1974 by a crew from Simon Fraser University during a judgmental site survey. The site was recorded as an isolated lithic artifact exposed at the top of a road-cut beside a culvert. In 2012, the Golder team returned to the area and attempted to relocate

HaRk-5, but was unsuccessful. Subsurface testing was completed; no cultural material was identified in any of the subsurface tests. The HaRk-5 site location had been heavily disturbed by highway construction.

The entirety of HaRk-5 was subject to alteration (i.e., stripping) under SAP 2019-0213 by the contractors, WSP/Formula, on April 20th, 2021, as part of preparation activities for bridge construction for the Highway 29 realignment. An Ecofor Team crew consisting of Rob Paterson, Taylor Kruk, Rob Steeves, Nancy Chipesia representing Blueberry River First Nations, Natasha Attachie representing Doig River First Nations, and Bernice Lilly representing Halfway River First Nations conducted concurrent monitoring and post ground disturbance inspection.

100% of the site was altered (i.e., stripped) to a depth of 20cm while the Ecofor crew was present.

Following stripping to the recommended depth (20 cm DBS), stripped sediments were re-deposited in windrows within the altered portions of the site. The exposed surface and windrows were then subject to surface inspection, raking, and screening. Windrow sediments were then hauled to the designated stockpile off-site (Farrell Creek Stockpile FCSP) and a final surface inspection of the stripped site area was conducted.

- 100% of the stripped portion of the site was subject to surface inspection following alteration
- Approximately 25% of the windrows were screened
- Nearly 100% of the windrows and exposed surface were raked and inspected

No artifacts were recovered, no archaeological features were identified during monitoring and PGDI. No further archaeological work is recommended for site HaRk-5 in advance of the next stage of construction.

6.7 HaRk-12

HaRk-12 is partly located within the proposed Site C reservoir and the proposed Highway 29 realignment corridor. The site located approximately 250 m northwest of the confluence of the Peace River and Farrell Creek, approximately 14 km northeast of Hudson's Hope, BC, and approximately 57 km southwest of the city of Fort St. John, BC. The majority of the site is situated upon a forested, lower intermediate terrace standing approximately 33 m above the river.

The site was first identified in 1974 by a crew from Simon Fraser University conducting a judgmental site survey. At the time the site was recorded as a surface scatter extending southeast from Highway 29 to the margin of the terrace overlooking Farrell Creek. Lithic artifacts were reportedly left in situ at that time.

In 2011, the Golder team relocated the portion of the site within the proposed reservoir and subsequently excavated eight grid tests at the eastern end of the site, of which six were within the reported site boundary and two others were immediately adjacent to the boundary. All tests were negative for cultural material.

In 2012, the Golder team again revisited the site. A pedestrian survey observed 22 lithic artifacts scattered across the surface, including a large chert biface showing pressure flaking, and a bifacial core tool. The surface finds were found in 11 discrete locations (i.e. some of the 22 artifacts were in clusters). Eleven judgmental tests were then excavated below the surface finds. Five tests were positive for cultural material, around which 48 adaptive tests were dug, eight of which were also positive. In total, 116 subsurface tests were excavated within or immediately adjacent to HaRk-12 by the Golder team and a total of 53 lithic artifacts were recovered.

In November 2020, an Ecofor team revisited the site to conduct concurrent monitoring of the stripping of approximately 22.54% of the site to a depth of 10 cm. No archaeological artifacts or features were recovered from this inspection.

A portion of HaRk-12 was subject to alteration (i.e., stripping) under SAP 2019-0213 by the contractors, WSP, on May 26th, 2021, as part of preparation activities for the realignment of Highway 29. An Ecofor Team crew consisting of Rob Steeves, Allison Johnston, and Alanna McKenzie conducted the final inspection of the HaRk-12 stockpile. The exposed surface of the stockpile was subject to surface inspection, raking and screening conducted by the Ecofor Crew.

- Approximately 25% of the stockpile was screened
- Nearly 100% of the stockpile and exposed surface were raked and inspected

During the inspection five lithic artifacts were recovered, consisting of one biface/biface fragment, and four pieces of black chert debitage. No archaeological features were identified during monitoring and PGDI. No further archaeological work is recommended within the stripped portion of HaRk-12 in advance of the next stage of construction.

6.8 HaRk-48

HaRk-48 is located on the edge of a terrace above the north bank of the Peace River, 5km upriver (west) from Farrell Creek. The site was identified and recorded by the Golder team in 2012. The site is a small site defined by three chert flakes found in a positive grid test.

The entirety of HaRk-48 was subject to alteration (i.e., stripping) under SAP 2019-0213 by the contractors, WSP/Formula, on April 27th, 2021, as part of preparation activities for bridge construction for the Highway 29 realignment. An Ecofor Team crew consisting of Rob Paterson, Taylor Kruk, Rob Steeves, Nancy Chipesia representing Blueberry River First Nations, Natasha Attachie representing Doig River First Nations, and Bernice Lilly representing Halfway River First Nations conducted concurrent monitoring and post ground disturbance inspection.

100% of the site was altered (i.e., stripped) to a depth of 10cm while the Ecofor crew was present.

Following stripping to the recommended depth (10cm DBS), stripped sediments were re-deposited in windrows within the altered site boundaries. The exposed surface and the windrows were inspected, raked, and screened. Windrow sediments were then hauled to the designated stockpile area off-site (FCSP) and a final surface inspection of the stripped site area was conducted.

- 100% of the stripped portion of the site was subject to surface inspection following alteration
- Approximately 25% of the windrows were screened
- Nearly 100% of the windrows and exposed surface were inspected and raked

No archaeological materials or features were identified during monitoring and PGDI. No further archaeological work is recommended for site HaRk-48 in advance of the next stage of construction.

6.9 HaRI-4

HaRI-4 is located within the proposed Western Reservoir on an intermediate terrace on the south bank of the Peace River. The site is located approximately 500 m southeast of the community of Hudson's Hope, and approximately 700 m northeast of the confluence of the Peace River and Maurice Creek.

HaRI-4, also known as the Rocky Mountain Portage House, was a fur trade post occupied from 1805 to 1814, again from 1823 to 1824 (Fladmark, 1985), and finally from 1861 to 1899 (Spurling, 1980). The trading post location was first identified in 1973 by Phil Murton and George Ferguson and was further recorded through surface inspection conducted by Simon Fraser University in 1974. Surface inspection included the recording of surface lithics and historic artifacts. Cultural mounds and depressions were also recorded and interpreted to be related to the House (Fladmark 1975, Spurling 1980). Shovel testing was conducted in 1987 to verify the location of the Rocky Mountain Portage House. However, only a limited number of tests were conducted and no changes to the site boundaries were made (Burley, 1990).

Stantec returned to the site in 2019 to conduct an AIA for the BC Hydro site C Energy Project. A total of 98 grid tests, 43 judgment tests, and 357 adaptive tests were conducted within and in proximity to the site boundaries of HaRI-4. Twenty-eight of the grid tests, 30 judgmental tests, and 189 adaptive tests were positive for cultural materials and/or faunal remains. A total of 286 lithic artifacts were recovered including two flake tools and a bifacial tool fragment, along with 45 historical artifacts, and 3,080 faunal remains. One possible feature was identified and other areas including a mound with a scattering of distinctive rocks were documented. It is believed that due to the presence of previous and ongoing disturbances in the area no other features were identified during the 2019 testing.

In 2020 an Ecofor team returned to the site to conduct an SDR investigation where 79 EUs, totalling 75m², covering a span of seven blocks located throughout the site were excavated. This investigation yielded a total of 771 lithic artifacts, 2764 historic artifacts, and 5,650 faunal remains.

HaRI-4 was visited multiple times during the 2021 season by an Ecofor crew to conduct concurrent monitoring and post ground disturbance inspections for different alterations (i.e., tree felling/bunching and stripping) under SAP 2019-0213 by the contractors, Duz Cho. The first visit on October 4th, 2021, a Ecofor crew consisting of Rob Paterson and Allison Johnston, conducted concurrent monitoring and post ground disturbance inspection of tree felling and bunching on and near the site for clearing the western reservoir of the Project. Ecofor returned to HaRI-4 on October 28th, and November 10th, 2021, to conduct concurrent monitoring and post ground disturbance of the stripping of four areas in the site boundary or in proximity to the site, for access road and bridge construction. This monitoring was conducted by an Ecofor crew comprised of Allison Johnston (October 28th, November 10th), and Zebedee Kawei (October 28th).

Approximately 3.591477914% of the site was altered (i.e., stripped) to a depth of 15cm while the Ecofor crew was present.

Following stripping to the recommended depth (15cm DBS), stripped sediments were re-deposited in windrows adjacent to the site boundary. The exposed surface and windrows were then subject to surface inspection, raking, and screening

- 100% of the stripped portion of the site was subject to surface inspection following alteration, including concurrent monitoring during alterations.
- Approximately 25% of the windrows were screened
- Nearly 100% of the windrows and exposed surface were raked and inspected

A total of 1 lithic artifact was recovered during the concurrent monitoring and post ground disturbance inspections. The 1 lithic artifact was identified as a combination scraper, no debitage was recovered. No archaeological features were identified during monitoring and PGDI. No further archaeological work is recommended within this portion of site HaRI-4 in advance of the next stage of construction.

6.10 HbRh-146

HbRh-146 is located within the proposed Highway 29 realignment corridor, situated on an intermediate terrace on the north (left) bank of the Peace River. The site is approximately 5 km west-southwest of Cache Creek, approximately 28 km west of the City of Fort St John, approximately 10 km east-northeast of the Halfway River, and approximately 4 km west-southwest of the confluence of the Peace River and Cache Creek.

In the 2021 field season, Ecofor returned to HbRh-146 to conduct concurrent monitoring and PGDI of the installation of Anchor 2 at power pole #32, which were placed on partially disturbed ground within the site boundaries of HbRh-146. On July 29th, 2021, Rob Steeves conducted the concurrent monitoring and post ground disturbance inspection of the installation of the power pole 31, with 2 Anchors, and the second anchor being added onto Power pole 32. Power Pole 31 with 2 Anchors was installed approximately 20 m south of the site boundary of HbRh-64, this site was not disturbed. The second Anchor of Power pole 32 was installed within the site boundaries of HbRh-146, on previously disturbed ground due to recreational activities and current highway alignment and construction.

Approximately 0.33% of the site was altered while the Ecofor crew was present.

Surface inspections were completed for the locations and concurrent monitoring was conducted for the backhoe excavation of the hole for the power pole and Anchor installations.

No lithic artifacts were recovered, no archaeological features were identified during monitoring and PGDI. No further archaeological work is recommended within this portion of site HbRh-146 in advance of the next stage of construction.

6.11 HbRh-155

HbRh-155 is located within the proposed Transmission Line, and adjacent to the Highway 29 corridor, on the eastern intermediate terrace above Cache Creek, north of the Peace River. The terrain is gently to steeply sloping towards the Cache Creek valley and towards the Don Philips Way/ Highway 29 to the south. The site is located approximately 22.5 km west of the City of Fort St John, approximately 15.5km northeast of the Halfway River, and approximately 920 m north of the confluence of the Peace River and Cache Creek.

HbRh-155 was identified during the 2016 AIA phase of the Project. A total of 2,617 lithic artifacts manufactured from chert, obsidian, quartzite, and an unknown igneous rock were recovered. Red ochre, fire-altered rock and a historic purple glass fragment were also recovered.

In 2016 during SDR, Golder excavated a total of 33.5m². The 2016 SDR work recovered 10,635 lithic artifacts, including 69 lithic tools and 10,566 pieces of debitage. The tools collected from the site include 1 adze, 15 utilized flake tools, 6 retouched flake tools, 23 cores, 1 spall tool, 4 end scrapers, 2 side scrapers, 5 biface fragments, 1 complete biface, 1 uniface, 2 projectile points, and 8 projectile point fragments. A total of 3,541 bone fragments were also recovered most was burned or calcined and could not be identified to species.

A portion of HbRh-155 was subject to alteration (i.e., power removal and installation, and soil stripping) under SAP 2019-0213 by the contractors, Kingston Construction Ltd., on March 5th, and March 19th, 2021, as part of preparation activities for the power distribution detour for the Highway 29 realignment corridor. and the power distribution detour. bridge construction for the Highway 29 realignment. An Ecofor Team crew consisting of Taylor Kruk (March 5th) Rob Steeves (March 5th and 19th), Rob Paterson (March 5th and 19th), Patricia Apannah (March 5th and 19th) representing Blueberry River First Nations, Tamara Henya (March 5th) representing Halfway River First Nations, Natasha Attachie

(March 5th) representing Doig River First Nations, and Kerry Metecheah (March 19th) representing Halfway River First Nations conducted concurrent monitoring and post ground disturbance inspection (PGDI).

Approximately 0.001% of the site was altered (i.e., stripped) to a depth of 2m while the Ecofor crew was present.

On March 5th the installation of power pole #005 and the installation of three anchors for power pole #005 was completed. During this installation concurrent monitoring was conducted while the excavator dug out the holes for each anchor, approximately 50 cm by 1.5m each. On March 19th the concurrent monitoring of the removal of power pole 249 055 and soil stripping of a 1.5m x 1.5m area was conducted. Following stripping to the recommended depth (90cm DBS), stripped sediments were re-deposited in windrows within the altered portions of the site boundary. The exposed surface and windrows were then inspected, raked, and screened.

- 100% of the stripped portion of the site was subject to surface inspection following alteration
- Approximately 25% of the windrows were screened
- Nearly 100% of the windrows and exposed surface were raked and inspected

A total of 3 lithic artifacts were recovered, including one primary flake, one tertiary flake, and one piece of shatter. No archaeological features were identified during monitoring and PGDI. No further archaeological work is recommended within the stripped portions of HbRh-155 in advance of the next stage of construction.

6.12 HbRh-164

HbRh-164 was identified by the Golder Team in 2016 while conducting systematic grid testing. In total, 26 lithic artifacts, manufactured from black chert and orthoquartzite, including one projectile point (identified as an Oxbow Point) and six flake tools, were recovered.

A portion of HbRh-164 was subject to alteration (i.e., stripping) under SAP 2019-0213 by the contractors, Kingston, on May 5th, 2021, as part of preparation activities for bridge construction for the Highway 29 realignment. An Ecofor Team crew consisting of Rob Steeves and Gary Ben representing Doig River First

Nations conducted concurrent monitoring and post ground disturbance inspection (PGDI).

Approximately 48.59061989% of the site was altered (i.e., stripped) to a depth of 15cm while the Ecofor crew was present.

Following stripping to the recommended depth (15cm DBS), stripped sediments were re-deposited in windrows within the altered portions of the site boundary. The exposed surface and windrows were then inspected, raked, and screened. Windrow sediments were then hauled to the designated stockpile area off-site (HbRh-189) and a final surface inspection of the stripped site area was conducted.

- 100% of the stripped portion of the site was subject to surface inspection following alteration
- Approximately 25% of the windrows were screened
- Nearly 100% of the windrows and exposed surface were raked and inspected

No archaeological materials or features were identified during monitoring and PGDI. No further archaeological work is recommended within the stripped portions of HbRh-164 in advance of the next stage of construction.

6.13 HbRh-187

HbRh-187 is located approximately 24 km west of Fort St John, 14.5 km east-northeast of the confluence of the Halfway and Peace rivers, and 1.2 km north of the confluence of Cache Creek and the Peace River.

HbRh-187 is on an intermediate terrace above the north bank of the Peace River. The site is situated adjacent to a very steep slope leading west down to Cache Creek, which is approximately 40 m below the site. The site is approximately 479 m (asl). HbRh-187 is located on previously cleared agricultural land and is devoid of overstory and understory other than a mix of grasses and small shrubs.

HbRh-187 was originally recorded by Golder in 2018 after a subsurface lithic scatter was identified (Golder, 2018). During the 2018 assessment, one (1) utilized black chert flake and twenty-one (21) pieces of black and grey chert debitage were recovered. One (1) intermediate mammalian vertebrae and two (2) pieces of calcined bone were also recovered. The site boundary was determined by the extent of positive grid, judgmental, and adaptive tests, with a 5m buffer (observed boundary). Eighty-one (81) shovel tests were excavated, of which two

(2) grid, two (2) judgmental, and twelve (12) adaptive tests were positive for cultural material.

At HbRh-187, the Ecofor team excavated six (6) EUs, all measuring 1 m x 1 m (6 m²). EUs were excavated to a maximum depth of 50 cm depth below datum (DBD), with cultural material being recovered at a maximum depth of 30 cm DBD. As per the methodology outlined in permit 2016-0235, EUs were halted after a minimum of one 10cm level failed to yield cultural material, sterile sediments were reached, or a minimum of 30 cm DBD was reached in negative units.

Excavations at HbRh-187 recovered thirty-three (33) lithic and twenty-four (24) faunal artifacts. Raw materials consisted primarily of black chert, but included some blue and grey chert debitage, as well as two (2) obsidian flakes. The obsidian debitage was photographed and then submitted for further analysis, in the hopes of identifying a source. The lithic assemblage recovered is representative of all stages of the lithic reduction process, and two (2) expedient tools were collected. One (1) retouched flake and one (1) utilized flake were recovered from Block A EU E1003 N1001.

The faunal assemblage at HbRh-187 consisted of twenty-four (24) calcined bone fragments. Eight (8) fragments were recovered from Block A EU E1003 N1001 and sixteen (16) fragments were recovered from Block A EU E1003 N1000. The calcination of bone fragments is indicative of bone exposed to a high temperature, suggesting that these fragments were once heated and/or cooked.

A portion of HbRh-187 was subject to alteration (i.e., stripping) under SAP 2019-0213 by the contractors, Kingston, on May 5th, 6th and 11th, 2021, as part of preparation activities for bridge construction for the Highway 29 realignment. An Ecofor Team crew consisting of Rob Steeves, Rob Paterson (May 11th), and Gary Ben representing Doig River First Nations (May 5th) conducted concurrent monitoring and post ground disturbance inspection (PGDI).

Approximately 73.23% of the site was altered (i.e., stripped) to a depth of 20cm while the Ecofor crew was present.

Following stripping to the recommended depth (20cm DBS), stripped sediments were re-deposited in windrows within the altered site boundaries. The exposed surface and windrows were then subject to surface inspection raking, and screening. Windrow sediments were then hauled to the designated stockpile area off-site (Temporary Site LCSP) and a final surface inspection of the stripped site area was conducted.

- 100% of the stripped portion of the site was subject to surface inspection following alteration

- Approximately 25% of the windrows were screened
- Nearly 100% of the windrows and exposed surface were raked and inspected

A total of 2 lithic artifacts and 33 faunal materials were recovered during the inspection. The 2 lithic artifacts are both pieces of debitage, and the faunal was recorded but not catalogued or retained, as it was deemed to be of modern deposition. No archaeological features were identified during monitoring and PGDI. No further archaeological work is recommended for the site, HbRh-187 in advance of the next stage of construction.

6.14 HbRi-33

HbRi-33 is located within the Highway 29 realignment project on an ancient fluvial terrace adjacent to the confluence of the Halfway and Peace Rivers. The site is located approximately 36 km west of the City of Fort St John, BC, approximately 13.4 km west-southwest of Cache Creek, and approximately 1.7 km northeast of the confluence of the Halfway River and the Peace River.

HbRi-33 was initially recorded as five sites, HbRi-6, HbRi-9, HbRi-33, HbRi-34, and HbRi-49 by Simon Fraser University when they were first identified in 1974 – 1978. The sites boundaries were then altered and combined into one after being revisited for archaeological assessments between 2010 and 2015. Golder Associates conducted an archaeological investigation assessment (AIA) in 2010 where a total of 162 lithic artifacts were recovered. In 2011 Archer CRM Partnership visited the site to conduct supplemental work from Golder on a meteorological monitoring station. During this visit a total of 57 lithic artifacts were recovered including cores, scrapers, and a projectile point. In 2012 Golder re-visited the site for additional assessments, where a total of 92 lithic artifacts and 9 faunal remains were recovered. In 2015 Golder returned to complete another AIA where an additional four lithic artifacts were recovered and the site boundaries extended.

In 2017 Ecofor visited the site to conduct an SDR for the BC Hydro Project, a total of 2177 lithic artifacts and 18 faunal remains were recovered. These included 32 flake tools, one spall tool, two bifaces, four scrapers, two spokeshaves, one combination tool, two wedges, three blades, one drill, and one preform. Golder returned to the site in 2018 to conduct an addition AIA that resulted in no archaeological materials being recovered. Then returned again in 2019 to conduct a PGDI for site alteration where a total of 34 lithic artifacts were recovered, including 5 flake tools, 3 biface fragments, one scraper, and two fragments of red ochre. Also in 2019 Stantec visited the site to complete an

additional AIA where a total of 994 lithic artifacts and 14 faunal remains were recovered. These included one side-notched projectile point, three scrapers, one core, and four biface fragments. Stantec returned to the site in 2020 and recovered an additional 527 lithic artifacts, including three bifaces, two scrapers, 14 retouched flakes, two notched flakes, six modified cobbles, and five cores. An Ecofor crew also returned to the site in 2020 to conduct additional SDR excavations where a total of 1,019 lithic artifact and 427 faunal remain were recovered. This archaeological artifact assemblage included 60 lithic tools. Ecofor was also present in 2020 to conduct concurrent monitoring and PGDIs of site alterations to HbRi-33.

An Ecofor crew consisting of Rob Steeves, and Patricia Apannah representing Blueberry River First Nations returned to the site on June 7th, 2021 to conduct a surface inspection of the HbRi-33 stripping stockpile due to concerns of possible exposed artifacts. The assessment area is located within the HbRi-33 site boundary along the eastern edge of the terrace overlooking the Halfway River. The exposed surface of the stripped stockpile was inspected, raked, and screened.

A total of 807 lithic artifacts were recovered, including 17 primary flakes, 50 secondary flakes, 455 tertiary flakes, 184 pieces of angular shatter, 1 microblade tool, 1 drill tool, 4 thumb scrapers, 1 side scraper, 22 retouched flake tools, 9 unidirectional core fragments, 13 multidirectional core fragments, and 6 bipolar core fragments. No archaeological features were identified during monitoring and PGDI. No further archaeological work is recommended in advance of the next stage of construction.

7.0 Results of Chance Finds Response

In 2021, five Chance Finds were reported by construction contractors to BC Hydro during construction activities for the Project and referred to Ecofor for assessment. The identified material for Chance Find 2021-002, 2021-006, 2021-007 were collected with photographs by the contractor and photos submitted to Branta Biostratigraphy Ltd. for initial identification. The material was determined to be palaeontological in nature and the specimen was submitted to Branta for further analysis and is reported on under separate cover. The other two Chance Finds, 2021-001 and 2021-005, were identified as faunal materials located by contractors. The specimen of 2021-005 was left in situ on the ground surface and an Ecofor crew was notified and inspected the area prior to any further work being conducted in the area. The specimen of 2021-001 was recorded and collected by BC Hydro as it was found out of context in a previously excavated/disturbed area. The specimens were identified as being an archaeological Chance Find by the Ecofor crew. Details are provided below.

The appropriate procedure for identifying and reporting Heritage Chance Finds is outlined in each construction contractor's Environmental Protection Plan created for the Site C Clean Energy Project, as outlined in the Heritage Resource Management section (Section 4.9) of the BC Hydro's Construction Environmental Management Plan (BC Hydro 2020 V7). A Chance Finds procedure provides detail into the types of archaeological, historical, and palaeontological resources that can potentially be encountered during construction activities within the PAZ, and if such resources are encountered, the appropriate process for reporting the find and managing the disturbance.

Methods for recovery and management of Heritage Chance Finds protected under the HCA and identified during construction activities for the Project in 2021 followed those outlined in HCA Permits 2019-0213 and 2016-0235. Permit 2016-0235 allows for the assessment and mitigation of heritage resources exposed during construction activities under Permit 2019-0213 for the Project that were previously unknown.

Chance Find No. 2021-001

On January 18th, 2021, a chance find was identified by prime contractor Peace River Hydro Partners. The find consisted of a single faunal remain that was found out of context in a previously excavated/disturbed area, below the original elevation level. It was recorded and collected by BC Hydro personnel and handed over to Ecofor. There is no further investigation required.

Chance Find No. 2021-002

The palaeontological Chance Find 2021-002 discovered in 2021 and reported by PHRP was palaeontological in nature and was therefore sent to a paleontologist (Branta) for further analysis and repository. The results from analysis by Branta will be included in their report.

Chance Find No. 2021-005

On June 9th, 2021, a chance find was identified by the Hwy 29 prime contractor Thompson. The find consisted of a single faunal remain that fell out of an excavator bucket during work at a previously excavated spoil pile. The contractors stopped work, recorded and left in place, then notified BC Hydro when then contacted Ecofor to inspect the area. The Chance Find was identified as a single full bone, appears to be adult as it is fully fused. Ecofor came and conducted an assessment of the area with the assistance of an excavator opening two (2) test areas adjacent to the original find location and to approximately the same depth. No further faunal material was found and work resumed.

Chance Find No. 2021-006

The palaeontological Chance Find 2021-006 discovered in 2021 and reported by the IEM was palaeontological in nature and was therefore sent to a paleontologist (Branta) for further analysis and repository. The results from analysis by Branta will be provided in their report.

Chance Find No. 2021-007

The palaeontological Chance Find 2021-007 discovered in 2021 and reported by PRHP was palaeontological in nature and was therefore sent to a paleontologist (Branta) for further analysis and repository. The results from analysis by Branta will be provided in their report.

Table 24: Heritage Chance Finds 2021 Results

Chance Find No.	UTM Coordinates	Find Type	Results
2021-001	10V,632379E, 6227700N	Paleontological; Faunal Remains-Bison Right Femur	Faunal material identified on ground surface by contractor. Single bone found out of context in a previously excavated/disturbed area below the original elevation. Find was collected by BC Hydro and packaged then handed over to Ecofor personnel. No further investigation required.

2021-002	10V,629507E, 6229744N	Paleontological; Ammonite Fossil	Fossil material identified on ground surface by contractor. Find was collected by contractor and handed over to Ecofor personnel. No further investigation required.
2021-005	10V,575119E, 6219047 N	Paleontological; Faunal Single Bone	Faunal remains identified from excavator bucket collection of an ongoing excavation at a depth of 3 m. The find was collected and handed over to Ecofor personnel. Ecofor conducted an investigation with an excavator opening two (2) areas for ground investigations. No additional faunal remains were recovered or identified in area by Ecofor crew.
2021-006	10V,628683E, 6229923N	Paleontological; Ammonite Concretion	Fossil material identified on ground surface by contractor. Find was collected by contractor and handed over to Ecofor personnel. No further investigation required.
2021-007	10 V 629408E, 6230049 N	Paleontological; Ammonite Fossil	Fossil material identified on ground surface by contractor. Find was collected by contractor and handed over to Ecofor personnel. No further investigation required.

8.0 Condition Assessment Results

A condition assessment inspection was conducted in 2021 at one previously identified archaeological site located within Project area associated with the Dam Site construction area (Dam Site). The assessment of HbRf-31, (commonly known as Rocky Mountain Fort) was completed to inspect and document the condition of the site after possible partial flooding resulting from diversion. This inspection was conducted in accordance with section 8.0: Heritage Monitoring and Follow-up Program of the BC Hydro Heritage Resources Management Plan, Site C Clean Energy Project with compliance to the Environmental Assessment Certificate report (EAC), (BC Hydro 2018). It was deemed that the site was not impacted, and no cultural materials were discovered.

8.1 Condition Assessment Methodology

Methods for condition assessment inspections consisted of visual inspection and recording of the site condition following the partial flooding of the area within the site boundaries. Inspections were conducted at HbRf-31 to confirm that the site condition was consistent with its status as reported on the site form.

8.2 Condition Assessment Results

A condition assessment inspection was conducted at one site by Ecofor in 2021. The inspection of HbRf-31 was completed following the partial flooding of the area within the site boundaries. This involved a pedestrian survey of the area with documentations through photos and fields notes. All edges of the site boundary were assessed and any changes to HbRf-31 were documented. There were signs of flooding along the edges of the well-defined terrace that makes up the north boundary of the site area, however, there was no evidence of flooding on the site itself, or impacts from weathering. Ground visibility was low due to a thick regrowth of vegetation including grasses, prickly rose, alder, bunch berries, and willow.

Table 25: Summary of 2021 Condition Assessments

Borden #	Site Class	Heritage Management Requirements	Condition Impact	Inspection Date(s)	Observations / Findings
HbRf-31	I	As listed in Section 8.0	Post flooding condition inspection.	October 31 st , 2021	Minimal evidence of disturbance of site due to flooding. There is silt buildup along the terrace edge, however the actual site appears to be untouched. There is evidence of disturbance from previous archaeological excavations conducted on the site, and a very dense vegetation regrowth throughout.

9.0 Conclusion and Limitations

9.1 Conclusion

The 2021 investigations (SDR) undertaken by the Ecofor team focussed on the systematic data recovery of one archaeological site located within the PAZ. The 2021 SDR was conducted within known site boundaries which are to be impacted by the eastern reservoir and the Wilder Creek shoreline enhancement for the BC Hydro Site C Clean Energy Project.

The total artifact assemblage recovered during 2021 SDR from the one site consists of 4 expedient and formal tools and cores, 44 pieces of debitage (48 total lithics). The lithic assemblage collected at the site mirrors those of previous years and is primarily made up of black chert. A variety of other cherts and another locally sourced lithic material is also present but in much smaller quantities at the site. The other material type collected was quartzite. No exotic materials were recovered during 2021 investigations. Tools were predominated recovered as surface finds from the site HbRg-5, with one recovered through the excavation process. Tool assemblages were also similar to those recovered in previous years in the PAZ. Tools were indicative of killing and butchering, and wood, hide, and/or bone working activities. In addition, the presence of debitage at the site are indicative of lithic procurement activities. No evidence of pre-contact living surfaces or habitation features were observed at any the site investigated during the 2021 field season.

The results of previous work and the 2021 SDR field work conducted at the one site, have provided sufficient information concerning the density, stratigraphy, integrity, and significance of the site.

AIAs were conducted for ten development areas of the Project within areas not previously assessed. Results from 2021 AIAs included the identification of two new sites, HaRk-84 and 2016-0235-21B (temporary site number). No Project impacts are planned at these sites.

Work conducted under SAP Permit 2019-0213 included PGDI at fourteen archaeological sites. Concurrent monitoring during site altering activities was conducted at eight of the sites. Cultural materials were identified and collected from eleven sites, all as surface finds, while no cultural features were identified. No further archaeological work is recommended within the altered portions of the sites.

No further archaeological work is recommended for site HbRg-5, unless ground disturbing activities are proposed in the future. Recommendations from AIAs include construction monitoring, avoidance and possible future archaeological work if site areas cannot be avoided. Post-ground disturbance inspection or archaeological monitoring may occur during or after site altering construction activities in conjunction with a Heritage Conservation Act Section 12.4 (formerly 12) (Alteration) Permit. No additional work is recommended within altered portions of the sites monitored or where PGDI was done in 2021 under the Alteration Permit 2019-0213.

9.2 Study Limitations

Information regarding archaeological resources presented in the report is based upon review of past work conducted, and unpublished field data from previous Site C archaeological studies conducted by Simon Fraser University, Wood, Millennia Research, Golder Associates, and Stantec Consulting Ltd. The intention of the SDR component of this study was to conduct Systematic Data Recovery of one known archaeological site. Field SDR was limited to areas within the PAZ in which property access had been granted. Properties were never accessed without prior approval from BC Hydro's Properties Group.

The SDR, AIA and PGDI (Monitoring) relied on the results of past studies and the authors accept no responsibility for any deficiencies or inaccuracy contained in this report as a result of that reliance.

9.3 Errata

- 2020 Annual Report, Section 6.0, 5th paragraph and Section 6.2: The description of PGDI methods for HaRk-1 omitted to note that 2020 inspections of soils from HaRk-1 were not complete due to frozen ground conditions and were stockpiled in a separate location within the contractors work area to be inspected upon spring thaw in 2021. Field methods were: Following stripping to the recommended depth (20cm DBS), stripped sediments were re-deposited in windrows within the altered portions of the site. Due to the sediments being frozen at the time of alteration the sediments were discreetly stockpiled for future inspection, raking, and screening pending the thawing of the soils. A final surface inspection of the stripped site area was conducted following removal of the windrows.

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