

**Luck of the Draw: Risk Considerations, Management
Responses, and Policy Implications for
Archaeological Chance Finds in British Columbia,
Canada**

by
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Abstract

Unanticipated discoveries of objects and features of archaeological interest occur for various reasons and in diverse contexts coincident with activities that alter land surfaces. When community development and resource extraction projects unexpectedly encounter a chance find, heritage resources management efforts are required. Such efforts necessarily expose project proponents to financial and regulatory obligations and risks that may or may not be balanced out by gains from supplemental engagements with stakeholders and further studies by archaeologists. British Columbia's archaeological record and applicable resource management policy provide an apt case study for understanding risk, policy, and management implications for archaeological chance finds. A typology for archaeological chance finds enables analyses that indicate there are new opportunities available to manage risk. The typology allows for consideration of alternative approaches that draw from international best practices. A suggested process improvement seeks to offset adverse effects on archaeological resources through overcompensation. Recommendations to align policy and practice include measures to improve triggering mechanisms for archaeological assessment and changes to established assessment processes for chance finds from the perspectives of regulators, proponents, practitioners, and Indigenous Nations.

Keywords: Heritage resources management; British Columbia; Archaeological chance finds; Inadvertent discoveries; Archaeological legislation and policy

Dedication

I dedicate this thesis to the magnificent archaeological record of British Columbia and everyone lucky enough to interact with it.

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List of Acronyms

ACF	Archaeological Chance Find
ACFMP	Archaeological Chance Find Management Plan
AIA	Archaeological Impact Assessment
AOA	Archaeological Overview Assessment
ASIF	Archaeological Site Inventory Form
BC	British Columbia
BCAPA	British Columbia Association of Professional Archaeologists
CAA	Canadian Archaeological Association
CEAA	Canadian Environmental Assessment Agency
CMT	Culturally Modified Tree
CRD	Capital Regional District
EAC	Environmental Assessment Certificate
BCEAO	British Columbia Environmental Assessment Office
EIA	Environmental Impact Assessment
EIM	Emergency Impact Mitigation
EMP	Environmental Management Plan
FLNRORD	Ministry of Forests, Lands, Natural Resource Operations and Rural Development
HRM	Heritage Resources Management
HRMP	Heritage Resources Management Plan
IDB	Inter-American Development Bank
IFC	International Finance Corporation
JPR	Joint Panel Review
LNG	Liquified Natural Gas
LRT	Light Rapid Transit
MEM	Ministry of Energy and Mines
MoE	Ministry of the Environment
MOTI	Ministry of Transportation and Infrastructure
N/A	Not Applicable
NEB	National Energy Board
OCP	Official Community Plan
OGC	Oil and Gas Commission
PARL	Provincial Archaeological Report Library
PHR	Provincial Heritage Register
RAP	Reservoir Assessment Program
SAA	Society for American Archaeology
SFU	Simon Fraser University
SRRMC	Stó:lō Research and Resource Management Centre
UNDRIP	United Nations Declaration on the Rights of Indigenous People
UNESCO	United Nations Educational Scientific and Cultural Organization
USA	United States of America

Chapter 1.

Archaeological Chance Finds

Explorers, citizens, tourists, and archaeologists are responsible for identifying, recording, and popularizing the world's most significant archaeological sites (Fagan and Durrani 2016:2). Introductory textbooks characterize early archaeological endeavours as treasure hunts in a time with few administrative or methodological barriers (Fagan and Durrani 2016:2–3; Ashmore and Sharer 2013:3). Archaeological sites recorded during these early forays contributed to the genesis of the global archaeological record and influenced the spread of international and State-level policy designed to recognize, manage, and promote heritage resources. Another way to look at archaeological sites recorded early in the discipline's history is as the first documented chance finds, minus the procedural requirements.

Popularized examples of chance finds dot the global archaeological record, and together, they serve to enhance everyone's understanding and appreciation of global, national, and local heritage. To a large extent, the completeness of the archaeological record in a region relies upon the frequency of visits by professional archaeologists and informant reports of archaeological discoveries. Informant reports often lead to reviews by professional archaeologists that result in false-positives or site record duplication. These types of finds do not always require a response authorized by government policy. However, in many instances, informant reports are documented as the first recording of an archaeological site and require an authorized response. Professional archaeologists will attest to a love-hate relationship with unexpected archaeological discoveries. Discoveries may be exciting or archaeologically significant, but authorized responses require technical and policy expertise, along with some diplomacy. Most States have heritage resources management (HRM) policies that authorize processes, procedures, and methods to manage archaeological resources. Archaeological resources that occur unexpectedly in association with land altering and resource extraction projects (herein projects) can conflict with a proponent's scope, schedule, and cost expectations.

Responses to chance find reports are governed and authorized by specific HRM policy elements. A qualified professional archaeologist is required to conduct an

assessment to comply with the HRM policy. Archaeologists assess archaeological resources within a project's terrestrial footprint and implement required impact management measures. HRM is a growing professional services industry employing post-secondary graduates with degrees in anthropology, many of whom also possess post-graduate degrees. Degree specializations include archaeology, zooarchaeology, ethnobotany, or human osteology, among others. HRM professional roles encompass consulting archaeologists, regulators, educators, museum staff, proponent representatives, Indigenous cultural heritage advisors, and other specialist service providers that interact with HRM activities (Welch et al. 2018). Consultancies with multidisciplinary teams of HRM professionals implement most archaeological assessment and mitigation work on a fee for service basis. Consulting archaeologists are often encouraged to join and participate in professional or academic organizations relevant to their practice area.

A professional consulting archaeologist's primary function is assisting development proponents in meeting HRM policy requirements. This task is ongoing as a proposed project proceeds through planning, regulatory review, construction, into operation, and through decommissioning – the project lifecycle. In conducting regulatory compliance work, HRM professionals and others develop policy, peer-reviewed literature, and gray literature linked to a region's archaeological record. These information sources provide the policy background to define chance finds, provide the framework to assess project risks, and include the primary source information for chance find data.

The examination of HRM policy is intended to provide the rationale for limiting the data catchment area to British Columbia (BC), Canada. Sections immediately below examine the HRM policy universe, published literature, and chance find cases from the digital archaeological record of BC. Primary sources documenting BC's chance find data have two information nodes accessible by professional archaeologists online. The Provincial Heritage Register (PHR) is accessible through the Remote Access to Archaeological Data website. A Java applet allows users to view geospatial data and directly access archaeological site data submitted in archaeological site information forms (ASIF). Documentation of authorized HRM work (i.e., HRM reports) is accessible through the Provincial Archaeological Report Library (PARL), also available online.

Together these online information nodes comprise archaeological data from BC used to inform the literature and policy reviews presented in the sections that follow.

1.1. Resource Management Policy and Literature

Regulation of archaeological resources and proposed development projects occur following published statutes, guidelines, and other de facto rules in each policy jurisdiction. HRM policy elements in a project's regulatory policy regime trigger HRM assessment procedures. In Canada, HRM policy and practice is overseen by provincial archaeology regulators in conjunction with project regulators. In BC, archaeology regulators (i.e., the Archaeology Branch) authorize and oversee academic HRM research and project-related HRM assessment. Where unavoidable impacts or proposed impacts to archaeological sites will occur, the Archaeology Branch consults with Indigenous Nations and determines mitigation requirements. Authorized mitigation strategies are designed to avoid direct impacts to recorded archaeological sites, and subsequently to compensate for past, future, or ongoing impacts. Authorized methods that allow for destructive mitigation follow preservation-by-record or compensation-in-kind approaches detailed in provincial guidelines (e.g., Archaeology Branch 1989).

Financing for projects in BC and elsewhere comes from a variety of sources that include domestic, foreign, public, and private equity. Proponents typically procure an HRM assessment during a project's planning and design phase. Heritage resources require consideration as components of environmental planning or permitting, and for multidisciplinary environmental impact assessments (EIA). Study results establish baseline resource conditions before project approval. Various regulatory policy regimes require submission of an HRM assessment report alongside other biophysical and social assessment studies. EIAs take many forms in BC depending on the type of proposed project and the associated regulatory policy. EIA regulators rely on the archaeology regulator's concurrence with the results and recommendations of authorized HRM assessment. Archaeology Branch concurrence contains management directives that become project approval conditions. These conditions outline future HRM assessment, mitigation, and planning requirements the proponent must finance. Provincial HRM policy in Canada mirrors other State-level HRM policies. There is considerable variation in HRM policy and assessment strategies between domestic and foreign regulatory policy regimes.

Regulatory policy regimes of relevance to this thesis are from international, national, provincial, and municipal tiers of governance. In brief, a project's sector, size, funding, and location establishes which set of policies apply; each policy regime is intended to trigger the need for HRM assessment. Project approval conditions require proponents to plan for and complete outstanding HRM assessment and mitigation. Project approvals, HRM assessment reports, and archaeology regulator concurrence letters invariably require proponents to plan for and respond to chance find reports. Examination of the HRM policy universe shows integration and variation across tiers of governance and policy. The policy analysis in this chapter identifies opportunities for reform and provides the basis for recommended practice and process improvements.

In BC, the Archaeology Branch of the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) administers the *Heritage Conservation Act* (1996). Gray literature generated by HRM professionals and archived by the Archaeology Branch documents authorized interactions with chance finds. HRM reports and heritage site data in archaeological site inventory forms summarize HRM assessment and mitigation efforts into the data entry fields that comprise the PHR database. Results and recommendations from HRM assessment reports inform the next steps for impact management, mitigation, and permitting requirements. For projects in BC, chance find policy language exists in a variety of documentation examined in Section 1.4.

Peer-reviewed literature analyzing chance finds from Canada is non-existent. To the author's knowledge, the use of chance find terminology occurs in regulatory policy and related HRM practice documentation. Also, chance find cases from BC and elsewhere have resulted in peer-reviewed publications that provide site reports or the results of specialized analysis (Stryd and Baker 1968; McLay 2006:1; Hebda 2017; Cullon and Pratt 2019). Informant reports can also result in media attention (Bryce 2007:1–13; CBC News 2008:n.p.; CBC News 2012:n.p.; Unist'ot'en 2019:n.p.). These media items and weblogs provide insight on the social implications of chance finds and include commentary on HRM mitigation strategies. Beyond HRM policy references, chance find nomenclature and definitions are specific to this thesis. Archaeological data from BC are described in more detail in Chapter 2 and analyzed in Chapter 3.

Following BC HRM assessment guidelines, conducting HRM assessment with subsurface testing ahead of project construction is the primary mitigation measure to

limit the financial risk associated with archaeological resources on a project (Archaeology Branch 1989:6). Literature echoes this process, which indicates risk for chance finds decreases with HRM assessment (Stapp and Longenecker 2009:57-69). HRM assessment that includes subsurface testing is conducted to identify protected archaeological resources, assess their significance, determine potential adverse project effects, implement authorized mitigation measures, and reduce the likelihood of chance finds during construction. The HRM assessment considers potential impacts to archaeological sites against the duration, magnitude, frequency, severity, diversity, range, and cumulative effects of land alterations (Archaeology Branch 1989:14). For chance finds, these same impact factors are used to assess unauthorized damages incurred by archaeological resources.

The scope and timing of HRM assessment vary from State to State in the international sphere. Projects in States with emerging economies tend to use 'chance finds' as a management tool where financing, logistics, safety, or labour issues prevent a robust HRM assessment in advance of construction. HRM assessment on international projects can be limited to identifying recorded critical heritage resources through a desktop-based study and a brief field visit. This level of effort is needed to achieve project approval from local regulators and lending institutions like the Inter-American Development Bank (Inter-American Development Bank 2006:11)¹. For these projects, the HRM assessment identifies recorded sites and other areas of archaeological potential to recommend locations for HRM construction monitoring. HRM planning is required to coordinate monitoring, which becomes the primary site discovery, delineation, and characterization method (Inter-American Development Bank 2015:14). This practice requires HRM professionals and other informants to identify and mitigate new archaeological sites while monitoring or following construction activities.

In BC, HRM assessment policy encourages proponents to test subsurface conditions and search for archaeological resources before project approval (Archaeology Branch 1989:2, 6). The domestic approach requires more effort and thus, more funding in a project's planning and design phase. This funding, along with HRM expertise, may not be available to proponents in foreign countries until after a project receives approval. International approaches rely on the fact that impacts to archaeological resources can

¹ Cited by others as Quiroga and Milewski (2007)

be mitigated following HRM policy and assumes adverse project effects are pre-determined. The domestic approach relies on early identification of archaeological resources and assumes that HRM assessment and mitigation are relatively complete when construction begins. In Canada, an EIA is intended to establish baseline conditions and provide an assessment of potential project effects on heritage resources. Practice documentation reviewed for this thesis indicates that HRM assessment tends to be ongoing or incomplete at the time of EIA project approval.

HRM policy and chance find-related literature use terminology like chance find, inadvertent discovery, incidental find, unexpected find, or opportunistic to discuss the phenomenon. For example, the USA's *Native American Graves Protection and Repatriation Act* (1990: 43 CFR 10.02 (g)(4)) defines inadvertent discoveries as: "The unanticipated encounter or detection of human remain, funerary objects, sacred objects, or object of cultural patrimony found under or on the surface of Federal or tribal lands pursuant to section 3(d) of NAGPRA." This definition is specific to the legislation that defines interactions with Indigenous ancestral human remains in the USA. HRM policy from BC requires a broader definition that encompasses all archaeological site types. Inter-American Development Bank (IDB) regulatory policy provides a broad definition for 'chance find': "the unanticipated discovery of material remains of archaeological and historical significance" (Inter-American Development Bank 2006:16). However, chance finds are described in policy and are anticipated to occur during construction, so the IDB's definition is not as exacting as it should be. Archaeological chance find (ACF) is the term used for the cases acquired for this thesis. The term ACF applies to a broad set of scenarios that include diverse site types, along with the discovery of human remains. To capture a broad yet defensible range of potential cases from the archaeological data, an ACF is defined herein as a protected archaeological resource that was found opportunistically reported to authorities and required a subsequent HRM response authorized by policy. Research and analysis contained herein focus on HRM policy and ACF data from BC that document authorized HRM responses to informant reports.

Authorized responses to chance finds document single or multiple cases that required input or actions from regulators responsible for administering HRM policy. The data source for an ACF case depends on the circumstances surrounding site discovery and the timing of the informant report. Where a chance find prompts regulators to provide management directives, technical archaeological data is needed to inform

decision-making. Acquisition of archaeological data is a destructive process documented in HRM reports prepared by consultants and academic archaeologists. To assist with a review of literature from outside Canada, various terms that describe chance finds were used as search criteria, beginning with definitions. ACF-type scenarios are associated with publications from outside Canada (Stapp and Longenecker 2009; Deur and Butler 2016; Yasaitis 2005; Zeidler 2001:7-8), including the final published HRM report from the Peru LNG project (Lockard 2010), and a follow up presentation on chance finds from international development projects (Lockard, 2019; Polglase 2019:n.p.).

A definition review of terminology used to describe chance finds in the literature assisted with refining the nomenclature used in this thesis. Definitions are from the Merriam Webster online dictionary (Merriam Webster 2019). HRM policy and professionals in the USA use the term inadvertent discovery; inadvertent means “not focusing the mind on a matter” or “unintentional” (Merriam Webster 2019). The term inadvertent denies culpability and does not consider the potential opportunity a chance find may present. Incidental occurs in indigenous HRM Policy (Stó:lō Research and Resource Management Centre 2003:23) it means “being likely to ensue as a chance or minor consequence” or “occurring merely by chance or without intention or calculation” (Merriam Webster 2019). Following this definition, incidental finds require an element of chance, and the term presupposes that consequences are minor. Opportunistic does not appear in the literature, but the definition contributes to defining chance finds. Opportunistic is: “taking advantage of opportunities as they arise” (Merriam Webster 2019) and suitable for use in the discussion about authorized responses.

Chance is “something that happens unpredictably without discernible human intention or observable cause,” secondarily as “the assumed impersonal purposeless determiner of unaccountable happenings” (Merriam Webster 2019). Further, the definition of chance is synonymous with risk and luck; it is the best term relative to the purest form of the chance find phenomenon. Chance is also a positive word that holds promise for better management outcomes. The term was also selected to follow language in international, North American, Canadian, and BC’s HRM policy discussed in Section 1.2.

Inadvertent discoveries from the USA are recognized in both statutes and guidelines and are the subject of limited academic research. Example cases are cited in publications about HRM assessment process and associated with legal proceedings. A

portion of the literature relates to risk management (Stapp and Longenecker 2009), and there is a long list of state, municipal, and tribal HRM policies associated with inadvertent discoveries. Review of state, municipal, and tribal HRM policies are beyond the scope of the literature review. Publications provide descriptions of municipal governance and policy issues about inadvertent discoveries (Deur and Butler 2016). An inadvertent discovery from a project on a military base is an example of how chance finds influence changes to HRM assessment methods (Zeidler 2001:7-8). Automatic protection language in Section 13(2a-i) of BC's *Heritage Conservation Act* (1996) and Section 3(d) and the USA's *Native American Graves Protection and Repatriation Act* (1990) create some procedural similarities. In both scenarios, authorized responses to chance finds are grounded in HRM statutes, guidelines, and practice (National Park Service 2009a:1-2; 2009b:1). Some inadvertent discoveries protected by the *Native American Graves Protection and Repatriation Act* (1990) create situations where litigation is required to solve claims. Court cases evidence proven economic and social impacts on governments, Indigenous people, projects, and proponents in the USA where human remains are involved (Yasaitis 2005:276-278).

Caution is appropriate when comparing BC's chance find cases with those from adjacent or international HRM policy jurisdictions. The literature analyzing chance finds from the Peru LNG project presents data from an assessment process where archaeological site identification efforts are focused on HRM construction monitoring, instead of subsurface testing during the planning and design phase (Lockard 2010; 2019). Late HRM effort expenditures in the construction phase inflate the total number of reported chance finds. The Peru LNG project displays the complexities of defining and managing chance finds across HRM policy jurisdictions (Lockard 2010). In Canada, there is HRM policy overlap in regulatory policy regimes that apply to projects that span one or more provincial boundary, and those projects situated on both provincial and federal land. Section 1.7 has examples of projects that involve chance finds.

1.2. HRM Policy Overview

The global spread of State-level HRM policy extends from the formation of the League of Nations, now the United Nations (UN), followed by the advent of the United Nations Education Science and Culture Organization (UNESCO). It remains that UNESCO and its process for recognition of World Heritage sites were instrumental in the development and evolution of HRM policy in Canada and around the world (Pokotylo and Mason 2014:1119; Burley 1994; Williams 1980). International HRM policy manifests as agreements, treaties, and financial policy. In Canada, national HRM policy includes the *Cultural Property Export and Import Act* (1985) and HRM policy elements in the *Canadian Environmental Assessment Act* (2012), the *National Energy Board Act* (1985). Policy elements are in guidelines (Canadian Environmental Assessment Agency 1996a; National Energy Board 2009), and project approval conditions (Minister of the Environment 2014). Parks Canada's HRM policy does not mention chance finds, and chance find data from sites in National Parks was not found in BC's archaeological data. Parks Canada's HRM policy includes guidelines for managing archaeological resources in National Parks as well as other publications about HRM in Canada (Parks Canada 2005, 2017a; 2017b). National HRM policy deters international trade in illicit antiquities and compels proponents to conduct HRM assessment on projects under regulatory review. Provincial and territorial governments provide communications to federal regulators that indicate if an HRM assessment is deficient, complete, or ongoing to their satisfaction.

Canada, the provinces, and municipalities review proposed projects following one or more regulatory policy regimes and issue project approvals to proponents and themselves. Project approval documents routinely contain provisions requiring HRM assessment (see Section 1.3.2). HRM policy manifests in different ways depending on the levels of governance involved in a project's regulatory policy regime. Archaeological resources are under threat from all project activities that involve land alteration. Archaeological resources can be subject to impacts during vegetation clearing and grubbing, deforestation, drilling, construction site grading and excavation, placement of fill material, and erosion from reservoir inundation, among other processes. Authorization of proposed impacts to archaeological resources occurs under the authority of a permit issued under Section 12 of the *Heritage Conservation Act* (1996).

Chance find reports made during a project's construction or operations phase require the project team to adapt its schedule, cash flow, and budgets. Adjustments are necessary to implement authorized next steps required by regulators and Indigenous Nations responsible for the management and stewardship of archaeological resources. Adjustments to schedule and budgets can be problematic for development proponents, contractors, regulators, archaeologists, private landowners, Indigenous Nations, among other affected parties. Perhaps most important is that unauthorized land alterations within archaeological sites are a contravention of the *Heritage Conservation Act* (1996). Authorized HRM responses to contraventions from encroachment and chance finds manifest in the PHR according to their Borden number². Additional detailed information is available in HRM reports which are filed on PARL by corresponding permit number. Alternatively, unauthorized alterations to protected archaeological resources go unreported and unmitigated, and there is no documentation. Where project activities contravene legislation or project approval conditions, construction can be shut down, or a non-compliant proponent and their contractor can be subject to enforcement measures like fines or work suspensions (BC Ministry of Transportation and Infrastructure 2016:1–21). Enforcement measures are available in Section 36 of the *Heritage Conservation Act* (1996); however, there is no evidence of the successful application to sanction proponents or individuals. Instead, remedial HRM work funded by an offending proponent is authorized to address impacts and HRM assessment gaps.

1.2.1. BC's HRM Policy History

Understanding the history of HRM legislation in BC builds the context for a discussion on current HRM policy and practice interactions. HRM reporting for proposed, ongoing, and completed projects document policy and practice interactions. There is a long history of HRM policy in BC. The first statute was the Colony of British Columbia's *Indian Grave Ordinance* (1865), issued before BC joined the confederation of Canada. This ordinance was repealed and replaced in 1867 and replaced again in 1886 (Klassen 1999:8). The British colony's ordinances are likely the first HRM policies enacted in the new world; the language developed over time in response to continued informant reports

² Archaeological sites in Canada are registered according to the Borden mapping system which divides Canada into 13 kilometer by 18.5 kilometer grid blocks based on latitude and longitude. Borden blocks are referenced by a four-letter designator (i.e., AbCd), archaeological sites are numbered sequentially as they are discovered (i.e., AbCd-1, AbCd-2, etc..).

of vandalism at pre-contact Indigenous cemeteries. In the colonial atmosphere of the time, the language in the ordinance was crafted without input from Indigenous Nations but served to automatically protect Indigenous interments and grave goods from vandals and rogue researchers (Klassen 1999:8).

Subsequent HRM statutes in BC included the *Heritage Objects Preservation Act* in 1925, revised in 1948. Later, BC's HRM statute history is marked by two versions of the *Archaeological and Historical Resources Protection Act*, first in 1960, and as amended in 1972 (Klassen 1999:8). Protection of archaeological resources under the *Heritage Objects Preservation Act* (1925; 1948) and *Archaeological and Historical Resources Protection Act* (1960; 1972) relied on a ministerial heritage site designation system (*Archaeological and Historical Resources Protection Act* 1972). The *Heritage Conservation Act* (1996), was enacted in 1977; subsequently revised in 1994, revised again in 1996, and is in the process of revision in 2019. BC's foundational HRM legislation focused on asserting ownership over human interments and later other heritage resources situated on Crown or public lands (*Indian Grave Ordinance* 1865; *Heritage Objects Preservation Act* 1948; *Archaeological and Historical Resources Protection Act* 1972; *Heritage Conservation Act* 1977). Except for the original ordinance, older HRM statutes used a ministerial site designation process to recognize, protect, and manage recorded archaeological resources. The limited jurisdiction and site designation process in BC's early statutes comported with Article 5 of the 1972 UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage (UNESCO 1973), but offered no automatic protection to unrecorded archaeological resources. HRM reports from the era document publicly-funded HRM research and rescue mitigation work.

The *Heritage Conservation Act* (1996) goes beyond UNESCO's HRM policy statements of the 1970's by automatically protecting recorded and unrecorded archaeological sites on public and private property (Section 13 and Section 14(2)), as well as allowing for ministerial heritage site designations in Section 9 (*Heritage Conservation Act* 1996). HRM legislation began to apply to private lands with the revisions to Section 13 and Section 14 of the *Heritage Conservation Act* (1996). Section 13 was amended in 1994 to afford all archaeological remains that pre-date 1846 automatic protection in Section 13(2d). Policy changes in 1996 expanded legislative jurisdiction to private land. These changes made chance finds a risk factor for

proponents and private landowners undertaking ground disturbing or resource extraction activities in the province. BC's HRM policy has changed significantly over time. When triggered by regulatory policy regimes, HRM assessment follows the *Heritage Conservation Act* (1996) along with *BC Archaeological Assessment Guidelines* (Archaeology Branch 1989), Indigenous HRM policy, project approval conditions, and sometimes national best practice. In June 2019, changes to the *Heritage Conservation Act* (1996) received Royal Assent (*Heritage Conservation Act 2019*). One change requires potential informants to report suspected archaeological materials. This change should increase the likelihood and frequency of informant reports when chance finds occur. Another welcome addition is a self-triggering mechanism for projects that escape other regulatory policy triggers (BC Ministry of Forests Lands Natural Resource Operations and Rural Development 2019:1; *Heritage Conservation Act 2019*). These changes are likely to have a positive effect related to chance find management.

The British Colony's original ordinance (Klassen 1999:9) and the *Heritage Conservation Act* (1996) have automatic site protection language that was lacking in HRM legislation between 1925 and 1996. Automatic site protection language is an essential feature in the *Heritage Conservation Act* (1996); it is the main driver behind many of the financial and legal risks presented in this thesis. This language influences HRM assessment processes whereby the province encourages development proponents to prioritize site discovery efforts in the project planning and design phase, over the identification of new sites during the construction phase. Many HRM reports of the authorized chance find responses from after 1996 document contraventions of the *Heritage Conservation Act* (1996).

HRM policy change is not without risk. Changes can alter the definition of heritage or archaeological resources or influence how and whom to report a chance find. In the recent past, policy change shifted the financial burden for HRM work from the province to each project. Also, HRM policy determines which types of land and projects are subject to HRM assessment. Proponent adherence to HRM policy plays a role in a project's ability to achieve and maintain regulatory approval. HRM professionals work with proponents to develop a project-specific heritage resources management plan (HRMP), and an archaeological chance find management plan (ACFMP) to guide a project through compliance with its approval conditions.

Archaeological site types in BC vary in frequency of occurrence across geographies. Sites in the interior, north, and higher elevations tend to manifest more frequently as culturally modified trees (CMTs), or small and large scatters of stone chipping detritus, along with cache pits that contain few artifacts. More complex archaeological resources include shell middens with longhouse platforms in coastal areas and clusters of semi-subterranean pit houses in lower elevations of the interior. This distribution of site types across the province aligns with the Archaeology Branch culture region subdivisions (Archaeology Branch 2018a:n.p.). Site type variation needs to be accounted for in ACFMPs and is best done using site types common to the culture region where a project is situated.

Under the current HRM assessment process in BC, consulting archaeologists conduct a phased HRM assessment on a specific property or a proposed development's physical footprint (Archaeology Branch 2018b:n.p.). The Archaeology Branch determines the criteria for assessing who is qualified to lead and undertake HRM assessment and research in BC. Professional determinations follow the *BC Archaeological Impact Assessment Guidelines* (Archaeology Branch 1989) and the permitting processes outlined in Sections 12 and 14 of the *Heritage Conservation Act* (1996). HRM research also requires authorization. Academic research serves to educate the public, reconcile historical colonial attitudes toward Indigenous Nations and tends to attract favorable public attention. HRM research is an appropriate strategy to document chance finds; research can also provide object lessons in how and why to avoid chance finds.

Where an informant report documents unauthorized damage to a protected archaeological site caused by a project, the outcome for the affected resource is different than for a chance find reported in the absence of a project. Chance finds are bound to occur when land alterations create new large-scale surface exposures. The reconnaissance of subsurface conditions in these vast areas is unachievable using conventional archaeological testing methods. Where reported and verified, archaeological finds become part of the archaeological record through the completion of authorized HRM assessment and mitigation. Large-scale ground disturbances in archaeological sites may occur from natural processes like shoreline erosion or other forces of nature too; these newly created natural exposures can also reveal archaeological materials and result in an informant report. In both circumstances, additional HRM assessment and mitigation may be required by regulators to authorize

additional impacts or research. Remedial HRM assessment is conducted to assess a chance find's site significance and mitigate future impacts or ongoing adverse project effects. The main differences between project-related and natural disturbance factors are the intentions behind the disturbances, the pathways for informant reporting, and the funding source for any required HRM assessment and mitigation.

Changes to BC's HRM policy in the 1990s also brought about a user-pay system that shifted HRM assessment financial burdens to all proponents. Changes resulted in immediate increases to the number of authorized HRM assessments conducted in the province each year, and a shift from public to private HRM professional service providers. The trend shows that the number of professional archaeologists in BC is growing. The increase in professional archaeologists is directly related to the volume of work available, both of which have increased since the last significant shift in HRM policy (Lasalle and Hutchings 2012:11). More HRM permits were issued, and more projects were subject to HRM assessment. At the same time, these legislation and policy changes generated more financial risk and created new a new cost for projects in the planning and design phase (see Section 1.4.10).

1.2.2. Canadian HRM Policy

In Canada, provincial and territorial governments enact HRM statutes and develop coincident guidelines, Parks Canada provides a comprehensive review of these statutes and guidelines, by policy jurisdiction (Parks Canada 2017a:41–55). In addition to the provinces, Parks Canada asserts ownership and regulatory jurisdiction over archaeological resources in National Parks (Pokotylo and Mason 2010, 2014:1103). Unlike the USA, there is no overarching federal HRM statute in Canada (Burley 1994:77). However, Canada controls the international movement of cultural materials following the *Cultural Property Export and Import Act* (1985). Subsection (2b) empowers Canada to regulate export of “objects of any value that are of archaeological, prehistorical, historical, artistic or scientific interest and that have been recovered from the soil of Canada, the territorial sea of Canada or the inland or other internal waters of Canada” (*Cultural Property Export and Import Act* 1985: Ss.2b). Instead of federal HRM policy, provincial statutes and guidelines, like BC's, define historical heritage, archaeological, and palaeontological resources in their jurisdiction (Parks Canada 2017a:9).

BC's HRM policy interacts with provincial and national HRM policy elements contained in regulatory policy regimes. Projects regulated by the Canadian Environmental Assessment Agency (CEAA) and the National Energy Board (NEB) require comprehensive multidisciplinary EIAs, as do provincial regulators – the BC Environmental Assessment Office (BCEAO). CEAA's *Reference Guide on Physical and Cultural Heritage Resources* (Canadian Environmental Assessment Agency 1996: Appendix 1) provides information on requirements for HRM assessment. It also defines the types of heritage resources that require consideration. Projects that affect navigable waters, federal land, nuclear energy and waste, energy production, energy transmission, railway right-of-way, or federally funded, can trigger a project's regulatory review under the *Canadian Environmental Assessment Act* (2012) and the *National Energy Board Act* (1985). The NEB is a responsible authority under the *Canadian Environmental Assessment Act* (2012) and regulates larger projects related to energy production and transmission. Energy projects that cross provincial boundaries or meet other specific thresholds are considered reviewable by the NEB. Reviewable projects under various regulatory policy regimes may result in the formation of a Joint Panel Review (JPR) that includes federal and provincial responsible authorities. The *National Energy Board Act* (1985) and the NEB's *Filing Manual* (National Energy Board 2009) mirror CEAA's requirements and language requiring HRM assessment and a potential effects assessment. These EIA policies trigger provincial HRM assessment processes in the planning and design phase of a proposed project.

For federally-regulated projects in BC, the BCEAO, other provincial government agencies, and resource regulators participate in JPRs. The BCEAO participates when a project also meets reviewability thresholds of the *British Columbia Environmental Assessment Act* (2002). JPRs comprise federal responsible authorities (e.g., Fisheries and Oceans Canada, Navigation Canada, the NEB) along with provincial and territorial regulators like the BC Ministry of Energy and Mines (MEM), BC Ministry of Environment (MoE), the BC Oil and Gas Commission (OGC), and the Archaeology Branch through FLNRORD. A province may choose to defer review of a project to federal regulators, or vice versa; this is done case by case and depends on factors beyond the influence of heritage resources (BC Environmental Assessment Office 2013:1). Specific HRM policy elements associated with comprehensive EIAs are discussed further in Section 1.4.1.

Federal regulators provide access to a limited range of project-specific information online. The Canadian Minister of the Environment's decision statement for the proposed Woodfiber LNG project provides a suitable example of a JPR that included regulators from the NEB, CEAA, Department of Fisheries and Oceans, OGC, MoE, FLNRORD, and the BCEAO among others (Minister of the Environment 2014). Documentation for projects that only undergo federal review is not readily available online. Specific conditions related to a proponent's remaining HRM commitments, including planning for chance finds, are issued by the responsible federal authority in a project's approval from the Minister of Environment. Given the confidential nature of CEAA-regulated projects, approval documents and the proponent commitments can be challenging to access, leaving gaps in the chance find policy comparison.

Recent HRM trends in international and domestic HRM policy include Canada's participation with the UN in developing and ushering in the ratification of the United Nations Declaration on the Rights of Indigenous Peoples or UNDRIP (United Nations 2008). UNDRIP's Article 31 identifies that "Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions..." (United Nations 2008:11); and Article 32 requires free, prior, and informed consent from Indigenous descendant communities (United Nations 2008:12). With the Trudeau government's signing UNDRIP (with no amendments) in 2016, a private member's bill, Bill C-262, was introduced to the House of Commons for First Reading (Saganash 2016). The proposed legislation extends Canada's signing of UNDRIP by seeking to entrench the language of UNDRIP into laws that affect Canada's Indigenous demographic.

Further to this, the federal government is currently working on revising the *Canadian Environmental Assessment Act* (2012) with Bill C-69 (Minister of Environment and Climate Change 2018). The proposed legislation includes stronger language about Indigenous consultation and free, prior, and informed consent. The legislative change will encourage a new EIA process intended to include Indigenous voices in the spirit of UNDRIP (McKenna 2018:n.p.). Further to this, BC has recently committed to being the first province to integrate UNDRIP into the provincial policy (CBC News 2019:n.p).

1.2.3. USA Policy

Unlike Canada, the USA is not a State Party to UNDRIP; it also officially withdrew from UNESCO on December 31, 2018 (Nauert 2017:1). However, the USA maintains the *National Historic Preservation Act* (1966), *Archaeological Resources Protection Act* (1979) and *Native American Graves Protection and Repatriation Act* (1990) which apply to projects and heritage resources on federal, public, and Indigenous tribal lands. Projects funded by the federal government trigger the *Archaeological Resources Protection Act* (1979), which allows for the application of the act to private property as well as public lands. *Archaeological Resources Protection Act* (1979) projects are regulated locally by State Historic Preservation Offices (SHPOs). For projects on tribal lands, there is often a Tribal Historic Preservation Officer (THPO). Statutes that protect archaeological resources employ a site registration system that affords protective measures for heritage resources as defined therein. As discussed above, the *Native American Graves Protection and Repatriation Act* (1990) automatically protects Indigenous human remains and makes provision for determining ancestry and repatriation. An abundance of HRM policy is available for review from state and municipal governments; these documents are likely to contain a reference to inadvertent discoveries. Elia (2014) and King (2014) provide detailed summaries of the USA's HRM policy and practice but refrain from mentioning inadvertent discoveries. Policy and literature reference chance finds or 'inadvertent discoveries' in association with HRM assessment methods and processes. Like HRM policy guidelines in BC, the USA has a separate statute to address instances of archaeological human remains.

Inadvertent discoveries of Indigenous human remains have led to litigation, two projects involving the Army Corps of Engineers and Yangton Sioux Tribe are in the literature. In both instances, finds were claimed as inadvertent discoveries to reach beyond the need to determine the lineal descent and cultural affiliation, and afford protection to interments (Yasaitis 2005:276). The outcomes are convoluted but identify that the act is not prospective; and, that despite an inadvertent discovery projects can impact remains if there is time to consider options and negotiate an outcome with Indigenous communities (Yasaitis 2005:277). Fetterman (2012:37-41) provides additional examples of case law and outcomes. HRM assessment practice in the USA involves conducting subsurface testing to identify and assess archaeological resources in advance of project approval, and subsequently developing a process to manage

ongoing work and inadvertent discoveries (Stapp and Longenecker 2009: 69). According to risk management literature, this is done in part to reduce the likelihood of encountering a chance find (Stapp and Longenecker 2009:57–69). Similarities across jurisdictions also prevail for project approval timing. Similar to Canada, HRM assessment and mitigation may be ongoing when projects receive approval in the USA (Stapp and Longenecker 2009:72). Despite the difference in State-level HRM policy between Canada and the USA, both sets of HRM policy meet or exceed recommended practice in UNESCO’s article 5 (UNESCO 1973).

Recent research from the USA reviews municipal government HRM policy in 24 states (Deur and Butler 2016:1). Their review identifies the potential for “inadvertent discoveries” during project construction (Deur and Butler 2016:192, 195). The authors recognize the potential for construction delay from HRM assessment and mitigation required to address unauthorized impacts. They indicate “work may be postponed to allow for data recovery, site stabilization, or in certain cases the revision or revocation of development permits” (Deur and Butler 2016:195). The research provides examples of high profile chance finds that forced policy change and project design revisions (Deur and Butler 2016:192, 198). Local Indigenous organizations are cited as helpful and can “minimize adverse impacts on archaeological resources as well as financial costs to local governments and developers resulting from inadvertent discoveries” (Deur and Butler 2016:200). Although this study focuses on municipalities in the USA, the literature speaks to the commonality of chance find concerns across policy jurisdictions and the importance of involving Indigenous Nations in determining the next steps.

1.2.4. International Policy

Protocols, agreements, and treaties in the international sphere do not contain chance find language. Instead, a review of financial risk management policy from international lending institutions, and State-level HRM policy provides insights on international HRM policy elements that address chance finds. International projects take many forms; different regulatory policy regimes apply depending on several factors. For example, Canadian companies developing projects in foreign states follow a parallel system to the *Canadian Environmental Assessment Act* (2012) and also need to meet with the host State’s domestic EIA and HRM policy (Canadian Environmental Assessment Agency 2013:2). International and State-level HRM policy extends from

UNESCO's *Convention Concerning the Protection of the World Cultural and Natural Heritage* (UNESCO 1972). Article 5 (a) indicates States Parties shall endeavour "to adopt a general policy which aims to give the cultural and natural heritage a function in the life of the community and to integrate the protection of that heritage into comprehensive planning programmes" (UNESCO 1972: A5(a)). State Parties are compelled to develop their own HRM policy to recognize, classify, and manage heritage resources. Considerable variation exists between State-level HRM policy and the policies of lending institutions. For a project in Peru, the host State's HRM policy the *General Law of the Cultural Heritage of the Nation* (2004) is meshed with international best practices (International Finance Corporation 2012) by following a trans-national lender's HRM policy (Inter-American Development Bank 2015).

Commitments to UNDRIP also extend to the Canadian government when they are the proponent in a host State (e.g., a new embassy building). Government projects are reviewable under the *Canadian Environmental Assessment Act* (2012) and regulated following application guidelines (Canadian Environmental Assessment Agency 2013). The International Finance Corporation, World Bank Division (IFC) has eight *Performance Standards* (International Finance Corporation 2012) that recommend best practices for assessing risk on foreign-funded projects in a host State. The IFC recognizes that other financial institutions like the IDB should adopt these performance standards to assess investment risk (International Finance Corporation 2012:Performance Standard 8). *Performance Standard 8* guides proponents and details appropriate content related to cultural heritage assessments for EIAs (International Finance Corporation 2012:53). IFC Performance Standards are used by lending institutions like the IDB to develop an internal HRM policy to assess and mitigate financial risk (Inter-American Development Bank 2015: 1). The IDB funds projects in less developed Central and South American States. HRM policy appears in guidelines like *Managing the Impacts of IDB Projects on Cultural Heritage* (Inter-American Development Bank 2015) and *Environment and Safeguards Compliance Policy* (Inter-American Development Bank 2006) which meet with the IFC's *Performance Standard 8* (International Finance Corporation 2012:Performance Standard 8).

States with emerging global economies often have less sophisticated EIA policy regimes or weaker environmental protection laws than Canada or the USA. Lenders and proponents identify and manage risk to limit financial exposure, create a positive return

on investment, and recoup loans. In addition to meeting IFC performance standards, an EIA for the IDB requires documentation of project compliance with a host State's HRM policy. For example, HRM assessment for Peru LNG's EIA complied with the *General Law of the Cultural Heritage of the Nation* (Peru 2004:n.p.), as documented in Proyecto Arqueologico/ Archaeological Project (Lockard 2010:45).

Performance Standard 8 is specific guidance for appropriate content related to HRM assessment in multidisciplinary EIAs (International Finance Corporation 2012:53). A chance find protocol is provided and indicates the next steps a proponent must take if a chance find is reported during the construction and operations phase:

...the client will develop provisions for managing chance finds through a chance find procedure which will be applied in the event that cultural heritage is subsequently discovered. The client will not disturb any chance find further until an assessment by competent professionals is made and actions consistent with the requirements of this Performance Standard are identified. (International Finance Corporation 2012:54)

Guidance from the IFC is available online and outlines response expectations to proponents and HRM professionals. Notably, the IFC chance find statement does not require notification of Indigenous communities; this is because Indigenous consultation regarding heritage resources is elsewhere in Performance Standard 8. In the event of a chance find, the policy indicates re-engagement might be appropriate.

As above, the IDB's policy defines chance finds, but they also indicate that "...the borrower will prepare and implement chance find procedures based on internationally accepted practices" (Inter-American Development Bank 2006:11). IDB process direction indicates the best approach to address HRM assessment gaps is to "include a construction monitoring program...to identify, protect, recover, and record all the archaeological, paleontological, or historical resources found during project construction" (Inter-American Development Bank 2015:30). In addition to providing direction on the process, guidelines for ACFMP content requires "the temporary cessation of construction activities" and for the process outlined in "construction and supervision contracts" (Inter-American Development Bank 2015:31). IDB guidelines also indicate the need for proponents to integrate the process with local State-level HRM policy, and to train workers (Inter-American Development Bank 2015:31).

Literature associated with international development cites financial risks related to archaeology (World Bank 2018:n.p.; Inter-American Development Bank 2015:7-10). Similar to policy, the literature suggests that proponents conduct HRM assessment in project feasibility studies and address the potential for chance finds during construction. There is a common understanding – chance finds alter the cost and schedule of development projects. In the example project from Peru, archaeological site discovery efforts follow IDB guidelines that focus fieldwork effort on HRM construction monitoring (Inter-American Development Bank 2006; 2015). This approach results in the discovery of an unpredictable number of sites that require subsequent mitigation work (Lockard 2010:45-46; 2019:1). IDB's policy acknowledges the need to integrate with State-level policy and is also applicable in the absence of host State HRM policy. The IFC's statement lacks a provision for mandatory notification of government officials or other regulatory agencies; note that this type of directive may not apply to all host State HRM policy. The common theme is that international best practice supersedes that of the host State. The IFC and IDB have no jurisdiction over the management of chance finds nor heritage resources; they can only enforce compliance with their respective HRM policy by withholding financing from a project.

The World Bank identifies financial risks associated with archaeological resources along the project lifecycle (World Bank 2018:1-14). Their risk management matrix considers a roadway construction project and identifies archaeology-related financial risks and mitigation measures (World Bank 2018:4–14). According to the World Bank, financial risks for EIA projects either manifest as an increase in project costs, or a decrease in project revenue (World Bank 2018:1). Three separate risk criteria in the matrix consider archaeological resources. Risk is inferred to exist in the fourth criterion, which identifies political or policy changes that could affect project revenue during the operations phase. World Bank archaeological risk management criteria are itemized by each project lifecycle phase, along with the corresponding risk mitigation measure. These phases are used to assess the risk of ACF occurrence in Section 1.8.

- **design risk:** consider archaeological resources in project feasibility studies, before a development application, approval, and financing (World Bank 2018:4);
- **site risk:** archaeological resources need to be assessed and mitigated according to local legislation (World Bank 2018:6);

- **construction risk:** assessments and disturbances to archaeological resources require permits (World Bank 2018:7); and,
- **political risk:** local legislation or governments could change over the lifecycle of the project and change approval conditions (World Bank 2018:13).

1.3. HRM Assessment and Chance Finds

In BC, proposed development projects that require regulatory review and approval include: single or multi-family residential subdivision developments, property zoning changes, commercial-industrial developments, new municipal infrastructure (e.g., roads, sewer, water), upgrades to provincial transportation infrastructure (e.g., roads, bridges, rapid transit), gravel pits and mines, oil and gas development (e.g., pipelines, wells, facilities), forestry developments (e.g., facilities, roads, and clear-cuts), along with energy generation and transmission projects. Each proposed development is evaluated in the planning and design phase to determine the applicable regulatory policy regime for the size, sector, and location of the project. Large complex projects require a comprehensive multidisciplinary EIA that addresses potential concerns with biophysical resources, socio-community resources, Indigenous knowledge, and heritage resources, among others. A detailed review of HRM policy contained within regulatory policy regimes is necessary in order to understand financial risk implications and HRM processes specific to chance finds in BC. Figure 1 identifies several relevant regulatory policy regimes and their independent interactions with the *Heritage Conservation Act* (1996) that are all operating within the framework of one or more Indigenous heritage policy. The gray band that connects the statutes is intended to show that sometimes the authority of these statutes overlap depending on the project. For example, Woodfibre LNG is regulated following federal and provincial statutes, whereas the Evergreen LRT is only subject to provincial regulatory statutes, but both require HRM assessment following Indigenous policy and custom.

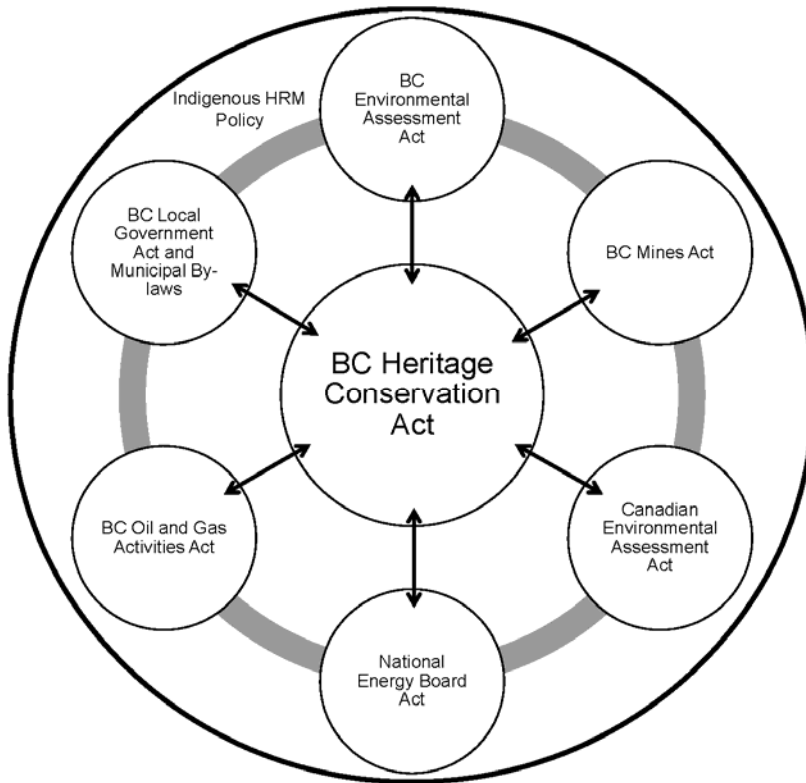


Figure 1. British Columbia's regulatory policy regimes with HRM policy.

The literature review and archaeological data show that chance finds occur where authorized and compliant HRM assessment work was deemed complete, is ongoing, and where HRM assessment was absent. Also, chance finds on international development projects can be from projects where archaeological site discovery methods focus on HRM construction monitoring. Chance finds present risks that are difficult to quantify. Projects that fail to contemplate archaeological resources or chance finds in advance will require time and costs beyond that anticipated. Chance finds that occur after HRM assessment result from several factors, including:

- Lack of project regulator or proponent expertise regarding the HRM assessment process;
- Gaps in HRM assessment testing areas, relative to a project's terrestrial footprint;
- Failure of protection and avoidance measures resulting in encroachments to recorded archaeological sites;
- Technically deficient or poor quality HRM assessment fieldwork before project approval; and,

- Regulator or proponent reliance on previous HRM assessments conducted following out of date HRM policy.

1.3.1. HRM Assessment Process in BC

Authorized HRM assessment follows a staged approach outlined in the *BC Archaeological Impact Assessment Guidelines* (Archaeology Branch 1989:7–17). The study begins with a desk-top archaeological overview assessment (AOA) during a project's feasibility or design phase. Preliminary assessments can lead to recommendations for no further archaeological work or identify the need for an archaeological impact assessment (AIA) to search for archaeological resources under the authority of a Section 14 *Heritage Conservation Act* (1996) inspection permit. Archaeological sites in unavoidable conflict with a proposed development component typically require mitigation. Recommended mitigation strategies in HRM permit reports are subject to review by the Archaeology Branch and Indigenous Nations. Recommendations may indicate that complete avoidance of archaeological resources is required, or advisable. Where avoidance is not possible, recommendations outline the potential scope of destructive, and sometimes costly, preservation-by-record mitigation options.

HRM mitigation approaches can involve protection and avoidance plans, preservation-by-record excavations, compensation-in-kind payments, or a combination of these approaches. Mitigation occurs during a project's planning and design phase, or as a project transitions to the construction phase and beyond. Archaeological excavation can occur under a Section 14 *Heritage Conservation Act* (1996) inspection permit, but excavations for significant sites may require the acquisition of a Section 14 *Heritage Conservation Act* (1996) investigation permit. Preservation-by-record excavations are conducted to acquire representative data samples from archaeological sites in peril. This systematic data recovery is in response to proposed, imminent, or ongoing impacts (Archaeology Branch 1989:15–17). Once avoidance is achieved, or preservation-by-record goals achieved, the remainder of the archaeological site is subject to HRM construction monitoring during mechanical removal under a Section 12 *Heritage Conservation Act* (1996) site alteration permit (Archaeology Branch 1989:17). During construction and operation phases, protection and avoidance strategies are monitored and maintained, where required. In BC, HRM construction monitoring is the last resort site discovery method. If archaeological conditions change based on monitoring results

(e.g., the discovery of a newly recorded site, or a new feature in a recorded site), there is an opportunity for the HRM professional to stop construction work, contact the Archaeology Branch, and implement authorized scope for preservation-by-record excavations.

Where an informant reports a chance find during the construction or operations phase of a project, the report initiates an archaeological assessment process that expands on previous project-related HRM assessment work. This process either reinvigorates a stagnant assessment, starts a new assessment, or engages a project's HRMP and ACFMP in an ongoing process. Where the assessment process re-starts, it commences from either the permit application stage; or, AIA fieldwork stage (Figure 2). Proponents of projects with an active *Heritage Conservation Act* (1996) Section 14 or 12 permits bypass some of the administrative tasks associated with permitting. Figure 2 illustrates the HRM process with ACF interjections during the construction and operations phases. Solid red lines in the flow chart indicate increases to a timeline; dashed lines reflect a timeline that is likely to increase. Blue boxes represent the project lifecycle; green boxes are questions that can only be answered before impacts occur; yellow boxes represent assessment work, and purple boxes are administrative permitting tasks. The critical difference between the two assessment and mitigation processes depicted in Figure 2, is the lack of avoidance options for ACFs that lead to destructive mitigation and HRM construction monitoring.

In the USA, the National Park Service provides a similar process flow for inadvertent discoveries protected by the *Native American Graves Protection and Repatriation Act* (1990). Their flow chart depicts a similar progression for planned and unplanned HRM assessment. It begins with a consultation, determines descendant communities, then requires a written plan, fieldwork, and repatriation (National Park Service 2019a:1-2). To assist HRM professionals, the National Park Service provides a process checklist online (National Park Service 2019b:1). In BC, the Archaeology Branch's *Policy on Found Human Remains* along with Indigenous custom guide the management of discoveries (Archaeology Branch 2018c). The Archaeology Branch's policy is a stand-alone document that details the HRM process for planned and unplanned impacts. In summer 2018, the Archaeology Branch initiated consultations with Indigenous Nations and HRM professionals to revise BC's human remains policy (Paula Thorogood, personal communication 2018).

It remains, that when HRM assessment is complete ahead of construction, the risk of chance find occurrence is lowered, but not eliminated. When HRM assessment is in progress, and a project is approved, the risk of chance find occurrence is moderate. Where HRM assessment is absent, the risk of occurrence is highest. Despite the latter high-risk scenario, chance finds are more likely to go unreported if there is no ACFMP to guide potential informants.

When reports of newly recorded archaeological sites and chance finds occur during the construction phase, authorized mitigation strategies are limited. According to *BC Archaeological Impact Assessment Guidelines*, newly recorded archaeological sites found after project approval are subject to Emergency Impact Management (EIM) field methods (Archaeology Branch 1989:17). These methods lead to a degradation in preservation-by-record methods when compared to sites found before construction. Unlike ACFs, newly recorded sites in HRM assessment gaps are not subject to unauthorized impacts; instead, degradation of archaeological data occurs when EIM measures remove the need for research-oriented goals customarily associated with preservation-by-record excavation. Implementation of EIM measures indicate complete avoidance options are not available, or that impacts have already occurred, or impacts are inevitable. Also, less tangible impacts occur from the rushed nature of preservation-by-record excavations, which are termed “rescue” archaeology on the Peru LNG project (Lockard 2010: 79). EIM methods are suboptimal; authorized use indicates that archaeological resources are under immediate threat from a project. The use of EIM methods creates an imbalance for new archaeological sites found during a project’s construction phase. Mitigation strategies like compensation-in-kind tend to apply a monetary value on heritage resources. HRM professionals or Indigenous Nations may not subscribe to the practice of monetizing impacts on heritage resources, and this option may not be a viable mitigation solution for some projects. However, the strategy exists in HRM policy and is worthy of consideration in some chance find scenarios.

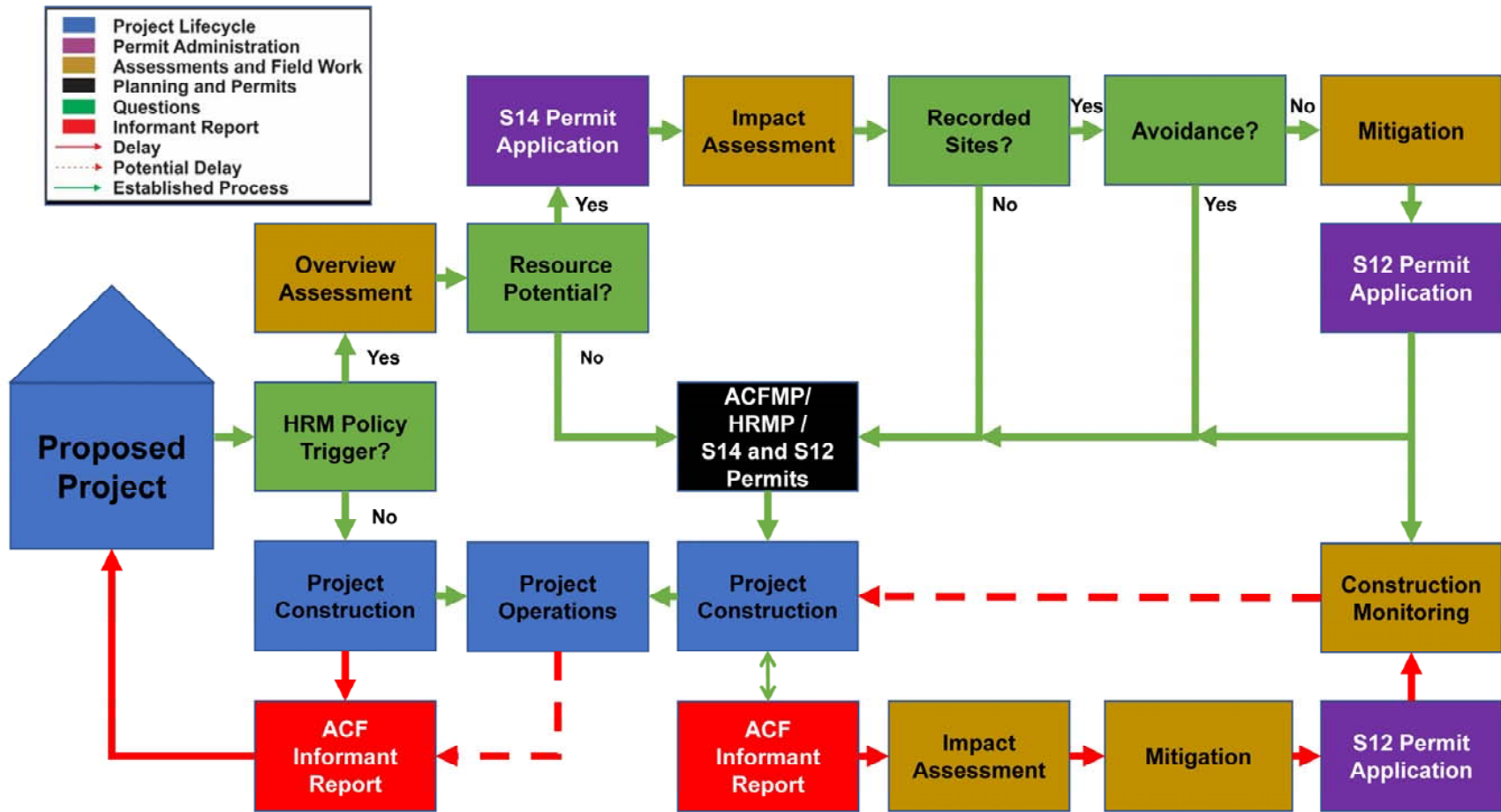


Figure 2. Archaeological chance find occurrences and the HRM process.

1.3.2. HRM Assessment Triggers

As discussed briefly above, policy elements requiring HRM assessment exist in project regulatory guidelines (BC Environmental Assessment Office 2013; National Energy Board 2009; Canadian Environmental Assessment Agency 1996a; 2015; BC Ministry of Forests Lands Natural Resource Operations and Rural Development 2011; BC Oil and Gas Commission 2011). Less formal HRM assessment triggers may occur as a result of proponent consultation with Indigenous Nations. Policy elements that trigger HRM assessment vary across international, federal, provincial, regional, and municipal project regulatory policy. These assessment triggers are the specific HRM policy mechanisms that require a proponent to conduct HRM assessment.

Per policy, projects in BC that require land alterations are subject to a regulatory review and approval process. Regulators examine multidisciplinary EIAs and other development applications, in the context of the applicable regulatory policy regime(s). Where directed, proponents retain HRM professional services (i.e., a qualified consulting archaeologist) to assess whether a project could impact archaeological resources protected by the *Heritage Conservation Act* (1996). However, in practice, some proposed land alterations do not trigger a regulatory review, or regulators fail to trigger HRM assessment (Figure 2). A recurring contributing factor is the lack of a self-triggering mechanism for HRM assessment in the *Heritage Conservation Act* (1996), which is addressed with a change in the *Heritage Conservation Act* (2019). Also, HRM professionals do not always find all archaeological resources during AIA fieldwork. Often, work areas confine archaeologists to a property or a project's physical footprint. Land alterations have a higher probability of unearthing undocumented archaeological resources where an HRM assessment trigger is absent, or AIA is incomplete or inadequate. Gaps in the consistency of HRM assessment and informant reporting make it impossible to know how many of BC's archaeological sites have been disturbed inadvertently or clandestinely over time.

In BC, FLNRORD and other government ministries with pertinent responsibilities refer to the *Archaeological Sites In British Columbia* checklist to assess archaeological potential related to development applications and permit authorizations (BC Ministry of Forests Lands Natural Resource Operations and Rural Development 2011:1-2). Affirmative answers to any of the three checklist questions trigger HRM assessment.

Then the checklist doubles as a letter to proponents to document the trigger. Answers to questions in the checklist determine if the proposed project is within 50 metres of a recorded site, situated in an area of modeled archaeological potential, or if a direct overlap with a recorded site is present (BC Ministry of Forests Lands Natural Resource Operations and Rural Development 2011:1). Where answers indicate a proposed project requires HRM assessment compliant with *BC Archaeological Assessment Guidelines*, an HRM professional opinion is necessary to satisfy regulators and intergovernmental referrals. Details of provincial HRM policy linked to chance finds is discussed from national and global perspectives in Section 1.4. The comparative review of HRM policy and practice in BC and elsewhere is the basis for the recommendations provided in Chapter 4.

Automatic archaeological site protection language in Section 13 of the *Heritage Conservation Act* (1996) is the Archaeology Branch's highest order ACF policy language. It states a person may not "damage, excavate, dig in or alter, or remove any heritage object from, a site that contains artifacts, features, materials or other physical evidence of human habitation or use before 1846" (*Heritage Conservation Act* 1996:S13Ss(2d)). Section 13 is reinforced by Section 6, which indicates that the *Heritage Conservation Act* (1996) supersedes all conflicting legislation. Human interments are provided specific protection under Section 13 (2b) (*Heritage Conservation Act* 1996).

Further to legislation and guidelines for professional archaeologists, the Archaeology Branch prepared a one-page double-sided tri-fold glossy brochure for a targeted outreach program. The brochure targeted private landowners and communicated the potential for unrecorded archaeological sites in urban and rural environments (Archaeology Branch 2018d:1-2). Stage 3 of 3 in the brochure provides the chance find response direction "If you find something in the ground – stop digging!" and further advises landowners to call the Archaeology Branch upon discovery (Archaeology Branch 2018d:1-2). The Archaeology Branch also provides additional procedures online (Archaeology Branch 2018e:n.p.). For each authorized HRM assessment, the Archaeology Branch reviews reports for the assessment, mitigation, or monitoring work and provides concurrence letters. For chance finds, these letters typically include language like, "in the unlikely event that unanticipated archaeological remains are encountered during your operations in these areas, please immediately stop

work in their vicinity and contact me...” (Mackie 2011; Forgeng 2017). Archaeology Branch concurrence letters present standard verbiage advising proponents to stop work, secure the area, and to call the Archaeology Branch upon discovery of a chance find.

1.4. Regulatory Policy Regimes

Whether knowingly or unknowingly, development proponents and their contractors risk impacting automatically protected archaeological resources when undertaking ground-disturbing activities in BC. A chance find report could result in construction work areas being temporarily shut down for an undetermined duration, or a need to redesign development components to avoid significant archaeological resources. Where chance finds occur, HRM professionals are required to assess discoveries and determine appropriate next steps to meet provincial guidelines. These administrative and field tasks take time to implement within a process, as identified in Figure 2. Where human remains are discovered proponents can anticipate additional time will be necessary. Policy guides the next steps for authorized responses to the discovery of archaeological materials (Archaeology Branch 1989; 2018c). Financial impacts on projects from chance finds are the result of construction delay, plus the cost of HRM professional services, fines, legal fees, and any compensation-in-kind payments. The subsections that follow provide the HRM policy contributions from a sample of BC’s regulatory policy regimes (see Figure 1).

1.4.1. Multidisciplinary Environmental Impact Assessment

The *BC Environmental Assessment Act* (2002) is the province’s comprehensive EIA legislation; it is like the *Canadian Environmental Assessment Act* (2012) and the *National Energy Board Act* (1985) in its focus on regulating larger projects that meet certain reviewability thresholds. For smaller non-EIA projects in BC, FLNRORD provides detailed guidance to proponents regarding the province’s regulatory review processes (BC Ministry of Forests Lands Natural Resource Operations and Rural Development 2015).

EIA project regulators receive initial project applications as project descriptions that identify environmental constraints or gaps that will be addressed by identified studies. Project regulators act as a hub for multidisciplinary EIA review and project

approval. For EIA projects, the regulator works with responsible authorities, the proponent, consultants, and relevant government ministries to develop a complete project description and conduct required studies. Information is used to determine which valued components of the environment require consideration in the EIA (BC Environmental Assessment Office 2018a:10).

EIA application guidelines identify heritage resources as a “valued component” or “valued ecosystem component” (Canadian Environmental Assessment Agency 2015:5; BC Environmental Assessment Office 2013:4) that need to be assessed and managed by qualified HRM professionals according to provincial guidelines (Canadian Environmental Assessment Agency 2015:5; BC Environmental Assessment Office 2013:4). For the BCEAO, heritage is identified as a ‘pillar’ of the EIA in their *Guideline for the Selection of Valued Components and Assessment of Potential Effects* (BC Environmental Assessment Office 2013). The guideline breaks down the heritage pillar to include the ‘valued components’ of “cultural, archaeological, historical, or other importance.” (BC Environmental Assessment Office 2013:4). Archaeological sites or groups of sites, where present, become selected valued components in the EIA by default because the *Heritage Conservation Act* (1996) affords them automatic protection. Automatic protection and the requirement to implement authorized mitigation strategies create a legislative requirement to assess potential project effects on archaeological resources. In addition to the legislative requirement, archaeological sites meet several other criteria used by the BCEAO to determine which heritage resources become valued components in the EIA (BC Environmental Assessment Office 2013:10). A comprehensive source of information on major projects in BC is the BCEAO’s online project review and reporting database ‘e-pic’ (BC Environmental Assessment Office 2018b:n.p.). Project regulatory reviews involving HRM assessment were examined to find examples of HRM policy and practice in action.

In a perfect world, HRM assessment with subsurface testing is complete at the time a project’s EIA is submitted. A complete HRM assessment allows regulators, Indigenous Nations, stakeholders, and proponents to determine if a project will cause adverse effects or cumulative effects to the suite of heritage resources present, and for the project to budget accordingly. A complete HRM assessment also helps proponents limit the risk of discovering new and significant archaeological sites during construction. With complete data, HRM professionals can develop avoidance strategies, minimize

proposed impacts, and prepare accurate cost estimates for mitigation and monitoring work. Submissions and regulatory review documents from several EIA projects inform the discussion on chance find policy elements and HRM assessment practice for EIAs in BC.

Woodfibre LNG, The Coastal GasLink (CGL) and the Evergreen Light Rapid Transit (Evergreen LRT) projects are multidisciplinary EIAs that triggered HRM assessment. The Evergreen LRT project provides an example of regulators approving a project before HRM assessment is complete (Evergreen Light Rapid Transit Project 2010). CGL project approval also occurred before completion of the HRM assessment, construction is ongoing, and ACFs are an issue (Unist'ot'en 2019:n.p.). Each project's Environmental Assessment Certificate (EAC) documents future HRM assessment and mitigation requirements (Minister of the Environment 2014:1-4; BC Ministry of Environment 2011:1-23; 2014; BC Environmental Assessment Office 2014:1-589). As examples, the CGL and Evergreen LRT projects were subject to an AOA supplemented with preliminary fieldwork to document areas of archaeological potential, an AIA with subsurface testing (BC Environmental Assessment Office 2014:305, 307; BC Minister of Environment 2011:22). HRM report recommendations identify AIA assessment gaps and recommend additional next steps during the construction phase (Fry 2016:31-21; Rogerson et al. 2017:70; Evergreen Light Rapid Transit Project 2010:41).

The initial HRM assessment of the Evergreen LRT did not reveal any protected archaeological sites. However, the project EIA's *Heritage Resources Technical Appendix* recommends future HRM construction monitoring in assessment gaps. HRM construction monitoring is authorized by a Section 14 *Heritage Conservation Act* (1996) inspection permit that allows archaeologists to search for unrecorded archaeological sites in HRM assessment gaps. The *Heritage Resources Technical Appendix* also recommends the implementation of an ACFMP for areas already subject to HRM assessment and provides the policy rationale (Evergreen Light Rapid Transit Project 2010:Section 16:16–42). The BCEAO and Archaeology Branch concurred with the in-progress nature of the HRM assessment in their application review report. Special conditions are provided to guide future HRM work in the proponent's EAC (BC Ministry of Environment 2011:1-4).

HRM assessment for EIA development applications like the CGL Project, Evergreen LRT, and Woodfibre LNG tend to follow HRM policy. However, early regulatory approval resulted in a requirement for each proponent to conduct outstanding HRM assessment and an unknown amount of mitigation. This practice deviation from policy increases the financial risk for proponents; it also leads to destructive EIM mitigation measures at newly recorded archaeological sites found during construction. As a project proceeds through construction, newly found archaeological sites are less likely to be avoided and more likely to cause frustration, delay, and increase project costs. A recent media report from an unnamed nationally syndicated media outlet sensationalized a chance find reported from a construction site on the CGL project. The media item capitalized on times of extreme pipeline angst in BC and fueled the spread of dissent toward the project. Reposted information in the media item was from an open letter posted on a blog that was endorsed by professional archaeologists, among others (Unist'ot'en 2019:n.p.). A faction of an Indigenous Nation opposed to all pipelines maintains and produces content for the blog. Instances of chance finds being used tools for social activism are uncommon in the literature. However, in the CGL case, the recovered artifacts are suspected of being moved to this location to create a situation that delays pipeline construction (BC Oil and Gas Commission 2019:1-2).

Project approval from the BCEAO is from the BC Minister of Environment. Decision statements document direction to proponents regarding future HRM assessment and impact management requirements. The Woodfibre LNG project's decision statement includes requirements for future HRM assessment, preparation of an HRMP that defines the scope of HRM construction and operations monitoring, and requires preparation of an ACFMP (Minister of the Environment 2014:12–13). The *Decision Statement* also identifies HRM assessment gaps associated with fish habitat enhancement projects. Provision for HRM assessment of these unknown areas requires consideration in the project's HRMP (Minister of the Environment 2014:9). Where HRM assessment and mitigation is incomplete, Woodfibre LNG and their contractors are required to prepare and follow an HRMP to meet project approval conditions. For example, fish habitat enhancement projects occur along shorelines and are likely to interact with untested areas of archaeological potential. As the habitat enhancement areas are not known, they could overlap with significant archaeological sites or an

Indigenous traditional fishing location; each would be valued components in the EIA requiring re-assessment of project effects, and potentially HRM mitigation.

The chance find identified in the Unist'ot'en blog was reported during land clearing for worker accommodations on the CGL project (BC Oil and Gas Commission 2019:1). Worker accommodations may represent a gap in HRM assessment coverage (Unist'ot'en 2019). Like habitat enhancement areas at Woodfibre LNG, camp locations for the CGL project may not be pre-determined in advance of receiving project approval. The OGC indicates that typical chance finds procedures are functioning as intended on the CGL project despite the commotion in the media (BC Oil and Gas Commission 2019:1). However, the commotion itself is still central to understanding how people regard archaeological resources and chance finds. Sentiments of UNDRIP extend beyond the archaeological implications of the CGL find or its authenticity. CGL's recent experience points to both financial and social risks that arise during contentious projects. When an informant reports a chance find from an active construction site, the proponent incurs costs. This ACF case is at the far end of the response spectrum and was popularized by new and traditional media sources negatively before the next steps could be determined and implemented by HRM professionals.

An HRMP details the scope and timing of HRM assessment and mitigation implemented during the construction and operations phases of a project (Minister of the Environment 2014; BC Minister of Environment 2011, 2014, BC Ministry of Transportation and Infrastructure 2016; 2018). Where required, a project's HRMP or Environmental Management Plan (EMP) includes an ACFMP. An ACFMP is intended to guide a potential informant's actions in the event of artifact discovery. HRMPs for larger projects specify the employment of qualified archaeologists, environmental monitors, and Indigenous community monitors during the construction phase. Their role is to document compliance with the HRMP and EMP and to report chance finds. Environmental and Indigenous community monitors, along with equipment operators, are all part of the front-line informants for chance finds. Many monitors and construction contractors are not always skilled in the identification of protected archaeological resources, and that adds an element of risk. To manage this risk, HRMPs often require proponents to provide ACFMP training to front-line workers at project construction kick-off meetings or construction site indoctrination training. ACFMP training materials tend to be limited to a few photographs of exceptionally crafted artifacts along with immediate

informant reporting actions. HRM professionals become involved again upon receiving a chance find report, following the process in Figure 2. Administrative subdivisions and archaeological site type distribution in BC demand a project- and region-specific approach to ACFMP preparation and site identification training materials.

In practice, approval of EIA projects happens before HRM assessment is complete. For the project documentation reviewed, project approvals rely on preliminary HRM assessment results summarized in EIA applications and associated technical appendices. HRM assessment gaps are documented for Woodfibre LNG (Minister of Environment 2014), CGL (Fry 2016; Rogerson et al. 2017; BC Environmental Assessment Office 2018b), and Evergreen LRT (Evergreen Light Rapid Transit Project 2010) projects. In each of the three cases examined, EAC issuance came with itemized HRM assessment and mitigation conditions. Practice suggests that archaeological sites found during the construction phase are like chance finds because they follow similar HRM policies from discovery to destructive mitigation (Figure 2). Also, a newly recorded archaeological site in conflict with construction activities creates a similar financial risk for projects as an ACF.

Early EAC issuance puts archaeological sites at risk and adds a layer of financial risk to a project that is difficult to quantify in advance. HRM assessment gaps need to be filled to satisfy Archaeology Branch and EAC requirements; these commitments can affect both the schedule and cost of a project. Cost is directly related to the size of the gaps in HRM assessment coverage (Mason et al. 2013; Seip et al. 2012). These conditions require an unknown level of HRM effort in the construction phase. Significant archaeological resources found in assessment gap areas after EAC issuance are problematic. Where newly found portions of significant resources conflict with pre-approved ground altering activities, the risk is higher for proponents and stakeholders. Financial risk can be assessed on a sliding scale depending on the completeness of HRM assessment before project approval, and the archaeological potential of the area in question. Values can be assessed using the size of HRM assessment gaps and the extent of untested areas of archaeological potential within. When HRM assessment gaps are small and only overlap with areas of low archaeological potential, the risk is low. Where significant HRM assessment gaps exist within areas of archaeological potential, the risk is high.

Section 2 of CEEA's guidelines allude to the potential for chance finds stating "not all valued cultural heritage resources have official designation status and therefore may not always be identified in government heritage registries. They may not even be formally recognized or documented." (Canadian Environmental Assessment Agency 1996:1). This policy language allows for a broad interpretation of heritage resources while acknowledging that all heritage resources may not be identified or understood (e.g., protected archaeological sites in BC). The NEB's *Filing Manual - Guide A: Facilities Applications* goes a step further indicating applications must "Describe what contingency plans and field measures would be undertaken if a heritage resource is discovered during construction." (National Energy Board 2009:4A-50).

CEEA guidance recognizes that construction monitoring may be required to document the efficacy of the EIA (Canadian Environmental Assessment Agency 1996:Section 4, Step 5). Further, CEEA notes the various provincial HRM policy jurisdictions and recognizes provincial authority for managing heritage resources on projects under federal EIA review (Canadian Environmental Assessment Agency 1996:Appendix 1). Included in the collected chance find data are sites associated with federally-regulated projects where HRM reports were available on PARL and sites were documented in the PHR. This thesis does not consider HRM policy from other provincial and territorial jurisdictions, despite the potential relevancy to trans-provincial projects undergoing federal regulatory review.

As mentioned above, the Woodfiber LNG project provides an example of a project regulated by a JPR, ultimately under the *Canadian Environmental Assessment Act* (2012). The specific chance find policy elements for Woodfiber LNG state the proponent must develop:

a chance find protocol, should a previously unidentified structure, site or thing of historical, archaeological, paleontological or architectural significance (including culturally modified trees) be discovered by the Proponent or brought to the attention of the Proponent, during construction, by an Aboriginal group or another party. (Minister of the Environment 2014:13)

Although this policy element identifies the need for an ACFMP during construction, there is no guidance available from the Archaeology Branch, the BCEAO, or CEEA for preparing one.

The BCEAO's resource effects assessment process applies to chance finds for the statutory reasons discussed in Section 1.4.1. A newly discovered archaeological site also triggers the need for additional authorized HRM assessment because new archaeological sites are indicators of the valued component (i.e., heritage resources) and automatically protected by the *Heritage Conservation Act* (1996). There is also a need to assess potential adverse project-related effects to newly selected indicators (i.e., an ACF). Similar to CEAA, BCEAO guidance documents do not indicate the need to develop chance find procedures. Instead, they recognize the need to evaluate residual effects to selected valued components and for proponents and their contractors to follow provincial statutes, including the *Heritage Conservation Act* (1996) (BC Environmental Assessment Office 2013:4, 8). Chance find response expectations are not communicated upfront by the BCEAO; however, the *Proponents Table of Commitments* that accompanies ministerial project approval will indicate a need for an HRMP or ACFMP (BC Environmental Assessment Office 2014:19). These special HRM conditions are crafted following the recommendations in HRM reports prepared for the project (Evergreen Light Rapid Transit Project 2010).

Special HRM conditions in the Evergreen LRT EAC outline future requirements (BC Minister of Environment 2011:15), Condition 124 requires the proponent or their contractor to retain HRM professional services to develop an HRMP for implementation during construction. The plan is to include provisions for additional HRM assessment, but also "in the event that any archaeological or cultural heritage resources are found during construction." (BC Ministry of Environment 2011:15). Condition 124 requires compliance with the *Heritage Conservation Act* (1996) and identifies an appropriate repository for any chance find responses that result in artifact recovery. The condition also requires construction to stop in the event of a chance find until an HRM professional can update the proponent, Indigenous Nations, and the Archaeology Branch (BC Ministry of Environment 2011:15). Condition 124 also includes a provision for chance finds involving human remains. It documents the need for Indigenous input and a negotiated outcome with the Archaeology Branch.

Further, Condition 124 indicates that construction work could only proceed following the issuance of a *Heritage Conservation Act* (1996) permit and following Indigenous policy and custom (BC Ministry of Environment 2011:15). This condition shows the importance of Indigenous involvement in determining the next steps for

chance finds and affirms the potential for administrative timelines to extend beyond the average two months permitting process. BCEAO's chance find policy elements are vague in published guidelines, and the details that create financial risk are hard to find and interpret. Also, they are unique to each project. Like CEAA and NEB projects, HRM assessment and mitigation requirements are outlined in a project's EAC and associated *Proponents Table of Commitments*. Approval conditions require ongoing HRM professional involvement; they are comprehensive, available to everyone, binding on the proponent, and enforceable under the *British Columbia Environmental Assessment Act* (2002) and the *Heritage Conservation Act* (1996).

Federal EIA regulatory policy relies on HRM professionals to follow provincial and national HRM policy, but guidelines for preparing HRMPs or ACFMPs are absent. Archaeology Branch guidelines do not meet the realities of early EIA project approval and tend to encourage the use of destructive EIM measures. Instead of being reactionary in response to predictable situations and outcomes, guidelines for HRMP preparation should direct professionals to innovate equitable approaches to chance find management in advance of construction. A consultative approach with Indigenous Nations is necessary when preparing a project-specific HRMP and ACFMP.

1.4.2. Project Applications and Referrals

BC's central hub for receiving and coordinating public and private project applications and intra-government referrals is FLNRORD. Front Counter BC accepts applications for projects and permits, and FLNRORD coordinates project review across several biophysical disciplines, technical experts, government ministries, and regulatory agencies. FLNRORD also coordinates forestry referrals under the *Forests and Range Practices Act* (2002) among others. Staff work across government ministries, municipalities, and other regulatory agencies to coordinate project approvals and authorize provincial permits for projects related to natural resource extraction and rural development.

Examples of intra-government referrals involving FLNRORD are generated by MEM when providing authorizations for mineral exploration programs; MoE when issuing authorizations under the *Water Sustainability Act* (2014); or, Ministry of Transportation and Infrastructure (MOTI) when approving subdivision of rural land under the *Land Act*

(1996), or acting as a proponent. Referrals are also received from municipalities and agencies like the BC Utilities Commission and the Agricultural Land Commission, among others. Where responsible authorities lack specific HRM policy, the *Archaeological Sites In British Columbia* checklist is used to trigger HRM assessment and notify proponents to retain a qualified archaeologist (BC Ministry of Forests Lands Natural Resource Operations and Rural Development 2011:1-2).

1.4.3. The BC Oil and Gas Commission

The OGC has a different HRM policy, and the commission acts as project regulator and archaeological resource regulator. One mandate of the OGC is regulatory oversight of proposed oil and gas development projects that do not meet the reviewability thresholds in EIA regulatory policy regimes. The OGC reviews development applications and issues authorizations to proponents under the authority of the *Oil and Gas Activities Act* (2008). Many OGC-regulated projects relate to upstream exploration activities that trigger HRM assessment before OGC approval. HRM assessment follows regulatory guidelines (BC Oil & Gas Commission 2018a:34) and Archaeology Branch guidelines (Archaeology Branch 1989). Reviewable development proposals include seismic exploration programs; oil, gas, and geothermal exploration wells, petroleum development roads, pipelines for raw and consumer grades of gas, and processing facilities (BC Oil & Gas Commission 2018a:58). Authorizations for OGC projects include general exploration development permits, intra-provincial mid-stream pipeline projects, and downstream consumer-grade gas transmission projects (BC Oil & Gas Commission 2013:58). OGC staff also participate in JPRs for NEB- and BCEAO-regulated projects in BC.

The OGC's oversees HRM assessment for OGC-regulated projects, but the Archaeology Branch authorizes the required HRM assessments under Section 14 *Heritage Conservation Act* (1996) inspection permits. Where impacts to archaeological resources are unavoidable, the OGC oversees and authorizes impacts under a Section 12 *Heritage Conservation Act* (1996) site alteration permit. A negotiated protocol agreement with the Archaeology Branch provides the authority for the OGC to oversee Section 14 and authorize Section 12 permits (BC Ministry of Forests Lands Natural Resource Operations and Rural Development 2004:1-8). Since 2004, a professional reliance process confirms compliance with Section 14 and Section 12 permits (BC Oil &

Gas Commission 2011). The OGC's HRM professionals audit professional reliance to confirm HRM work complies with permit requirements (BC Oil & Gas Commission 2018b).

Chapter 5.5 in the OGC's *Oil and Gas Activity Application Manual* identifies the need for HRM assessment work but lacks sector-specific language about chance finds (BC Oil & Gas Commission 2018c). Guidance to proponents and HRM professionals is limited to referencing the *BC Archaeological Impact Assessment Guidelines* (Archaeology Branch 1989) and language that indicates archaeological sites are protected, whether known or unrecorded. The OGC provides HRMP requirements and ACFMP guidance to development proponents within the *Environmental Protection and Management Guideline*, which states:

In the event a heritage site, heritage object, or any other feature, place or material that may contain historical or archaeological value as defined by the Heritage Conservation Act [RSBC 1996] Chapter 187 is encountered, the [OGC development] permit holder must cease disturbance activities and immediately notify the Commission's Archaeology Branch. (BC Oil & Gas Commission 2018a:34–35)

The OGC provides special conditions containing chance find policy within project authorization letters. Directives outline criteria for managing impacts to recorded archaeological and heritage resources along with chance finds.

Given the sensitive commercial nature of oil and gas exploration and the need to complete HRM assessment ahead of project approval, there is limited public information available for chance finds associated with upstream oil and gas projects. Documentation for larger OGC-regulated projects is available online and contributes to the discussion on HRM policy and practice, and chance find policy. The Archaeology Branch archives HRM reports and archaeological site information for OGC-regulated projects in PARL. KM LNG Operating Ltd.'s Liquefied Natural Gas (LNG) storage site sub-project in Kitimat provides a reference to HRM policy and includes project-specific chance find policy elements. Archaeological resources in proximity to the KM LNG Project were the subject of a chance find previously by a different proponent's contractor (Kristensen 2008). For KM LNG, HRM management directives are in the OGC's project approval letter to the proponent; they focus on the recorded archaeological site (i.e., FITE-33) that was the subject of a previous encroachment (BC Oil & Gas Commission 2013:1-6).

Damage to CMT site FITE-33 occurred in another portion of the site in 2007 (Kristensen 2008). The informant report was from professional archaeologists working on the Enbridge Gateway Pipeline LP project. Archaeologists described how tree felling in preparation for geotechnical drilling damaged several CMTs. The Archaeology Branch and affected Indigenous Nations required remedial HRM impact management work that employed EIM measures. A new Section 12 *Heritage Conservation Act* (1996) site alteration permit authorized the EIM methods. The project's JPR, Indigenous Nations, and the Archaeology Branch received a report detailing the results of remedial HRM mitigation work. All HRM work was reviewed by the local Indigenous Nation's preferred HRM professional. This example shows that chance finds occur within the planning and design phase and documents the inputs needed to satisfy HRM policy within a recorded archaeological site where previous unauthorized impacts occurred. A third-party review of deliverables can assist with rebuilding trust after avoidable unauthorized impacts occur. This level of professional oversight is likely to add more unforeseen costs to the project.

The OGC's authorization for KM LNG's proposed storage site provides an example that considers known archaeological values in conjunction with the potential for chance finds. The direction is provided to the proponent and HRM professionals by outlining the steps to take upon the discovery of CMTs or other archaeological site types during construction. This OGC directive also includes a requirement to contact specific Indigenous Nations upon the discovery of a chance find, or if archaeological conditions in a recorded site change. Two special conditions from the OGC's authorization for KM LNG's storage site relate to chance finds:

Special Condition 1) If a previously undiscovered CMT is identified within FITE-33 boundary, KM LNG Operating Ltd. will ensure that a qualified archaeologist record all characteristics of the CMT(s) according to the Archaeology Branch 2001 CMT recording guide and provide digital photos and UTM coordinates to Haisla Nation Council and the Oil and Gas Commission. This recording and notification must be conducted prior to any alteration of a newly discovered CMT.

-and-

Special Condition 4) If archaeological resources other than CMTs are discovered during the construction of Storage area A, KM LNG Operating Ltd. must cease work, notify the Oil and Gas Commission and the Archaeology Branch and allow recording of all data pertaining to the

recovery of the site as directed by the Commission or the Archaeology Branch. (BC Oil & Gas Commission 2013 Special Terms and Conditions: 1-2)

Although these two special conditions are prescriptive, jurisdiction over decisions for chance finds resides with the OCG and the Archaeology Branch. This duality of resource regulators can be a source of confusion for potential informants, Indigenous Nations, and proponents.

Examples of other OGC authorization letters for major projects are available online (BC Oil & Gas Commission 2018d); letter contents vary depending on the type of project being authorized and known and potential archaeological values. The inclusion of specific Indigenous Nations in Special Condition 1 highlights the need for project-specific approaches to chance find management that includes Indigenous voices and achieves free, prior, and informed consent. In the KM LNG example, the report of an ACF requires proponents to cease all work, undertake further consultation with affected parties, and follow the *Heritage Conservation Act* (1996) along with *BC Archaeological Impact Assessment Guidelines* (Archaeology Branch 1989).

1.4.4. Ministry of Energy and Mines

Government ministries like MEM, MoE, and FLNRORD issue authorizations to proponents. For example, MEM issues authorizations for mineral exploration and small-scale resource extraction projects (e.g., placer mining, aggregate extraction, low tonnage mines). MEM staff also participate in EIA regulatory review of large-scale mining developments with CEAA and BCEAO, where required. Answers to the *Archaeological Sites in British Columbia* checklist trigger HRM assessment for MEM-authorized projects (BC Ministry of Forests Lands Natural Resource Operations and Rural Development 2011:1-2.); or, triggers for HRM assessment are contained in policy elements from EIA guidelines (Canadian Environmental Assessment Agency 1996; 2015; BC Environmental Assessment Office 2013). Where a proposed mining exploration project does not meet any criteria in the FLNRORD checklist that trigger HRM assessment, a proponent must submit an ACFMP to FLNRORD along with their MEM Notice of Work application (BC Ministry of Forests Lands Natural Resource Operations and Rural Development 2018:1). An ACFMP is a necessary component for developments authorized by MEM under the *Mines Act* (1996). To mining proponents,

FLNRORD provides a sample ACFMP online (BC Ministry of Forests Lands Natural Resource Operations and Rural Development 2014:1-2). The provision of this document in the public domain in practice is a deviation from policy. According to policy, an ACFMP is necessary after HRM assessment is complete, or has commenced and is ongoing. This practice alleviates the need for proponents to retain HRM professional services and circumvents the typical HRM assessment process by allowing proponents to assess archeological potential and determine management strategies. Proponents that choose to proceed without an HRM assessment are at risk of perpetuating unauthorized impacts on archaeological resources. Projects and people can be subject to the enforcement measures identified in the remedies and penalties section of the checklist (Province of British Columbia 2014:2). This approach may be appropriate for less invasive projects that require minimal land alterations. However, any damage to archaeological resources contravenes Section 13 (2a-i) of the *Heritage Conservation Act* (1996). The province's sample ACFMP has the effect of making the province or proponent the HRM professional for mining exploration projects. Proponents in other sectors are required to retain HRM professional services for similar tasks like access road construction, camp set up, drill pad construction, and tree felling. The only evidence of this practice is from mining projects not large enough to require an EIA or submit a development application under the *Mines Act* (1996). The ACFMP template follows the standard protocol: stop work, secure the area, and contact the authorities.

HRM reports collected for this thesis document ACF cases from mining projects regulated by MEM and the BCEAO. For example, the Galore Creek Mine in northwest BC evidences multiple ACF cases associated with a roadway under construction (Seip et al. 2012:ii). The Galore Creek project and associated ACF cases are described below in Section 1.7.2.

1.4.5. Ministry of Transportation and Infrastructure

MOTI enhances and maintains highway infrastructure in BC. They are a proponent that plans, manages, and finances the construction of their projects using public funds. MOTI provides an example of public HRM policy from a government proponent. MOTI projects follow the *2016 Standard Specifications for Highway Construction*, which has overarching environmental due diligence statements that extend to heritage resources (Ministry of Transportation and Infrastructure 2016:1-21). Personal

experience indicates that MOTI retains HRM professional services using multi-year contracts following an established procurement process; this enables MOTI to respond quickly to project needs and chance finds because permits and HRM professionals are already in place. For larger EIA projects, MOTI engages multidisciplinary consulting firms through a competitive procurement process.

For projects that do not trigger an EIA, MOTI staff follow an unwritten environmental due diligence process that determines the provincial permitting and authorization needs of each project (Krista Englund, personal communication 2018). HRM assessment is conducted as stand-alone studies or as part of a multidisciplinary project team of consultants led by MOTI environmental coordinators. For smaller projects, MOTI has several Section 14 *Heritage Conservation Act* (1996) blanket inspection permits to conduct AIA fieldwork across the province. Resource-specific studies are designed to meet the future requirements of MOTI's construction specifications (Ministry of Transportation and Infrastructure 2016). The results of resource-specific studies are submitted to MOTI staff and are used to apply for provincial authorizations and prepare construction tendering documents. Tender opportunities direct potential contractors to meet a multitude of requirements, including those related to environmental values, and by extension to heritage resources. MOTI's HRM policy also takes the form of special contractual conditions that define HRM assessment, mitigation, and planning requirements to construction contractors (Ministry of Transportation and Infrastructure 2018:1-2).

Where a project requires land altering activities, MOTI's *2016 Standard Specifications for Highway Construction* identifies the parameters a construction contractor must follow (BC Ministry of Transportation and Infrastructure 2016:1). Heritage resources appear in Section 165 Protection of the Environment (BC Ministry of Transportation and Infrastructure 2016:1–21). Section 165:

- Identifies the qualifications required by MOTI for HRM professionals (BC Ministry of Transportation and Infrastructure 2016:165.01.02a).
- Acknowledges that heritage resources have natural, spiritual, and cultural components that are inclusive of socio-community issues (BC Ministry of Transportation and Infrastructure 2016:165.01.02e).

- Requires contractors to prepare a Construction Environmental Management Plan for each project (BC Ministry of Transportation and Infrastructure 2016:165.01.02b).
- Deems archaeological sites as environmentally sensitive areas that require inclusion in the project's EMP (BC Ministry of Transportation and Infrastructure 2016:165.01.02j).
- Notes that special contractual provisions associated with ESAs will be provided and require inclusion in the project's EMP (BC Ministry of Transportation and Infrastructure 2016:165.01.02j).
- Requires the inclusion of an HRMP in the EMP designed to avoid or minimize impacts on "archaeological, heritage, and cultural resources" (BC Ministry of Transportation and Infrastructure 2016:165.02.02).
- Requires contractors to prepare a contingency plan for unexpected events, or if protection and avoidance measures fail (BC Ministry of Transportation and Infrastructure 2016:165.02.03d).
- Directs contractors and their subcontractors to comply with Section 165 specifications and includes a blanket ACFMP and direct reference to compliance with the *Heritage Conservation Act* (1996) (BC Ministry of Transportation and Infrastructure 2016:165.03.01, 02).

The ACFMP provided by MOTI in Section 165.20 applies to all MOTI projects (BC Ministry of Transportation and Infrastructure 2016:s165.20). The plan guides contractors and HRM professionals in preparing an HRMP for inclusion in a project's EMP. MOTI's standard ACFMP directs contractors to cease all work within 30 metres of a chance find and contact the ministry representative who will coordinate contact with the Archaeology Branch. One key policy element that stands out in MOTI's ACFMP requires contractors to protect identified heritage resources from inadvertent disturbance and vandalism by their employees and the public during project construction (BC Ministry of Transportation and Infrastructure 2016:21). This atypical policy element encourages a culture of heritage stewardship among contractors. Although, for some chance finds MOTI's prescriptive 30 metre no work zone may not be large enough to avoid ongoing or future impacts. MOTI's ACFMP offers an inclusive definition of heritage resources as: "any item of archaeological, heritage, historical, cultural, or scientific interest" and is prescriptive on the next steps (BC Ministry of Transportation and Infrastructure 2016:21).

For chance finds, MOTI mitigates risk by conducting AIAs under Section 14 *Heritage Conservation Act* (1996) blanket inspection permits. Also, MOTI establishes

special terms and conditions with contractors during the tender award. MOTI's contract special provisions can indicate that extra costs to contractors for ACF-related work stoppages are negotiable. Moreover, MOTI can relieve a contractor from the financial obligations associated with implementing additional HRM assessment and mitigation – depending on the content of any special provisions agreed to in the contract. When contractual language combines with proponent chance find policy to create no-consequence reporting, it reduces financial pressures and undermines negative perceptions toward informant self-incrimination.

Special provisions in MOTI contracts can specify the potential for the presence of undocumented archaeological resources, and any requirements related to ongoing HRM assessment or chance finds. If HRM assessment is incomplete before construction commencement, then special provisions outline HRM construction monitoring requirements. An example from MOTI is available in special contract conditions from a project in the Fraser Valley:

in the event of a discovery, the Contractor shall immediately flag off a 30m radius around the discovery site before resumption of work outside of the discovery site. The Ministry Representative may increase or decrease this requirement in collaboration with the Professional Archaeologist. There shall be no additional cost to the Ministry for the flagging off of the area or relocation of equipment to the alternate location. The cost for any additional mitigative measures required by the Ministry Representative shall be borne by the Ministry. (BC Ministry of Transportation and Infrastructure 2018:1-2).

MOTI's *2016 Standard Specifications for Highway Construction* and the ACFMP within are designed to protect and appropriately manage archaeological resources. Special contract provisions are designed to protect MOTI, the contractor, archaeological sites, and the interests of Indigenous people. Here, policy and practice are aligned. MOTI also provides ACFMP training to contractors where appropriate and creates project-specific ACFMPs where necessary to meet regulatory requirements (BC Ministry of Transportation and Infrastructure 2015). Chance finds still occur on MOTI projects despite the rigor and foresight in MOTI's project planning efforts. Contractors are well equipped to respond to chance finds and know that contractual language is intended to limit each party's risk.

1.4.6. Indigenous HRM Policy in BC

Several Indigenous Nations in British Columbia have HRM policy. Some include a permit system; others only provide guidelines for HRM assessment and mitigation. Indigenous HRM policy attempts to direct HRM professionals and proponents toward positive outcomes that consider Indigenous voices and values. Indigenous HRM policy is both written and unwritten custom; it is sometimes publicly available. Indigenous HRM policy, provincial legislation, and regulatory policy regimes define heritage resources differently (Figure 1). For example, an ACFMP prepared to manage newly discovered archeological sites in BC may not capture the full range of heritage resources that require consideration under CEAA guidelines (1996a:3). CEAA guidelines define heritage resources differently than the subsections of Section 13 in the *Heritage Conservation Act* (1996), which may be different again than definitions in Indigenous HRM policy. Where several components of the HRM policy universe converge on a project, additional heritage resources may require consideration in HRM assessments following all HRM policies. Also, the range of available mitigation strategies for a project may differ based on policy, input, or comments received from Indigenous Nations.

Indigenous custom can involve heritage permit application systems for HRM professionals or proponents, may restrict photography of artifacts, or require that human remains be stored, transported, repatriated, or reinterred in specific ways. Indigenous HRM policy is not always published, and Indigenous heritage permits are not required by the Archaeology Branch when authorizing HRM work. Although not a provincial requirement, these permits are essential to an Indigenous Nation's alternative heritage management process (Hammond 2009:95). Hammond describes five Indigenous heritage stewardship strategies and provides commentary on the implementation and applicability of each (Hammond 2009:114–115). Of relevance to this discussion is the "Alternative Heritage Management Process" mode (Hammond 2009:115), which underlies the conceptual design of Indigenous HRM policy. The process identifies the importance of including local communities in Indigenous heritage stewardship efforts. Deur and Butler also point out the importance of including Indigenous voices in determining the next steps for chance finds in the USA (Deur and Butler 2016:200). Indigenous Nations play a role in implementing and designing HRM assessment in BC through general land stewardship activities, proponent consultation, and following custom, policy, and protocol. Where proponents or their archaeologists fail to achieve

free, prior, and informed consent or show disregard for Indigenous custom and consultation protocols in HRM assessment, additional risk presents when chance finds are reported (e.g., Bryce 2007; Unist'ot'en 2019).

Attempts have been made to crystallize Indigenous expectations associated with HRM assessment and mitigation through the development of HRM policy. The *Stó:lō Heritage Policy Manual* (Stó:lō Research and Resource Management Centre 2003) and *Simpcw First Nation Heritage Policy* (Simpcw First Nation 2015) contribute to the HRM policy universe and contain chance find policy elements. These two policies have coastal and interior geographic separation in BC. They contain comparable yet different HRM policy approaches for chance find management.

Stó:lō HRM Policy

The *Stó:lō Heritage Policy Manual* (Stó:lō Research and Resource Management Centre 2003) is an early example of published Indigenous HRM policy from BC. The policy identifies both tangible and intangible heritage elements that comprise heritage resources in the declared area of interest (Stó:lō Research and Resource Management Centre 2003:1). A *Stó:lō Coast Salish Historical Atlas* (Carlson 2001) documents Indigenous place names and other elements of tangible and intangible heritage. The Atlas defines the Stó:lō area of interest and is intended to work with policy. Definitions in the *Stó:lō Heritage Policy Manual* differentiate between archaeological and cultural heritage resources, identifying that some heritage resources of importance to the Stó:lō may not be protected by provincial legislation (i.e., the *Heritage Conservation Act* (1996)). Policy language aligns with the language in CEAA's guidelines related to defining heritage resources (Canadian Environmental Assessment Agency 1996b). Different terminology (i.e., incidental discovery) is used to describe chance finds. For archaeological resources, the *Stó:lō Heritage Policy Manual* provides direction for incidental discoveries defined as "surface finds without an associated Stó:lō Heritage Investigation Permit" and provides additional direction for the discovery of human remains (Stó:lō Research and Resource Management Centre 2003:23). The policy represents the full range of potential heritage resources defined in the *Stó:lō Heritage Policy Manual*. The Policy is somewhat inconsiderate of the *Heritage Conservation Act* (1996) despite the geographic overlap. Section 8.1 recommends that the individual who found artifacts call the SRRMC Senior Archaeologist and also deters collection.

However, the *Stó:lō Heritage Policy Manual* also acknowledges that monitors can implement an emergency recovery of artifacts under threat (Stó:lō Research and Resource Management Centre 2003:23). Chance find policy for human remains is re-communicated to HRM professionals in the heritage permit application template appended to the *Stó:lō Heritage Policy Manual*:

In the event that human remains are identified at any time during the course of this project, the permit holder must immediately cease and stabilize any disturbance of the remains, inform the Senior Archaeologist at the Stó:lō Research & Resource Mgmt. Centre (SRRMC) – representing the Stó:lō Nation & Tribal Council - of the nature and location of the remains, and implement any instructions provided by these individuals regarding the treatment of the remains. (Stó:lō Research and Resource Management Centre 2003:30)

The *Stó:lō Heritage Policy Manual* provides HRM professionals, proponents, and regulators with mitigation strategies for the range of expected heritage resources. Avoidance of all human remains is preferred, but negotiated outcomes are available through a consultative process (Stó:lō Research and Resource Management Centre 2003:13). Policy elements are generally appropriate for managing chance finds on federal Indigenous Reserve land. However, the application of the policy occurs across the Stó:lō area of interest, which includes land where the *Heritage Conservation Act* (1996) has jurisdiction. In policy, Stó:lō allows the collection of artifacts in peril without concurrent authorization from the Archaeology Branch. This policy could confuse monitors operating beyond the boundaries of Stó:lō reserves. Artifact collection without authorization from the Archaeology Branch contravenes Section 13 of the *Heritage Conservation Act* (1996). However, the chance find strategy is appropriate for end-users working on projects that occur on federal land where the *Heritage Conservation Act* (1996) does not apply. Actions based on this variation in policy may not align with provincial legislation, but it is a practical approach. Provincial policy and authorizations sometimes contravene Indigenous HRM policy; more work can be done to merge approaches across these policy jurisdictions. This policy element recognizes the value of swift action when projects threaten artifacts. Practicality is also evident in the policy's request to stabilize human remains if found (Stó:lō Research and Resource Management Centre 2003:13).

Simpcw HRM Policy

Similar to the Stó:lō, the *Simpcw First Nation Heritage Policy* defines heritage resources to reflect both tangible and intangible resources (Simpcw First Nation 2015:7). Some locations do not qualify for automatic protection under Section 13 of the *Heritage Conservation Act* (1996). HRM policy elements require consideration of all heritage resources when assessing potential project-related impacts. HRM policy directly references Canada's signature on UNDRIP (Simpcw First Nation 2015:3) and seeks free, prior, and informed consent in HRM decision making. The policy includes a forewarning to HRM practitioners identifying the consequences of non-compliance when operating in the Nation's area of interest (Simpcw First Nation 2015:15). Unlike the Stó:lō, Simpcw HRM policy lacks an alternative heritage permitting system and acknowledges the jurisdiction of the *Heritage Conservation Act* (1996) to manage archaeological resources (Simpcw First Nation 2015:5).

The *Simpcw First Nation Heritage Policy* provides proponents, government, regulators, HRM professionals, and the public with specific information on their expectations surrounding chance finds. The policy directs users on the next steps for human remains and other archaeological site types. Avoidance is preferred, but similar to the Stó:lō, through a consultation, negotiated outcomes are possible. Chance find policy language differentiates between encroachments on recorded sites during construction and unexpected archaeological finds. Encroachments require that "Project-related disturbance...must be reported to the Simpcw" (Simpcw First Nation 2015:12). Further, the policy acknowledges that the Simpcw will negotiate with proponents to determine impact management and compensation measures.

Direction related to chance finds provides that "all work must be stopped immediately, and the manager of the NRD [Simpcw Natural Resources Department] must be notified" (Simpcw First Nation 2015:12). Responses may include contacting the Archaeology Branch and a preferred HRM professional to determine the next steps. The direction for found human remains mirrors that for other archaeological remains, although the anticipated impact management measures vary significantly (Simpcw First Nation 2015:13). *Simpcw Policy* regarding chance finds outlines the Nation's expectations and underlines the need for participation of the Nation in negotiating outcomes when chance finds are reported.

1.4.7. Municipal Governments

Despite the frequency of visits by archaeologists, the archaeological record is underrepresented in many of BC's municipalities. Construction of the urban landscapes in BC happened before modern environmental, engineering, and building standards that apply today. In this sense, much of BC's current urban, industrial, and rural landscape was in place before the enactment of current HRM statutes. Project regulatory regimes may not have been in place or lacked triggers for HRM assessment on private property before 1996. Archaeological sites persist within these disturbed urban landscapes. These pre-1996 developments destroyed many archaeological sites, although some vestiges of the sites persist and remain undocumented.

Where a municipality is a responsible authority under the *Local Government Act* (2015) or the *Vancouver Charter* (1953), planning staff trigger HRM assessment of projects that fall under their authority. Each municipality and tier of municipal government varies in their sophistication and needs regarding HRM assessment and chance finds. Projects in communities that comprise metropolitan areas are subject to review at multiple tiers of governance. More sophisticated communities address HRM planning needs in their Official Community Plan (OCP) (Town of View Royal 2011:130). Other communities rely on FLNRORD's *Protected Archaeological Sites in British Columbia* checklist and template letter (BC Ministry of Forests Lands Natural Resource Operations and Rural Development 2011:1-2). Although unfortunate, some municipal regulatory policy regimes and approval processes do not consider archaeological resources. One approach observed in two OCP reviewed requires municipal planners to refer project applications to the Archaeology Branch (City of Salmon Arm 2011:14.3.13; District of Lillooet 2009:9.3.31). The actual reason for the lack of triggers issued during the municipal regulatory review is unknown, perhaps it relates to a lack of jurisdiction over archaeological resources or a regulator's lack of expertise? Absence of precise language to trigger HRM assessment in municipal policies reflects an underdeveloped sense of heritage stewardship among taxpayers, bureaucrats, and elected officials.

Ancient and modern settlement has been attracted by similar factors like high and dry ground that is close to potable water, food, and transportation corridors. Historical ground disturbances in the urban environment are varied, and many areas retain the potential for the presence of undocumented archaeological resources.

Archaeological sites in urban environments tend to be buried or precluded from easy visual identification because of previous land alterations. Archaeological site deposits can remain intact in less disturbed areas, in secondary or tertiary context, buried by imported fill, or situated beneath the physical footprint of older buildings and infrastructure. When project regulators or proponents ignore the potential for unrecorded archaeological sites in the urban environment, there is a risk of chance find occurrence. Reports of archaeological materials in secondary and tertiary contexts are frequent. Previous ground disturbances do not always negate archaeological potential as archaeological sites and artifacts are automatically protected in BC regardless of their context or significance.

Municipal governments acting as proponents are responsible for conducting HRM assessment of their proposed infrastructure projects. Following *Archaeology Branch Bulletin 13*, municipalities are also responsible for developing HRM policy that triggers HRM assessment of projects under their regulatory review (Archaeology Branch 2008:1). In the past, construction projects in urban settings have unearthed significant archaeological finds beneath road infrastructure and in residential neighborhoods (Mason et al. 2013; Hamm et al. 2011). The province administers HRM policy to manage archaeological resources in municipalities, but there are some exceptions based on property ownership. Examples of ACFs on municipally-funded infrastructure projects are available in HRM reports and included in the data collected for this thesis. The City of Vancouver, through the Vancouver Board of Parks and Recreation, provides HRM assessment and chance find procedures that apply to Stanley Park (Vancouver Board of Parks and Recreation 2015). An ACF case from Stanley Park provides a unique scenario.

Stanley Park is a complex land management scenario where various HRM policy converges. Vancouver's planning and engineering departments, and sometimes the Vancouver Board of Parks and Recreation are responsible for regulatory review of projects in Vancouver under the authority of the *Vancouver Charter* (1953). The *Vancouver Charter* (1953) Part XXIII (485) identifies the need for a Board of Parks and Recreation, outlines the Board's composition, and their mandate to manage the City's parks, including Stanley Park. Stanley Park occupies the site of an abandoned navy reserve base that is leased to the City by the federal government (i.e., federal land). The *Parks Development Standards: Best Management Practices for Cultural and*

Archaeological Resources Management addresses archaeological resources (Vancouver Board of Parks and Recreation 2015). Land jurisdiction issues affect the management of archaeological resources in Stanley Park but are not discussed, although the document does describe potential interactions with archaeological sites and staff, contractors, and park users alike (Vancouver Board of Parks and Recreation 2015:15). Stanley Park is on federal land that is not managed by Parks Canada, nor under the jurisdiction of the *Heritage Conservation Act* (1996). Staff at Vancouver Board of Parks and Recreation oversee HRM assessment and mitigation in Stanley Park in cooperation with local Indigenous Nations. HRM work is conducted under the authority of the *Vancouver Charter* (1953) and following municipal and Indigenous HRM policy. This process is designed to meet or exceed the requirements of Indigenous custom and provincial HRM policy.

An ACF reported from Stanley Park provides an example case from federal land (Sagarbarria 2016:1-4). A MOTI project to upgrade sidewalk and bicycle lane infrastructure resulted in the discovery. The municipality was the project regulator, and construction work followed a project-specific ACFMP (Ministry of Transportation and Infrastructure 2015). Contractors and MOTI staff were provided ACFMP training at a kick-off meeting, and Indigenous monitors were present during initial ground disturbing activities (Sagarbarria 2016:1). Somewhat ironically, a construction worker reported finding an isolated artifact (i.e., a pecked stone maul) during a second ACFMP training session for the next phase of ground-disturbing construction work. Upon request of local Indigenous Nations, the University of BC Laboratory of Archaeology curated the artifact. Although there were no delays to construction in this example and HRM fieldwork efforts were negligible, the province has no jurisdiction over the artifact, but the site is documented in the PHR as DhRs-883 (Archaeology Branch 2018f:DhRs-883). This ACF case represents a loss of process where construction contractors did not heed the project's ACFMP. If reported when found, construction would have ceased within 30 m followed by request for additional HRM assessment and construction monitoring. Although it is impossible to know with certainty, other less recognizable artifacts may have been impacted nearby the collected artifact. This HRM report is not available in PARL and is not part of the data analyzed. Land ownership and the mix of proponent, HRM policy, Indigenous involvement, and regulators make this an atypical ACF case worthy of a summary.

1.4.8. Proponent Policy

Experienced development proponents that undertake multiple projects per year are more likely to have internal HRM policy or standards of practice. Where present, they serve to limit a project's exposure to financial risk. Proponent HRM policy may be formal and published like MOTI discussed above, or informal and proprietary. For example, internal proponent policy may trigger progressive environmental studies to determine financial risk for site selection, property acquisition, and detailed design. Proponent HRM policy is varied; it can be project-specific, sector-specific, or well documented internal routine tasks – depending on the proponent's risk tolerances. Proponent HRM policy is non-enforceable beyond the threat of employment termination or withholding project financing. Instead, a proponent's policy exists to identify and guard against financial risks and guide projects toward compliance with local policy. The language found in Shell Inc.'s policy relates to heritage resources in overarching statements about environmental regulatory compliance and social and cultural best practice (Shell Inc. 2015). Savvy proponents provide more specificity on heritage resources and chance finds to approved contractors, or in confidential requests for proposals. Where present, proponent environmental risk management policies attempt to mirror multidisciplinary EIA assessment and the valued components of the environment in a proponent's operating area.

In general, proponents comply with regulatory policy and the conditions placed upon project approval. Proponent HRM policy consists of the HRMPs and ACFMPs prepared for each project. In the absence of published chance find policy from most proponents, MOTI's policy examined in Section 1.4.5 provides a baseline.

1.4.9. HRM Professional Organizations

HRM professional organizations like the Canadian Archaeology Association (CAA), Society for American Archaeology (SAA), and the BC Association of Professional Archaeologists (BCAPA) contribute to the HRM policy discussion. The CAA's *Principals of Ethical Conduct* (Canadian Archaeological Association 2018a) refers members to Principal I (4) in the *Statement of Principles for Ethical Conduct Pertaining to Aboriginal Peoples* for guidance in reaching negotiated terms with Indigenous Nations (Canadian Archaeological Association 2018b). The BCAPA's *Code of Conduct* Section 18 (6) states

members have a responsibility to “recognize, and make an effort to follow, archaeological protocols, policies, and permit systems established by First Nations, where these do not contravene the Heritage Conservation Act and the Constitution and bylaws of the society;” (British Columbia Association of Professional Archaeologists 1995:Section 18(6)). HRM policy contributions from professional organizations like the CAA and BCAPA guide practicing HRM professionals toward ethical behaviour, provide standards of practice on proven methodologies, and drive recommended practice. There is no language or guidance related to chance finds in these organizations’ policies.

In a recent communication, the BCAPA cites the Archaeology Branch as being in the process of developing chance find procedures (Campbell and Wijesinghe 2018:1). The communication also indicates the Archaeology Branch is deploying a system to track “alleged contraventions of the Heritage Conservation Act” (Campbell and Wijesinghe 2018:8). Tracking chance finds in this manner may serve to exacerbate self-incrimination perceptions of would-be informants. However, the move toward policy development indicates that HRM professionals, Indigenous Nations, responsible regulatory authorities, and proponents need overarching chance find guidance. It is the hope of the author that this thesis contributes to ongoing and future HRM policy initiatives.

The BCAPA provides an anonymous reporting form, in part to relieve the ethical or personal burdens of reporting chance finds and encroachments. The form is intended to record unauthorized disturbances to archaeological sites (British Columbia Association of Professional Archaeologists 2018:n.p.). A test submission of the BCAPA’s form in February 2018 relayed an email message to an Archaeological Inventory Officer in the Inventory Section of the Archaeology Branch at FLNRORD, along with the Administrator and President of the BCAPA. The BCAPA receives about two legitimate submissions per year (Raelene Danks, personal communication 2018). If any of these anonymous reports prompted HRM assessment, they are not traceable to submission of the BCAPA’s form (Drew MacLennan, personal communication 2018). Although these reporting mechanisms exist, they are really for HRM professionals to report spurious project-related disturbances to archaeological resources. In the case of the BCAPA, their reporting initiative focuses on observed damages and vandalism to recorded archaeological sites and anonymity of reporting (British Columbia Association of Professional Archaeologists 2018:n.p.). The need for anonymity speaks to the reality of

informant self-incrimination. The professional association's involvement indicates there are ethical considerations for HRM professionals acting as informants. Consultants acting as informants could profit from implementing future HRM work associated with a report.

Organizations like the SAA provide guidance on standards of practice and best practice to HRM professionals. In addition to guidance on ethical professional behaviour, the SAA provides a standard for assessing the monetary value of damage to archaeological resources (Society for American Archaeology 2003:1). The standard has been implemented to assess the value of encroachments and vandalism to registered archaeological sites (McAllister 2007:13-15; Fetterman 2012:36-41). Following the standard, the assessed damage value is used in legal proceedings (Society for American Archaeology 2003:1). In some instances, the value of the damage is used to determine if a statutory offense is a "felony or misdemeanor" (Fetterman 2012:12). To the author's knowledge, this tool is not used for cases in Canadian jurisdictions. However, damage valuations could be used to determine compensation-in-kind payments or calculate the cost of a fine.

1.5. Chance Find Policy Element Summary

In most published chance find policy, language indicates that all construction work should stop near a find and that HRM professionals and government officials are contacted immediately. In policy, qualified professionals are required to address all chance finds; one exception is in Stó:lō policy where the recovery of artifacts in peril is preferable in certain circumstances (Stó:lō Research and Resource Management Centre 2003:30). HRM professionals work with regulators, proponents, and Indigenous Nations to determine and implement the next steps before land altering work recommences. Regulators for comprehensive multidisciplinary EIA projects and MOTI require proponents or contractors to provide an ACFMP and HRMP. HRM professionals are retained by proponents or contractors to develop the required HRMP and associated documentation to meet unique regulatory conditions or contractual requirements. HRM professionals may also be required to develop and implement project-specific chance find awareness training to encourage identification and reporting.

Regulator approvals typically contain specific chance find policy elements directing proponents to be prepared and respond appropriately. Directions to informants and proponents on appropriate responses occur across a tiered, but an integrated set of regulatory policy regimes that operate in BC and beyond. Directions to proponents are disparate in presentation, but there is continuity between chance find policy language for different land ownership scenarios and across language in regulatory policy regimes. In some cases, chance find policy language only occurs in HRM reports or a project's approval documents from the regulator. As discussed in Section 1.4.1, premature EAC issuance and other authorizations allow construction to proceed in the absence of a complete HRM assessment. In other development situations, a sample ACFMP is provided online by FLNRORD for mining exploration projects that allow development to proceed without an authorized HRM assessment.

BC's efforts to align existing HRM policy and practice for chance finds may not be enough – updated guidance to professionals is necessary to fill policy and practice gaps. Deviations in practice from the established policy are related to projects that lack an HRM assessment and where HRM assessment is incomplete at the time of EIA approval. Several ACF cases in BC's archaeological data are a direct result of HRM assessment not being triggered by project regulators, or proponents that conduct ground disturbing activities for projects that do not require regulatory approval. For projects that trigger HRM assessment, a project-specific and innovative approach to chance find management is appropriate. Many proponents make substantial efforts to manage archaeological resources and incur costs for conducting HRM assessment ahead of project approval. Pro-active proponents can institute avoidance recommendations and deserve favored treatment when things go wrong that are out of their control. Solutions to chance finds found by the luck of the draw after a development proponent has completed HRM assessment can be predetermined. International projects in developing countries provide evidence of site reconnaissance efforts focused on HRM construction monitoring and successful application of predetermined HRM mitigation measures (e.g., Lockard 2010). Chance finds from projects where an initial HRM assessment is absent should follow the remedial HRM assessment process outlined in Figure 2.

Table 1 summarizes the policy element review above, by entity and policy regime. The review considers the multitude of entities that interact with HRM policy and chance finds. The column headers represent questions used to summarize the policy

element review. In some instances, the question did not apply (N/A), or there was no evidence found (?), in other instances, there was evidence for both answers (Yes/ No). Questions considered to populate the table include:

- **Statute:** does the entity administer statutes designed to manage archaeological resources?
- **Regulations:** does the entity administer regulations to manage archaeological resources?
- **Guidelines:** are there published guidelines by the entity that identify the potential for chance finds?
- **Approvals:** does the entity receive or produce specific direction on chance find management in project approval documents?

Contracts and Training: do the entities contractually require specific chance find responses or train workers to identify and respond to chance finds?

Table 1. Chance find policy element summary.

Policy Regime	Entity	Statutes	Regulations	Guidelines	Approvals	Contracts	Training
International	United Nations Educational, Scientific and Cultural Organization	N/A	No	Yes	N/A	?	Yes
	International Finance Corporation/ Inter-American Development Bank	N/A	Yes	Yes	Yes	Yes	Yes
	Host State	Yes/ No	Yes/ No	Yes/ No	Yes/ No	?	Yes/ No
	Foreign State	Yes/ No	Yes/ No	Yes/ No	Yes/ No	?	Yes/ No
National	Parks Canada	No	Yes	No	Yes	Yes	Yes
	Canadian Environmental Assessment Agency	Yes	Yes	No	Yes	N/A	Yes
	National Energy Board	Yes	Yes	Yes	Yes	N/A	Yes
Provincial	Forests, Lands, Natural Resource Operations, and Rural Development	Yes	Yes	Yes	Yes	Yes	Yes
	Ministry of Energy and Mines	Yes	Yes	Yes	Yes	N/A	Yes
	Ministry of Transportation and Infrastructure	Yes	Yes	Yes	Yes	Yes	Yes
	BC Environmental Assessment Office	Yes	Yes	Yes	Yes	N/A	Yes
	BC Oil and Gas Commission	Yes	Yes	No	Yes	N/A	No
Municipal	Internal Infrastructure	N/A	Yes	Yes/ No	Yes	Yes	Yes/ No
	Commercial and Industrial Development	N/A	Yes	Yes/ No	?	N/A	No
	Residential Development	N/A	Yes	Yes/ No	Yes/ No	N/A	No
Proponent	Citizen	N/A	N/A	No	Yes	No	No
	Corporate	N/A	N/A	Yes/ No	Yes	Yes/ No	Yes/ No
	Public	Yes/ No	Yes	Yes	Yes	Yes	Yes/ No

International HRM policy outlines the recommended practice for HRM assessment and impact management. Entities like the IDB act as project overseers to implement recommended practices to counteract inconsistencies in host State HRM policy and reduce financial risk. Provincial HRM policy shows variation but is aligned in the need to plan for and respond appropriately to chance finds. In BC, regulators work to mesh HRM policy across governments and stakeholders. The Archaeology Branch issues the final management directives for archaeological resources and attempts to be inclusive of Indigenous perspectives. A plan for chance find management is a requirement in the EACs for the EIA projects examined, as well as all MOTI projects. Except for the OGC, there is consistency across provincial policy for chance finds. Despite the OGC's dual role of project and archaeological resource regulators, the OGC lacks a clear chance find policy language, except in their authorizations for larger projects. However, the OGC requires completion of an HRM assessment ahead of project construction, which assists with mitigating the risk of chance find occurrence.

Municipalities frequently undertake infrastructure projects, and there is variation in their development review processes for internal and external projects. Research shows divergence from provincial processes in some municipalities, while other municipalities show a degree of sophistication in HRM and include a chance find policy in their internal and external regulations. Municipalities and proponents have varying degrees of experience dealing with HRM assessment and chance finds. Proponents like MOTI that undertake multiple projects per year have robust HRM policy that extends to their contract language. Citizens acting as proponents do not have HRM policy and are not required to undergo ACFMP training. Variation in policy exists across regulatory policy regimes, and sometimes HRM practice deviates from established policy. The summary shows an integrated system that can function in concert across regulatory policy regimes, but also shows gaps where improvements to chance find policy could be beneficial for archaeological resources, Indigenous Nations, HRM professionals, and proponents.

International lending institutions have the most advanced risk assessment process and communicate best practice, policy, and guidelines for chance finds publicly. Given the heavy reliance on archaeological prospection during a project's construction phase, this practice of disclosure is appropriate. HRM assessment policy and practice differ in BC, and there is much variation in the sophistication of the regulators and

entities that interact with the province's archaeological record. Public entities operating as proponents like MOTI also have robust chance find policy that extends from public policy to contract language intended to minimize risk, identify the potential for chance finds, and respond appropriately. Given the differences across policy jurisdictions examined, the sum of the policy does not equal an opportunity to craft the ultimate ACFMP. Instead, some aspects of policy and practice exemplify good heritage stewardship and provide a model that suits the needs of each proponent, regulator, or project.

1.6. HRM Research and Non-Project ACF Cases

Much of the research in this thesis is associated with projects and HRM assessment. As discussed, chance finds also occur with frequency in the absence of a project. In addition to the odd exceptional chance find and those threatened by immediate natural impact, sometimes non-project ACFs become the subject of academic research. One publicized chance find from BC involves well-preserved pre-contact human remains (Archaeology Branch 2000:1). The remains were discovered eroding from a glacier in northwest BC by hunters in 1999 and initially reported to authorities in Yukon Territory, then to the Archaeology Branch. Indigenous Nations based in the Yukon named the individual Kwäday Dän Ts'ınchi, or 'long ago person found'; Kwäday Dän Ts'ınchi is culturally and scientifically significant (Archaeology Branch 2000:1). The authorized HRM response focuses on the conservation, preservation, and specialized analysis of the remains. Consultation with Indigenous communities, expert analysts, conservators, and others was required. These collaborations resulted in an academic publication that far exceeds the norm. HRM planning for Kwäday Dän Ts'ınchi required HRM research that achieved free, prior, and informed consent, and was authorized by the local Indigenous Nations. Instead of a project-related impact, climate change and receding glacial margins are the potential factors that could impact the discovery. In the end, the HRM research made a definitive contribution to the province's archaeological record; and, Kwäday Dän Ts'ınchi has national and international significance (Archaeology Branch 2000; Hebda et al. 2017). In this case, a lack of impending project-related impacts allowed for adequate planning and consultation, and the results of the scientific archaeological analysis are available to an interested audience.

Other ACF cases that spawned HRM research involve underwater rock structures that were noted by a seaplane pilot along the BC coast at low tide and reported to authorities. Professors in the archaeology department at Simon Fraser University (SFU) took interest and later conducted authorized HRM research. The research documented discoveries in the absence of an impending project-related impact (Puckett et al. 2014). Analysis of the pre-contact aquaculture rock alignments coined the term 'clam garden'. Public presentations spread the word to other HRM professionals, Indigenous communities, and the public. A similar ACF case is associated with a fish weir complex at Saratoga Beach on Vancouver Island. An Indigenous informant from the area reported this case, which led to authorized HRM research (Cullon and Pratt 2009:1). Ten years later, the ACF case is the subject of an academic publication from Washington State University focused on perishable artifacts (Cullon and Pratt 2019:193-210). The publication has an entire section describing four different unexpected finds of perishable artifacts from the northwest coast region (Bernick 2019:n.p.). HRM research associated with this ACF case was led and funded by an Indigenous Nation and conducted in concert with a local HRM Professional. Again, there was no immediate threat to archaeological resources, and work was conducted to answer research questions of relevance to the Indigenous Nation. Another example of HRM research-based responses to chance finds occurred in the 1970s. An archaeology student identified rock art at Pitt Lake, and professors from SFU conducted authorized HRM research to document the images in the absence of a project. HRM research documented several pictographs in four discrete locations (Lundy 1972:1-21).

1.7. Projects and ACF Cases

Brief examples of ACF cases from projects are summarized in this section to exhibit the process and results of unauthorized impacts to archaeological resources. Project-related chance finds in BC's archaeological record span development sectors, geographies, and all phases of the project lifecycle. Cases show evidence of new archaeological sites being discovered on projects omitted from HRM assessment processes, and on projects that implemented HRM assessment in advance of construction. The example project from Peru provides context for the use of chance finds as a management tool when HRM construction monitoring is the primary method for identifying undocumented archaeological sites following an HRMP.

1.7.1. Transportation – South Fraser Perimeter Road Project

In addition to the example from Stanley Park above, other MOTI projects have encountered chance finds. Construction of the SFPR resulted in a chance find where subsurface conditions changed in and adjacent to a deeply buried archaeological site (i.e., DgRs-56). During construction of a sewer pipeline adjacent to the SFPR alignment, perishable artifacts were unearthed next to the established DgRs-56 site boundary (Mason et al. 2013:158-164). The SFPR project was subject to a multiyear HRM assessment and impact management program ahead of, and after, the project received its EAC (BC Minister of Environment 2008:22-24). HRM assessment and mitigation continued through construction following an HRMP; ACFMP training was mandatory for front-line contractors. Deeply buried perishable artifacts were not known to exist within DgRs-56. This discovery required additional HRM assessment, mitigation, artifact analysis, along with storage and conservation of perishable artifacts. This chance find resulted from encroachment to a known site because subsurface archaeological conditions changed from what was known to exist underground. This example caused construction delay, which was minimized by the presence of an active Section 14 inspection permit. A Section 12 permit for this site was in place but expired before the identification of perishable artifacts. HRM professional fees increased costs as direct impacts to perishable artifacts could not be anticipated. Their discovery required several days of fieldwork along with specialized laboratory services. The existing Section 14 permit allowed HRM work and construction to continue while a new Section 12 permit was acquired (Commisso et al. 2017).

1.7.2. Mining – Galore Creek Access Road

The Galore Creek Mine provides an example from the mining sector and evidences sixteen ACF cases (see inset map in Figure 3). Each case consists of a discrete scatter of lithic artifacts found on a roadway under construction in the winter (Seip et al. 2012:5-1). The new road extended beyond previous HRM assessment coverage. However, construction crews were prepared to address chance finds following the project's ACFMP, which was initially developed for other areas of the project (Seip et al. 2012:1-1). These sixteen ACF cases all represent unauthorized impacts, but the informant only identified one of the cases. These cases forced the suspension of construction in portions of the new road until unfrozen ground conditions prevailed in the

spring and authorization to assess the sites could be obtained (Seip et al. 2012:3-1). This example identifies the seasonal nature of HRM assessment, which is an extenuating factor for determining the timing of fieldwork in northern climates. Also, these cases indicate that environmental monitors have difficulty identifying lithic sites in adverse conditions.

1.7.3. Power Generation – Williston Lake Reservoir

Initial informant reports of several chance finds at the Williston Lake Reservoir resulted in BC Hydro retaining HRM professionals to conduct remedial HRM assessment of the project and other reservoirs in the province. The goal of the remedial HRM assessment was to address ongoing impacts to archaeological sites that are occurring along the margins of the reservoir. HRM treatments include partial avoidance, remedial HRM impact management, and development of an HRMP that includes provisions for ongoing archaeological monitoring (Brolly and Howe 2004; Brolly 2007; Eldridge et al. 2008, 2014). Williston Lake reservoir and other BC Hydro reservoirs were constructed before the enactment of the *Heritage Conservation Act* (1996) and the development of current regulatory regimes. The province-wide Reservoir Assessment Program (RAP) project documented hundreds of archaeological sites at reservoirs around BC (Brolly and Howe 2004; Brolly 2007; Eldridge et al. 2008, 2014; Oakes and Brown 2011; Cameron 2010; Brendzy 2011).

In 2004, remedial HRM assessment programs began within the physical footprint of operating reservoirs at hydro-electric developments in BC. Despite the destructive erosional forces along human-made lakeshores, archaeological resources found and recorded along the margins of BC Hydro's Williston Lake Reservoir are a significant recent contribution to the regional archaeological record of northeast BC. HRM work at Williston Lake Reservoir occurred between 2004 and 2014 during the project's operations phase. There was a high probability of encountering a chance find on this project because the W.A.C. Bennet hydroelectric generating facility was approved and constructed following an out of date regulatory regime.

Several HRM professional service providers conducted authorized remedial HRM assessment and mitigation work at the Williston Lake Reservoir. HRM permit reports document each ACF case and either implement or recommend mitigation measures as

the next steps (Brolly and Howe 2004; Brolly 2007; Eldridge et al. 2008, 2014). HRM assessment was designed to manage ongoing impacts following EIM methods. The Williston Lake Reservoir HRM assessment study area is large, but HRM efforts were focused on Findlay Reach in the north portion of the reservoir (Figure 5). Documenting the existence of chance finds that result from HRM policy change during the operations phase is necessary to determine risk mitigation actions.

Further, these ACF cases meet the criteria for inclusion alongside other project-related ACFs. However, the high number of sector-specific ACF cases from a confined geographic area with a homogenous archaeological site type would skew the detailed analysis of other ACFs. ACF cases associated with remedial HRM assessment conducted during operations are discussed separately, like non-project ACFs, to avoid skewing the data analysis,

1.7.4. Tourism and Residential - Bear Mountain Resort

A multi-family residential and recreational resort development near Victoria, BC provides an example of a project that did not trigger HRM assessment. An informant report of one site resulted in the discovery of eleven ACF cases during the project's construction phase. HRM assessment and mitigation caused construction delays related to permitting. After the remedial HRM assessment, construction monitoring was necessary when ground-disturbing activities resumed (Nicholls et al. 2008:24). The chance finds attracted negative stakeholder and media attention (McLay 2006; Bryce 2007:1–13). These cases both increased the cost of the project and reduced the resort's revenue because portions of the resort were in operation at the time of discovery. ACF costs could even be a contributing factor to the resort's eventual bankruptcy. In the end, HRM impact management efforts produced results suitable for inclusion in an HRM research project (Eldridge and Steffan 2008:87-104). Previous HRM assessment was not conducted ahead of construction on any part of the subdivision or adjacent resort facilities as there was no trigger from municipal regulators. The three questions in the checklist were insufficiently detailed to identify archaeological potential. Regardless, a lack of HRM assessment created a high-risk scenario for a chance find occurrence on the project. The City of Langford or the Capital Regional District should have minimally required an AOA during the development's regulatory review and approval process. In turn, the proponent's lack of due diligence created outcomes for archaeological

resources, sacred Indigenous use sites, and Indigenous people that were sub-optimal (Bryce 2007:1-13).

1.7.5. International – Peru LNG

Peru LNG provides documentation of a completed archaeological assessment of an international project in a Latin-American State with a developing economy. The IDB provided financing for project construction to the proponent. HRM assessment was conducted during the planning and design phase to identify recorded archaeological sites, review archaeological potential, and test previously recorded sites (Lockard 2010:45). The project's financing was approved, and the EIA's archaeological resource assessment followed the IDB process as outlined Section 4.24 of the *Environment and Safeguards Compliance Policy* (Inter-American Development Bank:11). HRM construction monitoring followed an HRMP and revealed 145 chance finds (Lockard 2010:47). Of the chance finds, 137 were subject to rescue archeology (Lockard 2010:79) following the project's HRMP (Lockard 2010:99), five required additional authorizations from the Peruvian government (Lockard 2010:84-97, 99). A detailed artifact analysis goes beyond international HRM policy and the host State's domestic HRM policy. Although artifact analysis is not a requirement, it is included to meet international best practice (Lockard 2019:2-3). Publishing the results of HRM assessment for public dissemination follows host State HRM policy. This chance find process is dissimilar from the North American model, and there are some disadvantages. There are also benefits to consider as candidates for integration into BC's process.

1.8. Chance Find Risk Assessment

Project-related ACFs are the result of unauthorized impacts on protected archaeological resources. These impacts result in HRM outcomes that are always sub-optimal. If not appropriately addressed, chance finds place regulators, Indigenous people, proponents, and contractors in challenging social, legal, or contractual situations. As much as these situations are at one end of the spectrum of possibility, chance finds can and do happen by the luck of the draw, and they do create adverse financial, social, and political realities for some projects.

Boateng (Boateng et al. 2015), citing a transportation megaproject risk assessment study summarized from a collection of European Commission transportation studies (Chevroulet 2008), identifies “archaeological factors/ habitats” as one of the top four cost and scheduling issues that had at least a “small-negligible” impact on 41% of projects analyzed; and, a “strong impact” on 17% of projects (Boateng et al. 2015:1797). Chance finds are not necessarily the cause of the financial impacts described by Boateng, but analysis shows the potential for heritage resources to affect a significant number of projects based on changing conditions during construction. At a recent presentation of the IAIA in Washington DC, chance finds from international projects were discussed. In one presentation, the cost per chance find occurrence on international development projects was estimated to range from USD 50,000 for less significant finds, to USD 250,000 for significant finds (Polglase 2019:Slide 3). These numbers provide an example of costs for authorized responses to chance finds that are useful for a coarse comparison with projects in BC.

Avoiding Archaeological Disasters provides a list of undesirable outcomes from chance finds that include: scheduling delays, legal problems, bad publicity, cost overruns, mad people, and damaged resources (Stapp and Longenecker 2009:16). These unfortunate outcomes occur, but the risk can be mitigated by following established HRM assessment processes. The authors detail the risks associated with chance finds on two projects. The associated risk matrices show the probability of occurrence during construction as “medium” with “very high” potential consequences (Stapp and Longenecker 2009:88–89). In the USA, contravention of HRM statutes places proponents and their contractors, including professional archaeologists, at risk of prosecution or civil litigation (Stapp and Longenecker 2009:14). Chance finds during construction are problematic everywhere because they represent financial, social, and legal risks. For instance, a significant chance find can adversely affect the economic viability of projects like residential re-developments, homeowner renovations, and public infrastructure. These types of projects are more revenue-neutral or funded by taxpayers and may involve capital investments. They are dissimilar from for-profit ventures like multi-family residential subdivisions, energy generation and transmission, or mineral extraction projects. EIA projects require chance find planning in HRMPs, funding for necessary HRM work is secure through EAC commitments, and chance finds are less likely to cause economic hardship to proponents.

Table 2 considers a variety of possible chance find scenarios against the World Bank’s finance risk assessment criteria presented in Section 1.2.4 (World Bank 2018). As there are two pathways to authorize HRM assessment of project-related ACFs in BC (Figure 2), they have been separated in the table into Construction Type A and B for the risk assessment. Construction Type A represents ACFs found on projects in the absence of an active *Heritage Conservation Act* (1996) permit; whereas, Construction Type B represents ACFs found where a permit is active, and an HRMP and ACFMP exist to govern interactions with ACFs and newly recorded sites.

Table 2. ACF risk assessment for the project lifecycle.

ACF	Design Risk	Site Risk	Construction Risk	Political Risk
Non-project	Low	Low	Low	Low
Construction Type A	Moderate	High	High	Moderate
Construction Type B	Low	Moderate	Moderate	Low
Human Remains	Moderate	High	High	Moderate
Operations Phase	Low	Low	Low	Moderate

The risk assessment shows the potential financial impact (e.g., consequences) of a chance find at various phases of the project lifecycle. Finds reported in the absence of a project have low to negligible financial consequences as they occur passively in the absence of looming project-related impacts. Most chance finds affect project cost, except for those associated with political risk or those from a project’s operations phase. Political risks stem from changes to previous project approval conditions and tend to affect project revenue, like the Williston Lake Reservoir ACF cases. Chance finds identified during the construction phase of a project where previous HRM assessment is absent have the highest potential for financial, archaeological, and social consequences (i.e., Construction Type A in Table 2). For these chance finds, there is less time available to implement authorized HRM work, which can lead to construction scheduling delays and application of EIM methods to mitigate impacts. Political risk is assessed as moderate because this scenario can relate to older projects where HRM assessment may not meet with current policy.

Chance finds that occur during ground-disturbing activities under an HRMP and ACFMP and an active Section 14 *Heritage Conservation Act* (1996) permit pose the least risk for projects unless human remains are involved. Chance finds that occur in the operations phase have a negligible risk to project costs. Instead, political risk elevates as

the project nears completion and is highest during and after a project's construction phase. HRM policy change is the top political risk. Data shows that existing public infrastructure developments are sometimes required to remediate past or ongoing impacts to archaeological resources to meet with the reality of HRM policy change. Chance finds associated with human remains have the highest overall risk at all stages of the project lifecycle. Authorized HRM mitigation for human remains is often complicated and requires input from multiple stakeholders, descendants, specialists, and regulators.

1.9. Problematizing Chance Finds

This thesis argues that each chance find generates a set of case-specific risks that are predictable and measurable. Identified risks can impact the integrity of archaeological sites, project schedules, proponent earnings, stakeholder interests (i.e., taxpayers, consultants, heritage interest groups, archaeologists), regulatory decisions, along with Indigenous Nations and community members. Documenting and understanding risk in the context of development project lifecycle phases is an extension of published literature. Risk assessment can assist with evaluating project-specific risk; these evaluations define appropriate risk mitigation measure(s) at the right time in a project's lifecycle.

Project proponents that interact with archaeological resources and chance finds have financial, legal, social, and scheduling risks. Indigenous interests extend beyond the financial risk implications of proponents and projects. For Indigenous Nations, the risk assessment considers losses to cultural heritage resulting from site damage; or, from the need to renegotiate previous agreements with development proponents. Renegotiation could be the result of a significant chance find; or, changes in a Nation's governance. The risk is highest where human remains incur unauthorized impacts from project activities. Where discovered, there is a need for proponents and archaeologists alike to respect broader concepts of lineal descent and cultural affinity in their practices, along with separate HRM policy.

Another argument is that because each chance find case requires an informant, there are both real and perceived self-incrimination barriers that prevent potential informants (e.g., a whistleblower) from reporting finds to authorities. There is also the

potential for an informant's superiors or proponents to disregard informant reports or the recommendations of professional archaeologists. The lines of communication and educational requirements for project regulators and potential informants are not well established nor consistent across development phases, sectors, or jurisdictional boundaries. Ignorance of the law is not a valid excuse for contraventions, but enforcement to curb unauthorized impacts is lacking, and reporting a chance find has financial consequences for employees, contractors, projects, and proponents.

A final argument is that current *de facto* and *de jure* (that is, official) HRM policy for managing chance finds on approved projects in BC creates an unnecessary delay for proponents that historically comply with HRM policy and assessment processes. HRM assessment processes revert to an initial starting point after unauthorized damage to an archaeological resource occurs. Forward-looking HRMPs from international projects provide custom approaches to meet the conditions of project approval and address most HRM assessment and mitigation tasks during the construction phase. For projects in BC that follow HRM assessment processes, a better HRMP method is possible, one that reduces the potential for identified administrative delays associated with a chance find and other newly recorded sites.

New concepts and innovative approaches to HRM planning require time and adequate consultation amongst stakeholders to reach free, prior, and informed consent. Regulators and HRM professionals need to ensure that the management of archaeological resources is appropriate. The inclusion of Indigenous Nations in planning discussions for HRM assessment and mitigation is appropriate. Forward-looking HRM approaches are best determined and implemented in a project's planning and design phase. HRMP requirements need to be determined based on the results HRM assessment, HRM policy, and consultation with Indigenous Nations. Current legislation and policy can be used to develop innovative custom approaches in HRMPs to assist with reducing potential delays. Compensation-in-kind is not authorized frequently as an impact management option, but language to allow application exists in HRM policy. This destructive mitigation option may be deserved of more frequent use and could be a tool to overcompensate for past, ongoing, and future site impacts while reducing administrative timelines and funding archaeological research of relevance to Indigenous Nations. Parallels can be achieved between HRM practice and the literature relating to environmental or biodiversity offsetting (Poulton 2014:1-59). The Department of

Fisheries and Oceans published an area-based formula that achieves equivalency between impacts and financial compensation (Bradford et al. 2016:3). As a last resort mitigation measure, this formula, or a modified version, could be used to determine compensation-in-kind payment values. The formula could be adjusted to overcompensate for unauthorized impacts or to offset past, ongoing, or proposed impacts.

Chance finds force projects to conduct additional authorized HRM assessment, which requires an HRM permit. Permit issuance takes approximately two months and delays the start of fieldwork in an area where a temporary suspension of construction activities is required. Delays to construction affect overall project cost and spending projections. Despite the HRM assessment process beginning again, sub-optimal outcomes are the reality for chance find sites. For example, an undisturbed site found early during initial HRM assessment, or a chance find that results in HRM research, follow processes with checks and balances that allow for adaptation to changing subsurface conditions in the archaeological site. Policy includes time to achieve free, prior, and informed consent with Indigenous Nations on the methods and scope of work. The current process generates an authorized outcome that satisfies most affected parties. Where a chance find occurs, unauthorized damage to protected archaeological resources happens ahead of Indigenous consultation — unauthorized site damage results in immediate archaeological data loss and deviation from policy and there is no opportunity to achieve free, prior, and informed consent. Outcomes for chance finds on projects will always be sub-optimal unless impact management measures can be designed to overcompensate for damages already incurred.

1.9.1. Research Questions

In undertaking this initial systematic assessment of chance finds in BC, several potential research questions were possible. The data gathering table used to document ACF cases from HRM reports in PARL was created, in part, to compartmentalize scattered data necessary to address the research questions presented below. Questions this thesis will answer are:

1. What types of ACFs occur in BC and at what frequencies?
2. What types of reports identify ACFs in BC and at what frequencies do these occur? What are the relationships between the ACF report type and site type?
3. Have policy changes affected the types and frequencies of ACFs, and if so, how?
4. Are ACFs reported more frequently on private or public land? On projects in rural or urban settings?
5. To what extent is HRM practice in BC aligned with policy? What policy reforms are recommended to improve this alignment?

Chapter 2.

Data and Research Methods

The complex and sensitive nature of chance find data extends from interactions across HRM policy and regulatory policy regimes, including possible enforcement measures. In BC, authorized HRM assessment is used as a chance find risk mitigation tool, ahead of and during construction. Chance finds occur with or without a project. Archaeological sites recorded by the province are the result of multiple informant reports, and there is no data collection field in the PHR to track information. Due to the lack of tracking, chance find documentation is elusive, and a portion of identified ACF cases lack detailed supporting documentation. Research demanded a detailed review of two digital information nodes, the PHR and PARL. Research tactics also involved gathering documentation from personal experience and that of colleagues. An Excel spreadsheet of the entire PHR was requested online by submitting a *BC Archaeological Site Data Request Form* (Archaeology Branch 2018g:1-2). HRM permit reports on PARL were accessed based on the author's prior professional authorization. The presentation of archaeological data follows Archaeology Branch data sharing agreements (Archaeology Branch 2012:4). Data gathering efforts compiled three ACF datasets considered to be representative of BC's ACF cases. Analysis results presented herein are from the ACF cases shown in Figures 3, 4, and 5 below. Documentation for each ACF case shown on the figures provided in the attached appendices (A, B, and C). Microsoft Excel's data filtering assistant, statistical analysis tools, and graphing tools were employed to analyze collected data and prepare graphs in Chapter 3 and 4. QGIS was used to conduct coarse spatial analysis, and ESRI's ArcGIS was used to generate the thematic mapping. Corel Draw and Microsoft Powerpoint were used to prepare other graphics like the process flow charts and other digital images. Sections that follow document the methods employed to gather and tabulate ACF data from BC. In most instances, a general reference to 'HRM permits' and 'HRM permit reports' is appropriate because PARL's collected works span several iterations of BC's HRM statutes and policy.

2.1. Archaeological Data Sources

Chance find data is not readily available in the archaeological record, and data gathering mandated an innovative approach. To develop a conceptual outline for this thesis, a compilation of available ACF data was necessary early in the writing process. Data was used to clarify potential research avenues and develop research questions.

The discovery of ACF examples allowed for a preliminary critical assessment of available data sources. This initial analysis also identified that some ACF data in BC's archaeological record is more defensible than other data. ACF data associated with unpublished HRM permit reports available through PARL was deemed the most reliable source. Data gleaned from these HRM permit reports are the focus of the analysis presented in Chapter 3. An ACF data entry table was crafted to collect HRM permit report information; the structure of the data table and some example cases are available in Section 2.3. Analysis results in Chapter 3 focus on data compiled in the ACF data table (Appendix B). Other, less defensible, chance find data was acquired during research and supplements the focused analysis presented in Chapter 3. The less defensible ACF cases, acquired directly from the PHR (Archaeology Branch 2018f:n.p.), are included in the analysis discussions to show interactions, range, and frequency of ACF cases discovered.

2.1.1. The Provincial Heritage Register

BC's PHR is a relational database containing individual entries for the province's recorded heritage sites. The organization of the database uses Borden numbers that coincide with a unique database number. A data query was constructed to acquire a sample of the desired data, both in recognition of the data limitations and understanding that the review of each PHR entry was not possible. In part, the query is designed to find archaeological site records that lack a corresponding HRM report or permit number (see Section 3.1). In general, chance find data that appears only in the PHR represent archaeological sites found in the absence of a project where no concurrent or subsequent authorized HRM assessment was required.

A chance find without a corresponding HRM permit report is assigned a Borden number based on informal reports to authorities from various informants. Data fields in

the PHR for these chance finds contain abridged information compared to data in HRM permit reports. Despite lacking the back-up of an HRM permit report, these non-project ACFs comprise a significant portion of unique Borden numbers classified as ACFs in this thesis. These data also contribute to understanding the range of documented ACF types and the methods available for authorized HRM responses. For details on data collection and validation methods, see Section 2.2. Chance find cases described in HRM permit reports provide consistently reported data that is more appropriate for detailed analysis.

2.1.2. The Provincial Archaeological Report Library

Where authorized HRM work addresses a chance find, an HRM permit report is prepared and submitted to proponents, regulators, and Indigenous Nations. BC's PARL contains electronic copies of most HRM permit reports and is accessible by HRM professionals following a data sharing agreement (Archaeology Branch 2012:4). Like the PHR, there is no tracking mechanism for ACF cases in PARL. The results of the keyword and Boolean searches in PARL did not return any relevant results. A lack of search results required the author to review individual reports on PARL to determine if each report documents any chance find responses. Reports documenting ACF cases were downloaded and used to acquire the data necessary to populate the data fields in the data table (Appendix B). Data capture methods and a breakdown of the data entry fields are described further in Section 2.3 along with some example cases. PARL research and HRM report reviews were conducted between February 2017 and February 2018.

HRM permit reports associated with ACF cases range from handwritten notes with scanned Polaroid photos, to bound reports complete with georeferenced mapping and digital photographs, to academic publications. These reports span almost six decades of authorized HRM assessment and mitigation in BC; in fact, the earliest HRM report available on PARL briefly describes an ACF response (Borden 1960:1-2). HRM reports satisfy requirements from the HRM policy in place at the time of their completion. ACF data within PARL's HRM permit reports are scattered. Data availability is inconsistent in reports completed before 1996.

Research in PARL identified a significant subset of BC's chance find data. HRM reports revealed that over 800 archaeological sites were recently documented within

existing reservoirs at BC's hydroelectric generating facilities (Brolly and Howe 2004; Brolly 2007; Eldridge et al. 2008, 2014; Oakes and Brown 2011; Cameron 2010; Brendzy 2011). Acquisition of ACF cases associated with this data subset required combining PARL, PHR, and geospatial data to generate query parameters. The highest concentration of ACF cases is associated with BC Hydro's Williston Lake Reservoir (see Figure 3 Inset, and Figure 5).

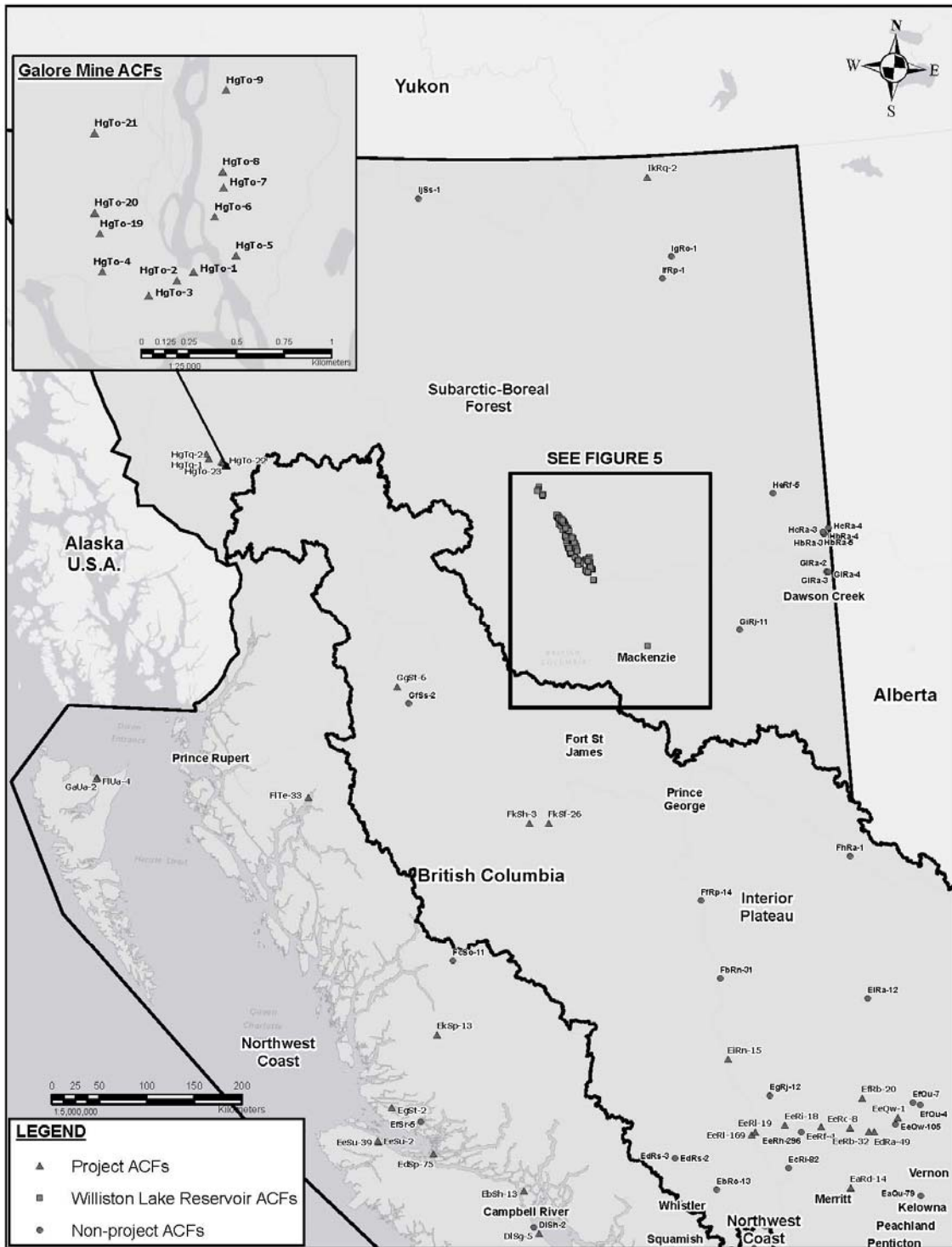


Figure 3. Map of documented ACF cases in the northern portion of BC.

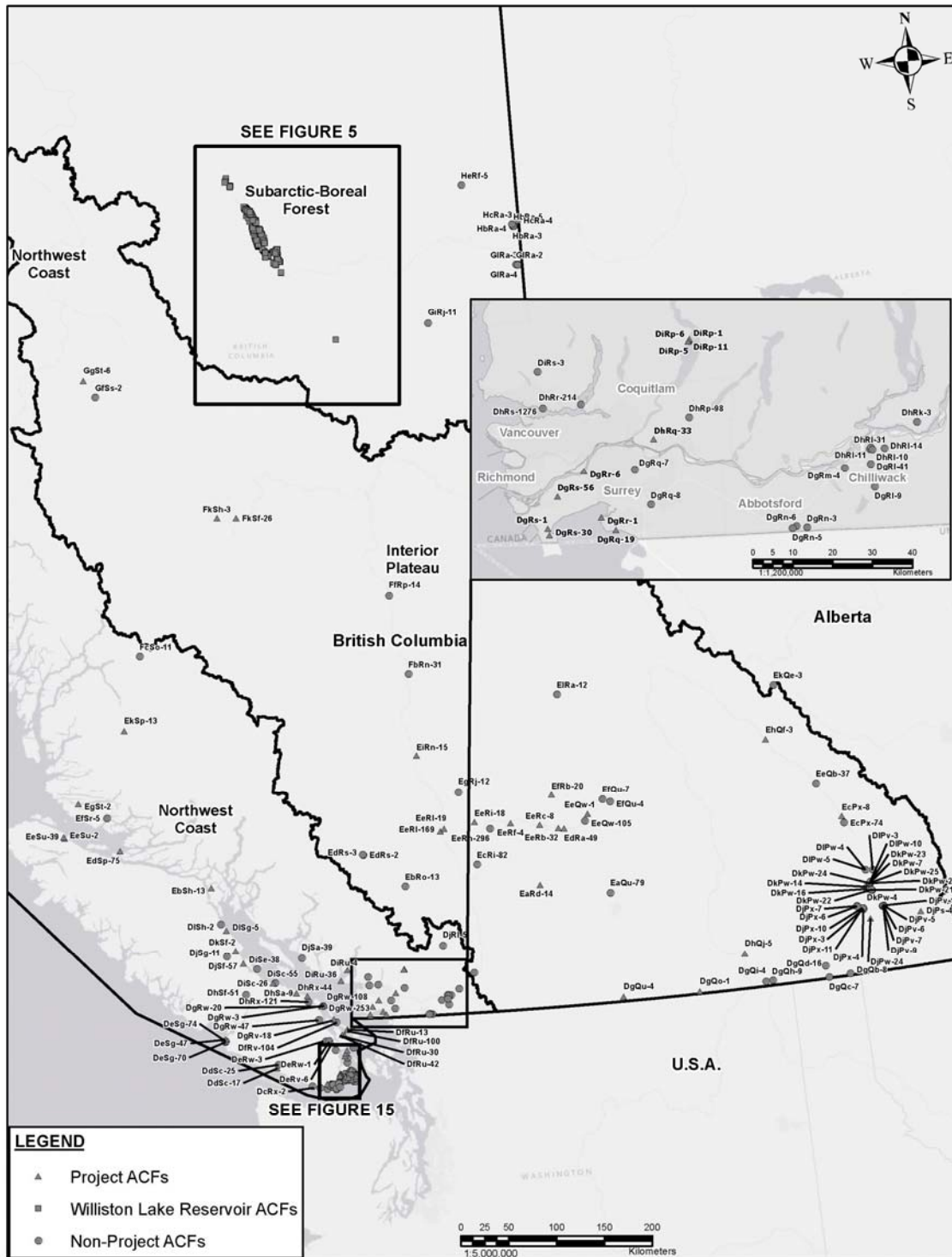


Figure 4. Map of documented ACF cases in the southern portion of BC.

2.2. Non-Project Related ACF Data

Data that documents ACF cases reported in the absence of a project is recoverable from the PHR (Archaeology Branch 2018f:n.p.). The transmission of these data to the archaeological record happens by satisfying the data entry fields in an ASIF. These chance finds need the baseline amount of HRM effort to document. The effort needed includes time to confirm an informant's report, compile an ASIF, and assign a Borden number. As these cases occur in the absence of an authorized HRM assessment, data provision is inconsistent and less reliable. Despite data reporting inconsistencies, these ACF cases represent a significant portion of the available data. A representative sample of cases was established from the PHR using the data query methods described below.

2.2.1. Data Query Methods

This data query was indented to extract ACF cases from the PHR that have never been subject to authorized HRM assessment. Application of Excel's data filtering assistant to the top row of the PHR spreadsheet allows for queries to be built (Archaeology Branch 2018f:n.p.). An inductive and deductive database query was built and applied to the relevant columns. An inductive approach uses database criteria from known cases to establish query parameters. The data query selects unknown ACF cases that match the data parameters of the known ACF cases where the inductive query parameters are satisfied. The goal of the query was to find a replicable set of Excel data filter criteria to provide a representative sample of non-project ACF cases.

The query began by accessing the PHR entries for two archaeological sites identified on the author's time, reported to the Archaeology Branch, and subsequently assigned a Borden number in the PHR. These two inductive ACF cases were used to develop a deductive string of 109 individual Excel filter criteria (Table 3). The query required modification of five separate PHR data columns 1) Site Typology; 2) Site Visit Type; 3) Personnel Role Type; 4) Senior Author and Report Title; and, 5) Land Tenure Type (Table 3). The application of the inductive filter criteria (i.e., the deductive string) to the PHR resulted in 259 individual database entries that met all the filter criteria. The author's two inductive ACF cases are absent from the final query results because of overlapping information between cases and final query parameters.

Table 3. Inductive data query filter criteria.

Provincial Heritage Register Data Column	Number of Filter Criteria
Site Typology (TY TYPOLOGY)	43
Site Visit Type (SV_SITEVISITTYPE)	5
Personnel Role Type (SV PERSONROLE)	49
Senior Author and Report Title (SR_AUTH_TITLE)	1
Land Tenure Type (TN_TYPE)	11
Total	109

A review of the comments and recommendations column for the 259 query results reveals that some cases are not suited for inclusion. Several Borden numbers were deemed unplotable based on missing spatial information from informants (i.e., no coordinates). Other entries were remnants of Borden numbers that were later amalgamated by the Archaeology Branch with another PHR entry (e.g., duplicate site records). There are no data filter criteria that were common to all query results that could be used to omit outlier PHR entries. Instead, manual removal of Borden number entries that lack coordinates along with other anomalous entries described above was necessary. Chance find data is often overwritten in the PHR when subsequent HRM assessment work transmits to the PHR. In 2019, HRM assessment of a project occurs under the authority of a Section 14 *Heritage Conservation Act* (1996) inspection permit. The addition of new ASIF information to a Borden number in the PHR overwrites data from the original ACF informant report. Where this occurs, the inductive query criteria cease to function. For example, filter criteria for the 'SV_AUTH_REP_TITLE' data column exclude any entry that references an HRM permit report. Exclusions occur because the Excel filter criteria for this column is designed to include entries in the query results based on a lack of data in the PHR.

Based on the methods described above, non-project ACFs represent 156 individual Borden numbers. Each ACF case in this dataset is shown using a circle in Figures 3 and 4. Appendix A provides Borden numbers and the raw site typology data from the PHR (Archaeology Branch 2018f:n.p.). Filtering the PHR was a suitable method for finding a diverse and replicable dataset of non-project ACF cases. The dataset acquired through this query is not a comprehensive list of all such chance finds in the PHR. The dataset does not include chance finds from federal land, nor those where additional project-related HRM assessment and mitigation was necessary after the original informant report, nor the two cases used to build the inductive query parameters.

2.3. Project-related ACF Data Table

All chance finds require an HRM professional to respond, even if only for Archaeology Branch staff or museum curator to confirm the find is archaeological and assign a Borden number. The main differentiator for most project-related ACF cases is that avoidable and unauthorized impacts have occurred to protected archaeological resources. As discussed in Section 1.9, unauthorized impacts result in legal, social, cultural, and financial risks. Except for eight cases, collected data represents projects where there was a direct cost to proponents or taxpayers for delays or consultant fees related to an authorized response to a chance find. In some situations, these delays result in negative media coverage or the need for more than one authorization from the Archaeology Branch. These problems tend to create negative perceptions about cultural heritage stewardship among project stakeholders.

HRM permit reports from PARL were accessed and read to determine suitability for inclusion in the table of project-related ACF cases. The criteria for inclusion was broad enough to encompass a variety of chance find scenarios from HRM reports submitted between 1960 and 2018. For inclusion, an HRM report needs to contain an informant report of a chance find where an HRM permit authorized subsequent HRM assessment or mitigation effort. Data from HRM permit reports were used to populate data entry fields in an Excel spreadsheet (Appendix B). The spreadsheet was crafted to capture interdependent and scattered ACF data. Each ACF case is assigned a unique descriptive project name and case number. For projects with multiple ACF cases, each archaeological site was provided a unique case number and added to the total. Private property owner information and detailed archaeological site location information is available in the PHR but not in the published dataset. Spatial data from the PHR was used to plot ACF case locations on maps. Research to find examples of authorized responses to ACF cases resulted in the discovery and tabulation of 108 ACF cases. ACF cases in this dataset are shown using triangles in Figures 3 and 4.

To better understand chance finds, the categorization of the data from 108 ACF cases was necessary. Data categories include 1) Chance find information; 2) Regulatory jurisdiction; 3) Land ownership; 4) Rationale; and 5) HRM effort, along with space for qualitative commentary and reference(s) cited. Descriptions of the five primary data categories, their subdivisions, and the data field criteria are described below. The data

table of ACF cases with authorized responses constitutes Appendix B. Data inputs in the chance find information category are syntax-based. Otherwise, most data entry fields are for numeric binary inputs of 0 (i.e., negative or no data) or 1 (i.e., positive response). Another exception to the binary approach to data collection is the HRM effort category. These data entry fields require whole number entries that quantify labour resources and duration of fieldwork.

ACF data presented in the spreadsheet are case-specific, yet interdependent because adjacent categories and columns rely upon one another for analyses. Some research questions required querying multiple data entry columns in concert across the five categories. The inability to satisfy informational requirements in data entry fields rendered some inadequate for further analyses and are not published (Appendix B). Other data columns with mostly completed data entry fields were subject to analysis to answer research questions. Select data fields in the sections that follow provide the raw data from ten representative ACF cases. Analyses and results are available in Chapter 3.

2.3.1. Chance Find Information Category

Data within this category identifies the proponent, the culture region, sub-region, or municipality where the chance find occurred, along with the proponent's sector and subsector. Data entry fields ask if the chance find constitutes a newly recorded site, what the before and after significance ratings are (where reported) and document the presence or absence of an ACFMP. These syntax-based data fields also show whether a project-specific HRM assessment was complete before the informant's chance find report, identifies the Archaeology Branch staff involved, and identifies the HRM permit number. Further, this category documents which institution, independent consultant, or consulting firm implemented HRM work along with a concise archaeological site type description.

Development sector information is one example of lumping common themes in the data; for example, the transportation sector includes roads, railway, public transit, and maintenance. Infrastructure projects include non-municipal and institutional undertakings like renovating a Masonic Temple and water and sewer developments. Municipal projects could be related to parks, trails, flood protection, and residential

servicing, among others. Simplification of raw PHR data from the “TY_Typology” column (Archaeology Branch 2018f:n.p.) was also necessary to lump specific archaeological site type criteria together to analyze affected archaeological site types. For instance, the simplification of the DfRu-30:88³ typology entry “PRECONTACT, Human Remains, Burial|PRECONTACT, Cultural Material, Subsurface, Shell Midden|PRECONTACT, Cultural Material, Subsurface, Firebroken Rock|PRECONTACT, Human Remains, Scattered” is reduced (Archaeology Branch 2018f:DfRu-30). With simplification, the entry becomes ‘Human Remains, Shell Midden’ in the refined typology. An archaeological shell midden typically contains lithics, fire-broken rock, faunal material, and often indigenous ancestral human remains. Where these archaeological resources occur in association with a shell midden in the PHR, they were merged with the term shell midden to refine the site typology. Similar simplifications to other raw archaeological site type data from the PHR were also appropriate. Feature types like petroforms, cairns, cultural depressions, hearths, and habitation floors are also grouped to mirror ASIF and PHR categorizations. Following this method results in the underrepresentation of all ACF cases known to contain lithics and faunal remains. Data for the archaeological site type analysis was derived from the PHR (Archaeology Branch 2018f:n.p.) and added to the data table (Appendix B). Note again, that PHR data (Archaeology Branch 2018f:n.p.) reflects cumulative archaeological knowledge that may have been enhanced over time by subsequent authorized HRM work. The refined site typology may reflect accumulated knowledge that differs from the original informant report or the resultant HRM report.

³ ACF cases from Appendix B are referenced in the text as examples. The citation is the site’s unique Borden number from the PHR, followed by the unique data entry row in Appendix B.

Table 4. Chance find information data.

No.	Culture Region	Sector	Borden No.	Recorded Site	Site Type	Previous Project AIA	ACFMP Present	HRM Permit No.	Consulting Firm
1	Interior	None	EeQw-1	No	Human Remains	No	No	1960-1	UBC
8	Coastal	Research	DiRp-1	No	Rock Art	No	No	1972-41	SFU
21	Interior	None	EeRI-169	No	Human Remains, Historical	No	No	1976-9	SFU
50	Coastal	Government	DcRu-760	Yes	Human Remains, Shell Midden, Features	No	No	None	Millennia
51	Interior	Municipal	DjPw-24	Yes	Lithics	No	No	2016-115	Tipi Mountain
52	Interior	Mining	HgTo-1	No	Lithics	Yes	Yes	2007-163	Rescan
76	Coastal	Transportation	DgRs-56	Yes	Lithics, Faunal, Historical	Yes	Yes	2012-233	Stantec
94	Coastal	Tourism	DcRv-158	No	Lithics, Faunal	No	No	2006-285	Golder
107	Coastal	Oil and Gas	FITe-33	Yes	CMT - Coastal	Yes	Yes	2007-335	IR Wilson
108	Coastal	Research	EbSh-13	Yes	Shell Midden, Features	No	No	2010-251	SFU

2.3.2. Regulatory Jurisdiction Category

This data category identifies which regulators were responsible for issuing project approvals. Regulatory jurisdiction for project review and approval include federal and provincial approving authorities. The Archaeology Branch of FLNRORD is central to HRM policy in BC; data relating to their involvement is in the permitting columns. The Archaeology Branch manages responses to chance finds in a variety of project contexts and proponent scenarios. Table 5 provides the regulatory jurisdiction category headers from the data table (Appendix B). Data in the table identify if the *Heritage Conservation Act* (1996) applied to a project; but the sample data includes a project without an HRM permit (i.e., DcRu-760:50). The first two columns in the category (i.e., HCA1996 and Pre-HCA) differentiate between authorized HRM work done before and after the current statute was enacted. Other data entry fields identify regulatory policy regimes with HRM assessment triggers (see Section 1.4). These data show overlap for project regulators, which is subject to analysis in Section 3.1.6.

Table 5. Regulatory jurisdiction data.

No.	Provincial								Federal		
	HCA 1996	Pre-HCA	BCEAA	DPIR	OGC	FLNRORD	MEM	Other	CEAA	NEB	Other
1	0	1	0	0	0	0	0	0	0	0	1
8	0	1	0	0	0	0	0	0	0	0	1
21	0	1	0	0	0	0	0	1	0	0	0
50	0	0	0	0	0	0	0	0	0	0	1
51	1	0	0	0	0	1	0	0	0	0	0
52	1	0	1	0	0	0	1	0	0	0	0
76	1	0	1	0	0	0	0	0	1	0	0
94	1	0	0	0	0	1	0	0	0	0	0
107	1	0	1	0	0	0	0	0	1	1	0
108	1	0	0	0	0	0	0	0	0	0	1

2.3.3. Land Ownership Category

Land ownership interacts with different regulatory policy regimes, HRM policy, and industry sectors. HRM policies of Indigenous Nations apply to all land ownership scenarios. Different regulatory policy regimes exist to manage land use on private land compared to public land, Crown land, or federal land. Complexities arise when projects overlap multiple land ownership scenarios or multiple landowners, or where federal and provincial EIA regulatory policy overlaps on a single project. For example, Federal properties (e.g., the Canadian Forces Base in Esquimalt, or Stanley Park), or lands and water administered by federal agencies (e.g., Vancouver Fraser Port Authority) are not under the province’s jurisdiction. In these instances and others, land ownership can be the sole determiner of a project’s HRM policy requirements. Subheadings and data entry fields associated with land title is analyzed in Section 3.3 to determine if the frequency of chance find occurrence is different for the various types of public and private land presented in Table 6. The example ACF cases in the table show that variety of land ownership scenarios are relevant to the discussion. Under federal land, the Parks Canada data field is the only one lacking a chance find in the entire table.

Table 6. Land ownership data.

No.	Provincial				Federal			
	Unsurveyed Crown Land	Crown/Municipal Owned	Private Land	Treaty Land	Reserve	Federal	Parks Canada	Other
1	0	0	0	0	1	0	0	0
8	0	1	0	0	0	0	0	0
21	0	0	0	0	0	0	0	1
50	0	0	0	0	0	1	0	0
51	0	1	0	0	0	0	0	0
52	1	0	0	0	0	0	0	0
76	0	0	1	0	0	0	0	0
94	0	0	1	0	0	0	0	0
107	1	0	0	0	0	0	0	0
108	1	0	0	0	0	0	0	1

2.3.4. Rationale Category

The rationale category records data related to who, when, and why a chance find occurred, along with the type of authorized HRM response. The rationale category is broken down into the subsections of ACF triggers (Table 7) and ACF actions (Table 8). Data entry fields are intended to reveal the reason behind authorized HRM assessment and next steps.

Table 7. Rationale data – ACF triggers.

ACF Triggers								
People				Reasons				
No.	Land-owner	Indigenous Informant	Informant	New find	Vandals	Out-of-Date Regime	Encroached	New AIA Work
1	0	1	0	0	1	0	1	0
8	0	0	1	1	0	0	0	0
21	0	0	1	1	1	0	0	0
50	0	0	1	1	0	0	1	0
51	0	0	1	0	0	0	1	0
52	0	0	1	1	0	0	0	1
76	0	0	1	1	0	0	0	1
94	0	0	1	1	0	0	0	1
107	0	0	1	1	0	0	1	1
108	0	0	1	1	0	0	0	1

Informant report data is under the people subsection. The informant data entry column is a catch-all for environmental monitors, HRM professionals, and wandering amateur archaeologists. Additional data entry columns may have been more appropriate to show the range of all potential informants. However, many HRM permit reports did not contain enough data to support the further subdivision of the informant category. As

such, the lumping of most probable informant types into one data entry field is appropriate for the available data.

Authorized HRM work needed to address a chance find varies in complexity. The actions subsection considers three perspectives – that of the regulator, the HRM professional, and the proponent (Table 8). As discussed in Section 1.3.1, a two-tier permitting system exists within the *Heritage Conservation Act* (1996). Subdivision of the data was necessary to distinguish between HRM assessment conducted under Section 14 permits and HRM mitigation and monitoring conducted under Section 12 permits. In reviewing the HRM reports, there are several practice inconsistencies in the Archaeology Branch’s administration of the permitting system. The inconsistency HRM work scope per permit type is noted, but the data was not subject to analysis. HRM professional actions data fields document the type(s) of HRM work conducted to meet regulatory requirements for each chance find. These actions may include conducting an AIA, systematic data recovery (SDR) excavations to achieve preservation-by-record or HRM construction monitoring. The data fields are also set up to capture recommendations for no further archaeological work.

The technical nature of HRM assessment limits opportunities for proponent actions; instead, proponents play a significant role in designing and implementing protection and avoidance measures. Proponents work with regulators and HRM professionals to erect barriers, cap sites with fill, or implement engineered avoidance solutions to limit additional direct impacts. In select circumstances, proponents are obliged to negotiate compensation-in-kind agreements. Compensation-in-kind approaches authorize a one-time payment to affected parties for both authorized and unauthorized impacts, usually funds are for HRM research elsewhere. Mitigation measures are required when impacts are proposed in a site, when natural forces threaten or impact a site, upon the discovery of a newly recorded site, after purposeful damage to a site, or after encroachment.

Table 8. Rationale data – ACF actions.

Archaeology Regulator						Actions					Proponent		
No.	Directive Issued	Existing Permit	New Permit	S12	S14	AIA	SDR	EIM	Monitoring	NFW	Avoidance	Legal Action	Compensation-In-kind
1	0	0	1	0	0	0	0	1	0	0	0	0	0
8	0	0	1	0	0	0	1	0	0	0	0	0	0
21	0	1	0	0	0	0	1	0	0	0	0	0	0
50	0	0	0	0	0	0	1	1	0	0	1	0	0
51	1	0	1	1	0	0	1	1	1	0	0	0	0
52	0	0	1	0	1	1	0	1	0	0	0	0	0
76	1	1	1	1	1	1	1	1	1	0	0	0	0
94	1	0	1	0	1	1	0	1	0	1	0	0	0
107	1	0	1	1	0	1	1	1	0	0	1	0	1
108	0	0	1	0	1	1	1	0	0	0	1	0	0

2.3.5. HRM Effort Category

This portion of the dataset records effort expenditures by HRM professionals to implement authorized HRM work at reported chance finds. Data was compiled using the reported number of HRM professionals involved in implementing HRM treatments. Not all HRM reports contained this level of detail, and some of this data was interpreted from sparse information to achieve a complete dataset. The HRM effort category subdivides into two subsections – fieldwork and analysis. Table 9 provides the breakdown of data entry fields in the HRM effort category.

Within the fieldwork section, data fields are satisfied with whole numbers that indicate the number of field days and labour resources needed to implement HRM work at each chance find. Field efforts from archaeologists and volunteers are accounted for separate from Indigenous community representatives (Indigenous Reps.) as are other specialist service providers. This category also captures the setting of the associated development project as rural or urban. Criteria in the analysis column are used to collect data related to laboratory effort. Data entry columns consider recovered lithic and faunal remains, if specialized laboratory analysis or conservation services were needed, or if a specialist was required to analyze human remains. Examples in Table 9 present a diversity of effort that spans several development sectors.

The original intention in compiling HRM effort data was to create hypothetical unit values for each data entry column. These values could be applied at each ACF case to assist with determining a cost projection. However, an inability to verify HRM permit report data across all 108 ACF cases thwarted this endeavour. Instead, the values represented in this section of the data table allow for a general estimate of HRM professional fieldwork effort for each ACF case. This data contributes to the analysis in Section 3.4 used to determine the HRM effort by land development sector from Table 4.

Table 9. HRM effort data.

Fieldwork							Analysis				
No.	Days	Archaeologists	Indigenous Representative	Specialists	Urban	Rural	Total Stone	Total Faunal	Special	HR	Other
1	1	2	0	1	0	1	1	1	0	1	0
8	1	2	0	0	0	1	0	0	0	0	1
21	2	7	0	1	0	1	0	0	0	1	0
50	31	8	5	0	1	0	1	1	0	1	0
51	10	3	4	0	1	0	1	1	0	0	0
52	1	2	2	0	0	1	1	0	0	0	0
76	10	11	7	2	0	1	1	0	1	0	1
94	2	2	2	0	1	0	1	0	0	0	0
107	5	2	2	0	0	1	0	0	1	0	0
108	20	10	4	2	0	1	1	1	1	0	1

2.3.6. Human Remains Data Fields

Human remains data is found in the HRM effort category, and the refined site typology in the chance find information category. Site typology data reflects cumulative knowledge about a site, and the analysis is limited to data in the HRM effort category. Effort data is a compilation of information from the HRM report that documents the authorized response to the chance find report. Data entry fields in the HRM effort category are under subsections of fieldwork (i.e., specialists) and analysis (i.e., HR) (Table 9). A focused analysis of chance finds involving human remains is presented in Section 3.1.3.

2.4. Project Operations and Chance Finds

As presented in the example cases above in Section 1.7, archaeological sites recorded in association with the Williston Lake Reservoir form a significant part of the readily available chance find documentation. The density and collective significance of ACF cases from the Williston Lake Reservoir enhances the collective understanding of the potential political risks that affect project revenue instead of costs (World Bank 2018). These ACF cases highlight project risks that accompany significant changes to HRM policy discussed in Section 1.2.1.

ACF cases associated with the operations phase of the Williston Lake Reservoir were compiled by querying the PHR by the Borden block (Archaeology Branch 2018f:n.p.). The Remote Access to Archaeological Data web site was queried to determine which Borden blocks overlapped with the reservoir. Then, the list of 65 Borden blocks was used to query the “Borden_Number” column in the PHR (Archaeology Branch 2018f:n.p.). Examination of the 1,000 entries from the raw filter results revealed some anomalies like archaeological sites associated with other authorized HRM assessments and duplicated Borden numbers. Anomalous entries were manually removed. The remaining 831 unique Borden numbers comprise the chance find dataset associated with the reservoir’s operations phase (Appendix C). ACF cases from the Williston Lake Reservoir are squares in Figure 3. The extent of the reservoir and associated cases are in Figure 5.

The ACF dataset for the Williston Lake Reservoir is presumed to be accurate and complete. One anomaly remains in the dataset; it relates to ongoing HRM work in the reservoir. Management of the archaeological sites found in active reservoir impact zones required grouping the Borden numbers from original ACF cases together to form large clusters of sites. Several of the original chance finds are now within a single site polygon, and each larger encapsulating polygon has a new Borden number. These new Borden numbers remain in the dataset and appear as points on figures. These specific Borden number entries increase the total number of ACF cases. Data has been retained to document the implementation of a project-specific HRMP related to the ongoing management of the original chance find site locations.

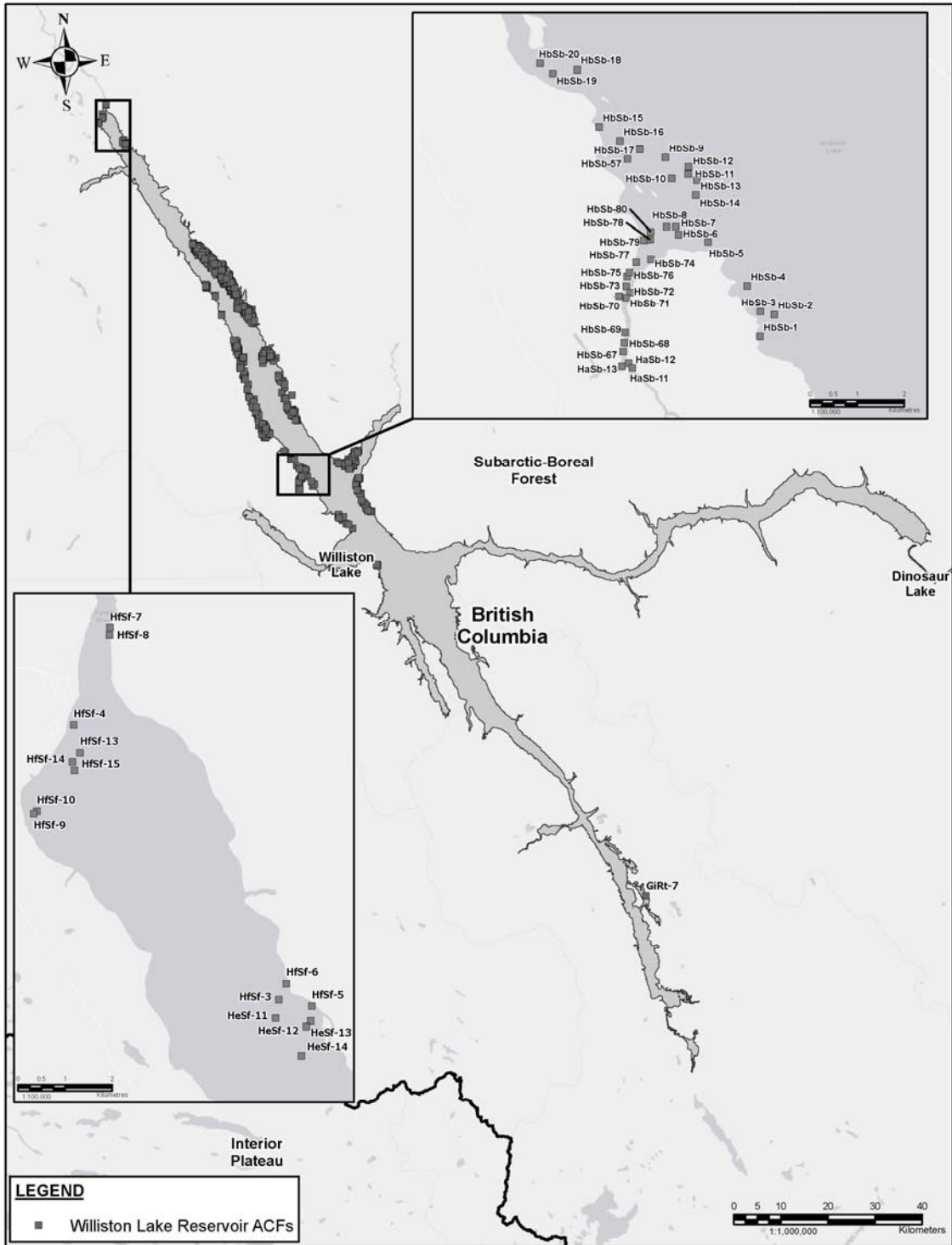


Figure 5. Map of the Williston Lake Reservoir ACF cases.

2.5. Collected ACF Cases

The collected chance find data are compiled into three separate datasets as described in Sections 2.1 and 2.2 and summarized in Table 10 (see also Appendices A, B, and C). Analyses required to answer research questions will focus on the chance find data from HRM permit reports (Appendix B). Where necessary to inform the discussion, chance find data from non-project related scenarios (Appendix A) and the Williston Lake Reservoir (Appendix C) are incorporated. The intention is to capture a robust understanding of the potential risk implications and HRM policy actions necessary to manage all types of ACF cases.

Table 10. Collected ACF data.

Collected ACF Datasets	Figure(s)	Borden Numbers
Non-project ACFs documented in the PHR	3 and 4	156
Project-related ACFs documented in HRM permit reports	3 and 4	108
Williston Lake Reservoir ACFs	3, 4, and 5	831
Total Sample of ACF Cases		1095

Chapter 3.

Data Analysis Results

Undocumented archaeological sites exist throughout BC's backcountry, and the contexts for most finds remain intact. Other archaeological sites coexist with modern urban, rural, and agricultural landscapes where prior damage to archaeological sites has altered most contexts. The sections and subsection in this Chapter provide analytical results from data associated with ACF cases documented in HRM permit reports and available on PARL. Data analyses further quantify ACF cases to address research questions. Analysis results suggest that a typology can be developed to classify ACFs.

3.1. Quantification and Classification

As of February 2018, there are 53,908 individual entries in the PHR (Archaeology Branch 2018f:n.p.). These entries represent the culmination of recorded heritage resources in BC. PHR entries include archaeological, traditional use, palaeontological, and historical heritage sites. A Borden number documents most PHR entries, and all entries have a unique database entry number. The first step toward quantification involved adding the Excel data filter to the "TY TYPOLOGY" column in the PHR. The filter was used to omit PHR entries without 'pre-contact' in the column text. PHR entries with text indicating a pre-contact component constitute approximately 36,091, or 67% of total entries. These pre-contact archaeological sites have been recorded based on ethnographic information, discovered as part of authorized HRM assessment, or recorded as chance finds.

Data analyses are from single and multivariate queries of ACF cases in the project-related ACF data table (Appendix B). Data queries determined the number and frequency of HRM permits issued to authorize responses to chance find reports, along with the quantity and type of HRM permitting scenarios. Analysis of chance finds includes applying filters for criteria like archaeological site type, culture area, and frequency of occurrence. Chance finds that involve human remains are summarized separately and subject to spatial analysis based on Archaeology Branch administrative boundaries and other criteria. Multivariate queries were conducted using Excel's filter to

isolate specific types of ACF cases by sector, HRM permit type, regulatory jurisdiction, or archaeological site type. Adjacent data entry columns were then queried to analyze and overlay related data subsets. Data entry fields from each category were selectively queried to segment and then compile data needed to answer research questions.

3.1.1. ACF Frequency

Overall, the frequency of authorized HRM work on ACFs has increased over time. Figure 6 illustrates the number of ACF cases by year where HRM assessment or mitigation was authorized. For projects with multiple ACF cases documented under a single HRM permit, each site is a separate ACF case. Two projects contributed disproportionately to the analysis. Eleven (n = 11) chance finds were discovered in 2006 at the Bear Mountain resort project (DcRv-158:94, DcRv-170-180:95-104) and sixteen (n = 16) chance finds were found in 2017 at the Galore Creek mining project (HgTo-1-9, HgTo-19-23, HgTq-1 and 2:52-67). In Figure 6, 2006, and 2007 have the highest frequency of documented cases. Authorized responses to other ACFs cases from 2006 and 2007 are present in the data, including the chance finds from the Williston Lake Reservoir’s remedial HRM assessment.

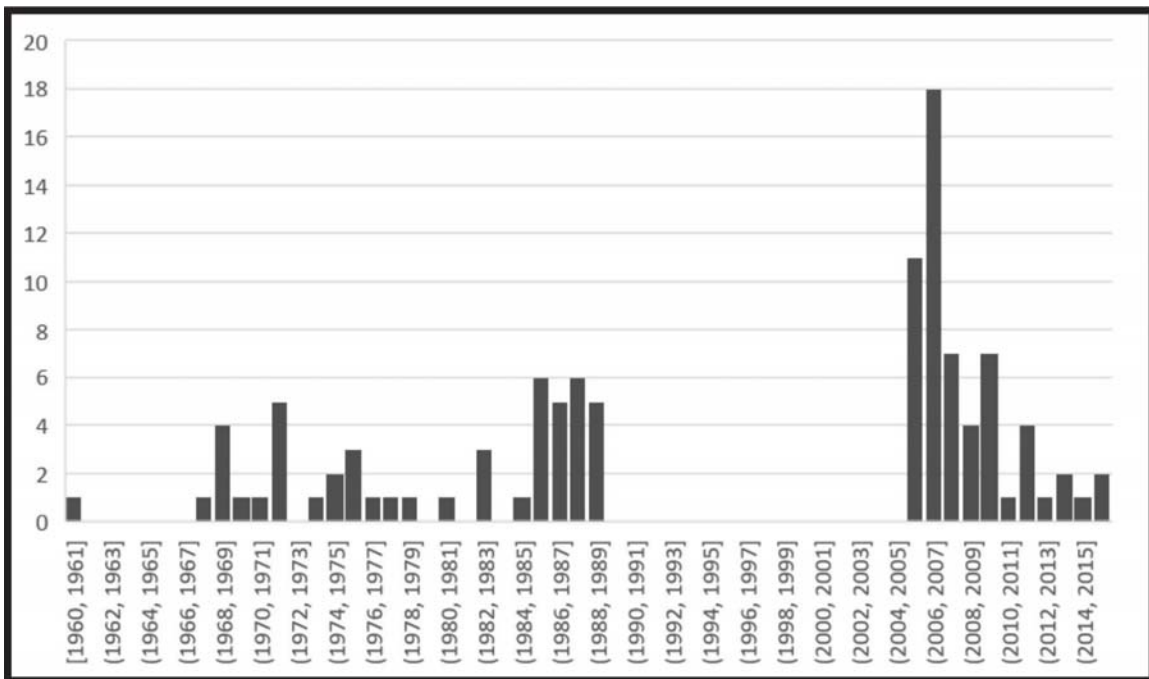


Figure 6. ACF cases with authorized responses by permit issuance year.

Figure 6 shows a data gap between 1990–2005; this is in part due to a gap in PARL research by the author and secondarily to an absence of authorized responses to chance finds. To provide some separation between newer and older ACF cases, a search of HRM reports from the years 1999 to 2003 was not completed. The research included a review of HRM reports from all other years available on PARL. Reports of authorized chance find responses were absent in gap years except for ACF cases associated with the RAP project (see Section 1.7.3). Another potential gap in the research relates to some HRM reports not being available on PARL. Reports with highly sensitive information are not available, nor are HRM reports where the author has retained copyright. HRM mitigation for the single federal land project (i.e., DcRu-760:50) tabulated in Figure 7 is for work completed between 2002 and 2003. In this ACF case, HRM professionals followed provincial guidelines for fieldwork and reporting, but the Archaeology Branch did not authorize the work. As a result, the data used for the analysis presented in Figure 6 omits DcRu-760:50.

There is inconsistency in the number and frequency of ACF cases over time with a spike in the late 2000s. The histogram does not include chance finds from the Williston Lake Reservoir (Appendix C); if included, they add disproportionately ($n = 831$) to the frequency of occurrence between 2004 and 2014. When combined, these data reveal that the frequency of authorized responses to chance finds has increased dramatically over time. Several ACF cases, including those from Williston Lake Reservoir, identify projects where one or a few informant reports resulted in the discovery of additional new sites during a subsequent authorized HRM assessment.

The ACF data table's Chance Find Information category records the number of HRM permits issued before and after the *Heritage Conservation Act* (1996) was revised. Figure 7 shows that 35% of the data table entries comprise the HRM permits issued before 1996. These data also indicate that the frequency of ACF occurrence has increased since the last significant HRM policy change in 1996.

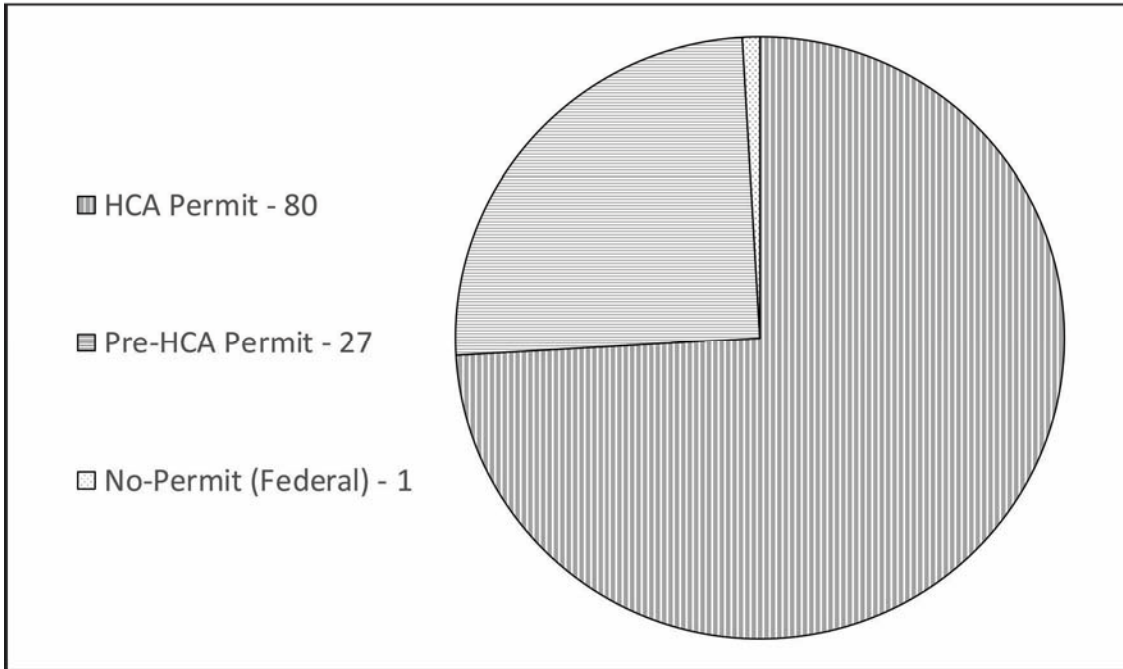


Figure 7. Distribution of HRM permits associated with chance finds.

3.1.2. Geography and Archaeological Site Types

For a coarse spatial analysis, the three culture regions of BC (Archaeology Branch 2018a:n.p.) were used to group chance finds geographically (Figures 3 and 4). Of the 108 ACF cases, 16% (n = 17) are in the boreal sub-arctic region; 23% (n = 25) are in the interior region; and, 61% (n = 66) in the coastal region. Williston Lake Reservoir is in the boreal sub-arctic region, the chance finds from the remedial HRM work increases the total cases in this culture region substantially. However, without Williston Lake Reservoir and the Galore Creek mining project, only one project-related chance find would remain in the boreal sub-arctic region (i.e., 1kRq-2:79). In the north, large projects in remote areas provide the documented ACF cases. In coastal areas, the frequency of informant reporting is higher for non-industrial projects. The higher number of reports from the coastal region could be attributed to the higher population density now and in pre-colonial times, or perhaps the recognizability of coastal archaeological materials.

The frequency of chance find reports for specific archaeological site types was determined using the refined site typology data as described in Section 2.4. Results presented in Figure 8 indicate that sites containing Indigenous ancestral human remains

(AHR in Figure 8) are the most frequently reported chance find in the data, followed by equal numbers of shell midden and lithic sites. Over half of the archaeological sites with Indigenous ancestral human remains are from shell midden deposits. There are also a significant number of shell middens with features (n = 12) in the data. Together, impacts on shell middens sites with perishable artifacts, and lithic sites with features indicate that intact archaeological deposits are frequently subject to unauthorized impacts by projects.

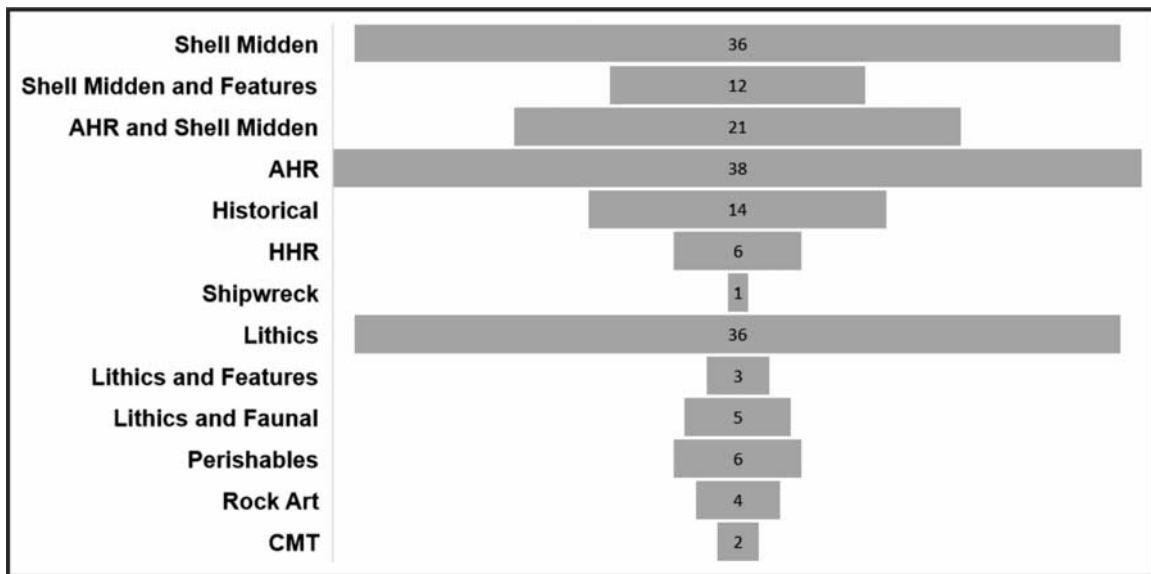


Figure 8. Archaeological site type distribution for ACF cases.

Some historical resources also meet automatic site protection criteria in Section 13(2a-i) of the *Heritage Conservation Act* (1996), the chance find data includes authorized responses to historical finds where documented in the PHR and PARL. Six (n = 6) of the 14 historical sites represent historical human remains, one is a shipwreck without a Borden number, and seven (n = 7) are instances where historic debris overlaps with pre-contact archaeological materials or human remains. Chance find reports document six (n = 6) archaeological sites that contain perishable artifacts, although direct impacts on perishable artifacts did not occur in all cases. The four ACF cases related to rock art were the subject of HRM research based on an SFU archaeology student's report to professors. Images recorded during the study were not directly impacted (Lundy 1972).

3.1.3. Human Remains Data Analysis

ACF cases with human interments include historical cemeteries in urban areas (e.g., DcRu-1234:90) and rural settings (e.g., EfRb-20:40), pre-contact cemeteries in shell middens (e.g., DfRu-13:14), as clusters of rock cairns (e.g., DfRu-100:93), or document scattered, fragmentary, or partially disturbed human remains (e.g., DcRt-10:29). Other pre- and post-contact chance finds of single and multiple human interments are clustered or occur sporadically across the landscape.

The discovery of human remains was the main reason for an initial informant report in at least 56 ACF cases or 51% of the total. In some instances, additional sites and types of archaeological material culture are present when HRM professionals respond to an informant report. Two cases where a contractor excavated through adjacent archaeological matrix first and then stopped when human remains appeared include DjSf-57:89 on the coast and DiQv-61:87 in the interior. In other cases, private landowners or their contractors made chance find reports of human remains to the local police who later informed the Archaeology Branch after development was complete (e.g., DgRs-1:43 and DiSc-26:42). Other informants reported vandalism to graves (e.g., EhQf-3:35), or observed human skeletal elements eroding from exposed archaeological strata (e.g., DfRu-:14 and FkSh-3:105). Authorized responses to ACF cases involving human remains represent 51% (n= 56) of the 108 ACF cases. The results of several multivariate queries are in Table 11.

Table 11. ACF cases involving human remains.

Data Query Parameters	No. of ACF Cases: Human Remains	% of ACF Cases
Urban	24	43
Urban Coastal	20	36
Urban Interior	4	7
Rural	32	57
Rural Coastal	15	27
Rural Interior	17	30
Private Land	34	61
Crown/ Municipal Land	16	29
Unsurveyed Crown Land	4	7
Treaty Land	3	5
Reserve Land	2	4
Federal Land	1	2
Other Federal	3	5
HR Post HCA	35	63

Data Query Parameters	No. of ACF Cases: Human Remains	% of ACF Cases
HR Pre-HCA	20	36
Non-permit	1	2
Newly Recorded Site	24	43
Previously Recorded Site	32	57
Landowner Informant	19	34
Other Informant	37	66

The high frequency of chance finds involving Indigenous ancestral human remains is not entirely unexpected as burial locations tend to be unmarked, and known Indigenous burial locations are managed separately from historical cemeteries. The result of the queries presented in Table 11 is evidence of how many high-risk cases have occurred over time, and in which scenarios. Ultimately, when human remains are displaced or encumbered by development projects, it leads to cultural losses for Indigenous people and other descendants. When unauthorized disturbance to human remains occurs, individuals and communities suffer imposed damages that extend from physical impacts to sacred locations or ancestors. Potential adverse effects include loss of access to sacred locations, or interruptions to ways of understanding and interacting with ancestors and the land. Disturbances can also affect the sense of place associated with burials, archaeological sites, or other intangible heritage resources. Depending on the significance of a chance find, a proponent may lose their previous approval to operate from project and resource regulators, Indigenous communities, or other stakeholders. Indigenous ancestral human remains invariably have high ethnic and ideological significance, impact mitigation costs are likely to be higher, and more administrative time is required to achieve free, prior, and informed consent. Policy examined in Chapter 1 distinguishes chance finds that involve human remains from other archaeological site types in BC and elsewhere.

3.1.4. Impact Management Responses

Responses to chance finds are determined on a case by case basis, the data table documents the implementation of authorized HRM assessment and mitigation strategies. Analysis indicates that 23% of authorized work was implemented based on a directive from provincial archaeology regulators (Figure 9). In 17% of ACF cases, HRM treatments were implemented under existing permits, either as part of a project's active HRMP (e.g., DgRs-56:76); or, under a development sector-specific Section 14 *Heritage*

Conservation Act (1996) blanket inspection permit (e.g., DeRu:188:82; DdRu-156:83). HRM mitigation has also been authorized as an add-on to an existing permit for a nearby research project (e.g., EeRI-169:21).

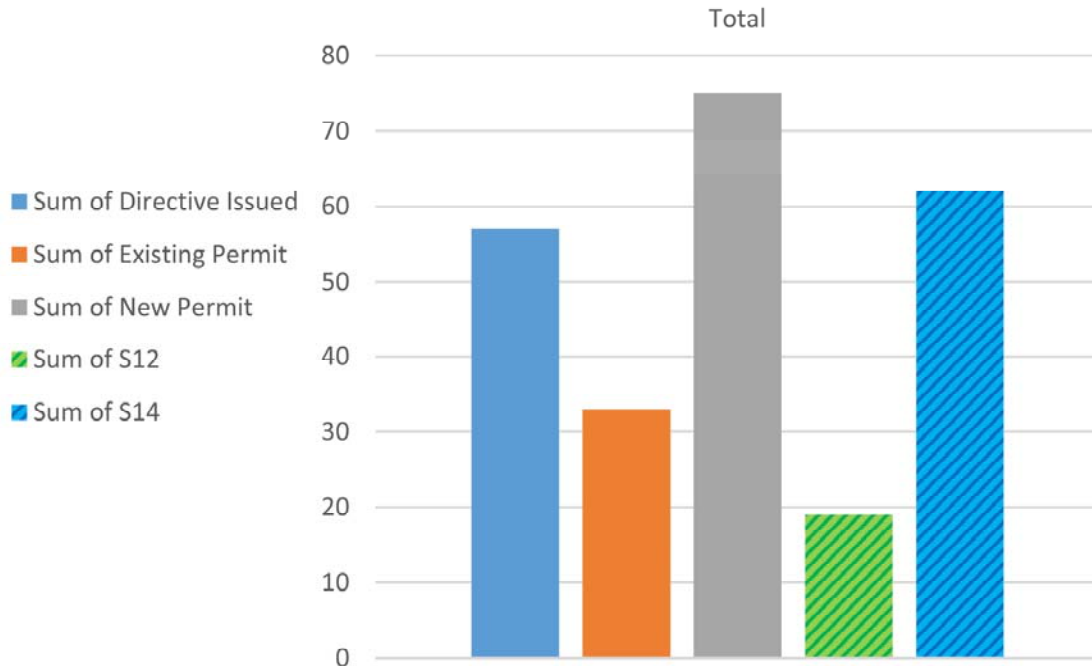


Figure 9. Quantity of permits issued for ACF cases after 1996.

Figure 9 shows if a Section 12 permit for mitigation and monitoring, or Section 14 permit for HRM assessment, was issued to authorize responses to a chance find under the *Heritage Conservation Act* (1996). Of the 80 permits issued, 75% (n = 62) were Section 14, the remainder were Section 12. Analysis evidences the Archaeology Branch’s directives requiring remedial HRM assessment before authorizing further alterations. Of the ACF cases with Section 12 permits, one was from a project where land alteration was complete before HRM professionals attended the site. One addressed the discovery of human remains under an existing Section 12 permit (i.e., DiRu-4:69). Sixteen (n = 16) represent projects that required overlapping or sequential permitting and reporting. Figure 10 summarizes the types and frequencies of HRM treatments for ACF cases. The total values in Figures 9 and 10 exceed the total authorized ACF cases in this subset of the data (n = 80) because some projects followed a staged permitting approach to HRM work, as discussed in Section 1.3.1. Authorization of EIM methods is present in the documentation for all 80 ACF cases analyzed.

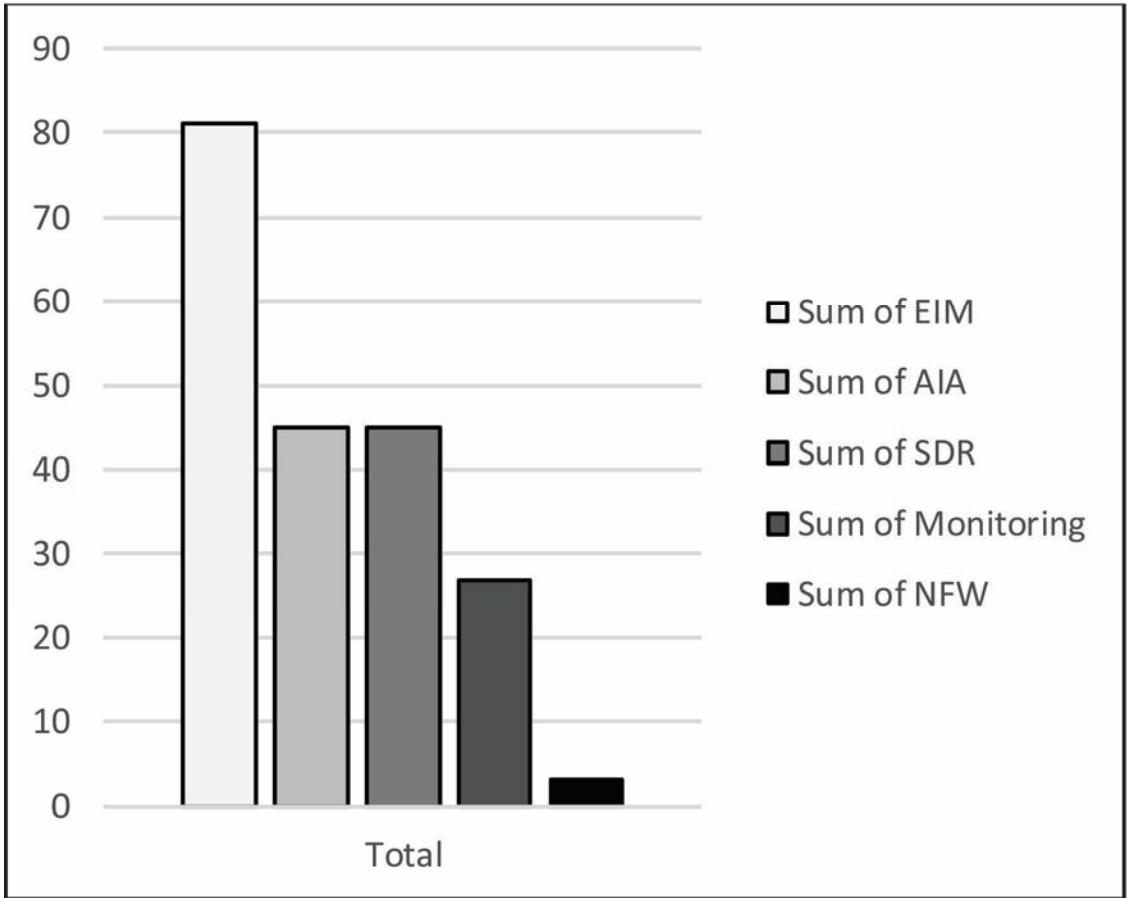


Figure 10. Summary of authorized HRM work for ACF cases.

Additional administrative delay can be related to the need for multiple permits; of the 80 authorized ACF responses, 16 required multi-phase work or implementation of concurrent HRM treatments. Overlapping HRM treatments in these 16 cases include preservation-by-record following EIM methods, and HRM construction monitoring. Also, 13 of the 16 cases required additional HRM assessment and reporting. There are only three ACF cases where no further work was necessary, two of which required an HRM assessment before issuing a recommendation for no further work (i.e., DgRv-18:70, and DcRv-158:94). The remaining entry is related to an informant report of a shipwreck found on unsurveyed Crown land. An HRM permit provides the authorization to document the wreck, and avoidance is the preferred mitigation strategy in the HRM report (No Borden number:17). Variability in these unwritten approaches indicates that de facto policy can add efficiencies to chance find responses. This chance find provides evidence that case-specific authorized responses are possible, depending on the circumstances.

3.1.5. Proponent Actions

Proponents were able to implement avoidance measures to limit further disturbances to archaeological resources in 32% of cases. In all cases except for HRM research projects (n = 8), the damage incurred by archaeological sites was irreparable. EIM methods are appropriate at chance finds where impacts have already occurred. HRM work includes preservation-by-record excavations to mitigate damage, remedial HRM assessment of a project, and HRM construction monitoring to remove remaining archaeological materials. Two cases resulted in compensation-in-kind plans negotiated in private between affected parties (i.e., DcRu-25:47 and FITe-33:107). Both compensation-in-kind cases involved a one-time payment to an Indigenous community to offset damages incurred (Oliver 1990; Kristensen 2008).

3.1.6. Regulatory Jurisdiction

Data analysis indicates there is a jurisdictional overlap associated with regulatory policy regimes. Overlapping HRM policy, along with land ownership, influences chance find responses and impact management strategies. Figure 11 displays where regulatory policy jurisdictions overlap using a stacked bar graph. The overlap is limited to projects that trigger comprehensive EIA reviews. However, other examples of overlap occur where multiple land ownership scenarios exist within a project's physical footprint (e.g., DhRq-33:46 and EeSu-2:72). Chance finds reported from non-EIA projects that are regulated by the province (e.g., OGC, FLNRORD) do not show any regulatory overlap. The OGC, the BCEAO, and FLNRORD represent the regulatory overlap with federal agencies in the graph.

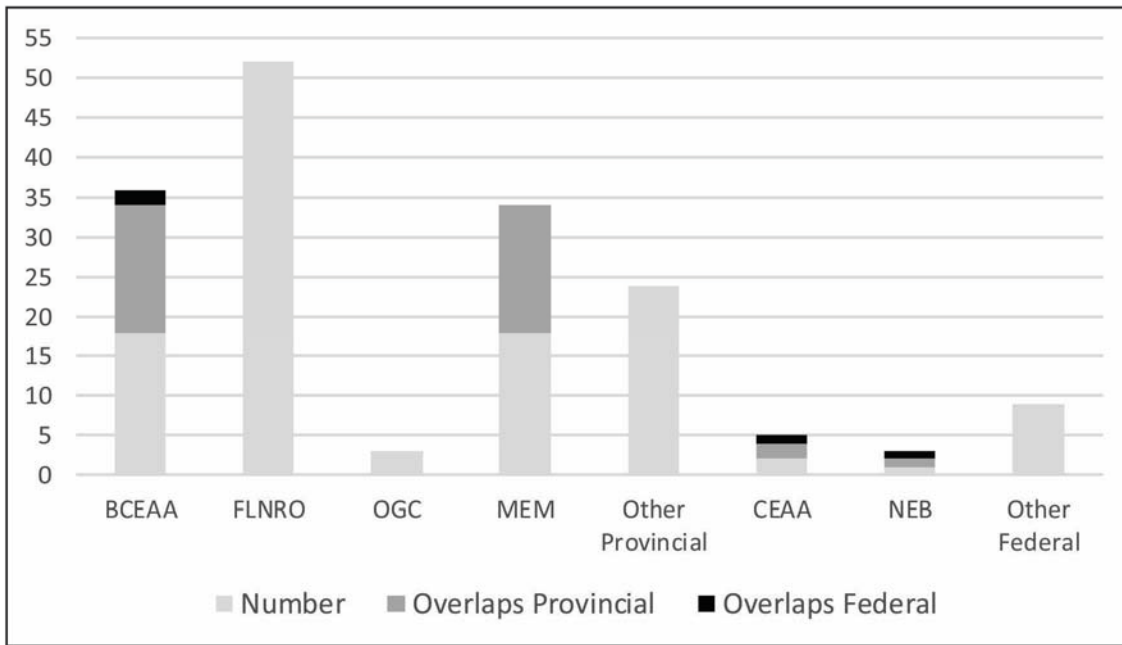


Figure 11. HRM policy overlap in regulatory policy regimes.

The various chance find policy elements converge because of regulatory overlap, and the differences in policy language require harmonization. Figure 11 suggests that regulatory policy regimes associated with chance finds involved FLNRO most frequently, followed by BCEAO and MEM projects. The lowest frequency of occurrence is from OGC-regulated projects which may be associated with a lack of guidelines or the exceptional rigor in HRM assessment, which requires completion before construction activities are authorized.

3.2. Rationale

This section presents data and commentary surrounding the rationale associated with informant reports. Informant report data is used to determine if trends in the data show barriers to reporting. Archaeological site types are included in the analysis to determine if some site types result in more frequent reports.

3.2.1. Informant Rationale

Most HRM permit reports in PARL that address chance finds contain information on the original informant report and the scenario surrounding the discovery. Figure 12 is a summary of pivot table data that calculates the sum of ACF cases by informant type.

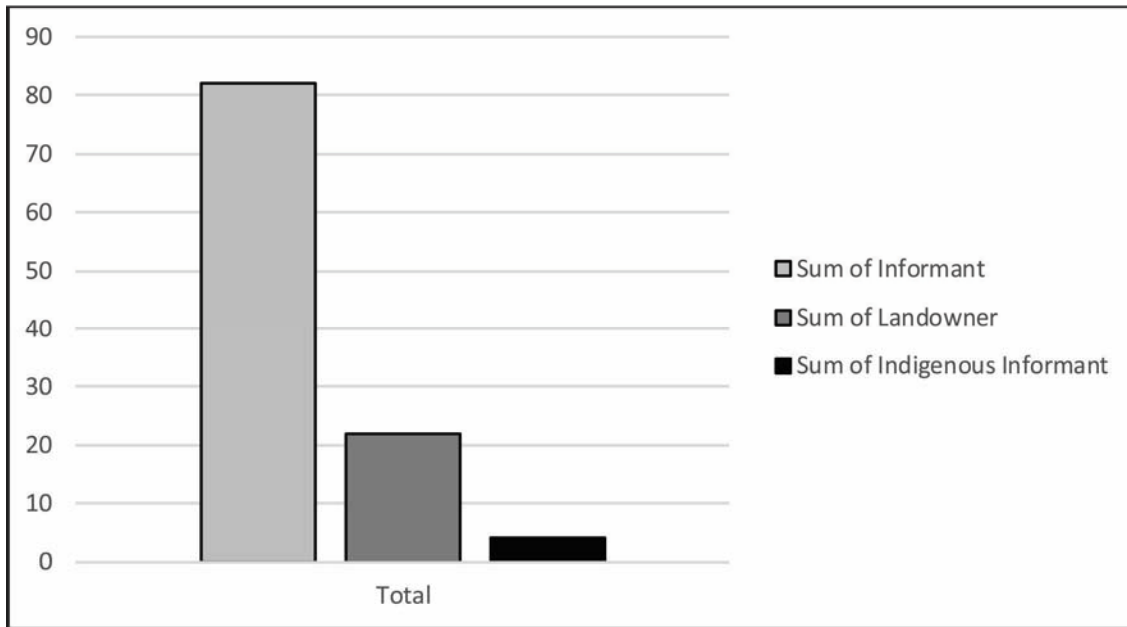


Figure 12. Chance find informant summary.

The range of data collection fields in this category is limited. Analysis of the data indicates that private landowners are responsible for reporting 20% of ACF cases. Of the 21 landowner-reports, 90% involved human remains (see Table 11). Just over 80% of informant reports are from individuals other than landowners of the property where the find occurred. ACF cases from privately-owned land amount to 51% of the total; closer inspection of this subset indicates 61% are reports from someone other than the landowner. Data analysis indicates that landowners are most likely to report the discovery of human remains on their property. Archaeological bone, including human remains, is recognizable as anomalous in the soil column by almost anyone. Moreover, human remains are difficult to ignore because unmarked interments are sometimes the product of criminal activity. Considering this, the 19 instances of human remains depict somewhat obligatory reporting that typically starts with a call to local police.

3.2.2. Impact Rationale

Archaeology Branch responses to informant reports vary depending on several factors, including the underlying reason why a chance find occurred. Data fields ask if the find resulted from: a new, unexpected find during construction; new AIA work required during construction; encroachment during construction; or, from vandalism. The pivot table derived graph in Figure 13 illustrates the rationale behind site discovery. In several instances, there was more than one type of rationale provided; caution is necessary as the sum of ACF cases in Figure 13 is more than the total number of ACF cases in the data table.

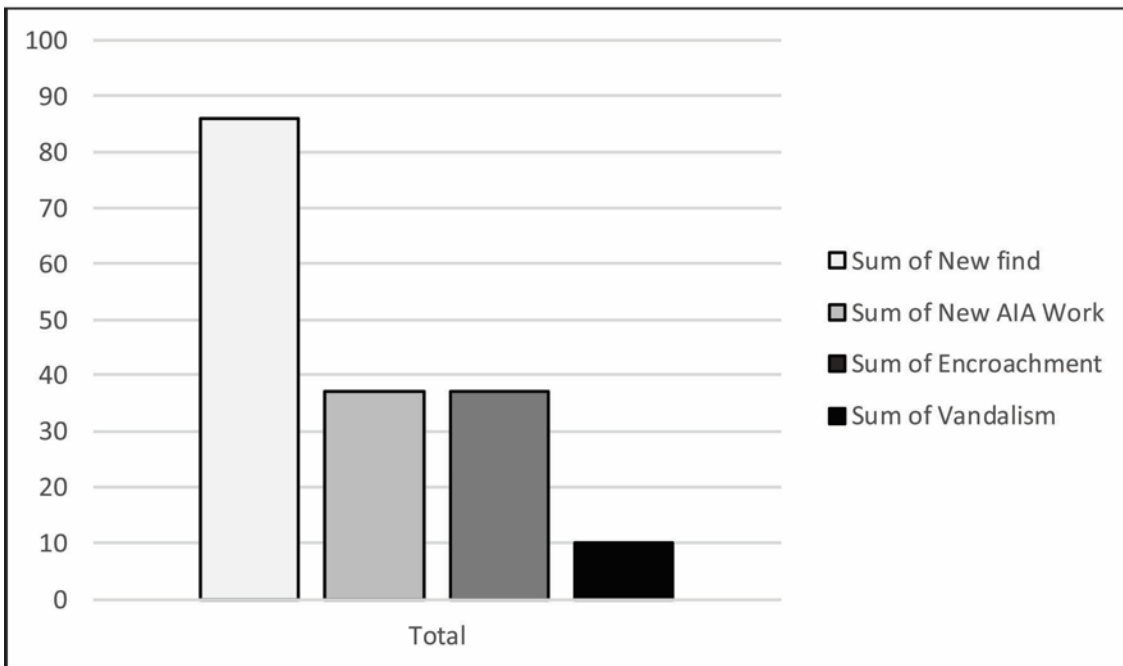


Figure 13. The rationale provided for chance find informant reports.

The discovery of a new archaeological site was the reason for 86 informant reports. In several cases, this is due to a lack of HRM assessment work conducted in advance of ground altering activities (e.g., Nicholls et al. 2008). Chance find data in the Rationale category, along with data in Figures 9 and 10 support the assertion that most chance finds occur due to a lack of HRM assessment or “inadequate risk management” (Stapp and Longenecker 2009:77). The sum of new find data represents ACF cases where an active HRMP with an ACFMP was in place during a project’s construction phase, and a new HRM permit was needed. New AIA work and encroachments are each

responsible for 37 of the authorized responses. Encroachments are cause for concern; recorded archaeological sites are being damaged unnecessarily when HRM assessment triggers or protection and avoidance measures are insufficient or fail. Data in Table 11 documents 32 encroachments to recorded sites that contain human remains. Responses to reports of vandalism were the least cited reason for an informant making a report. Vandalism is more likely to occur in recorded archaeological sites and not associated with proposed or ongoing projects.

3.3. Land Ownership and Environment

The distribution of sites according to land ownership, and their environmental setting is essential to determine which HRM policies interact with a chance find. These criteria also assist with determining the funding source for HRM assessment and mitigation, which is a differentiator used to classify ACF types in Chapter 4. Similar to previous analyses, land ownership can be used to filter results in Excel to conduct multivariate analysis. These analyses assist with answering questions about report type and jurisdiction.

3.3.1. Land Ownership

Land ownership determines where the *Heritage Conservation Act* (1996) has jurisdiction over archaeological resources. Provincial legislation is not enforceable of federal land, but a chance find report still requires an HRM response according to proponent policy, EIA guidelines, or Indigenous HRM policy. Two similar projects on private landholdings in urban and rural areas would be subject to different regulatory policies and regulators. The regulatory process is different again for projects on unsurveyed Crown land. Land ownership often dictates financial responsibility for HRM services. Private and public land holdings are present within the urban environment and the rural transition zone and into the surrounding remote areas that comprise unsurveyed Crown land. Figure 14 provides a breakdown of land ownership scenarios for ACF cases.

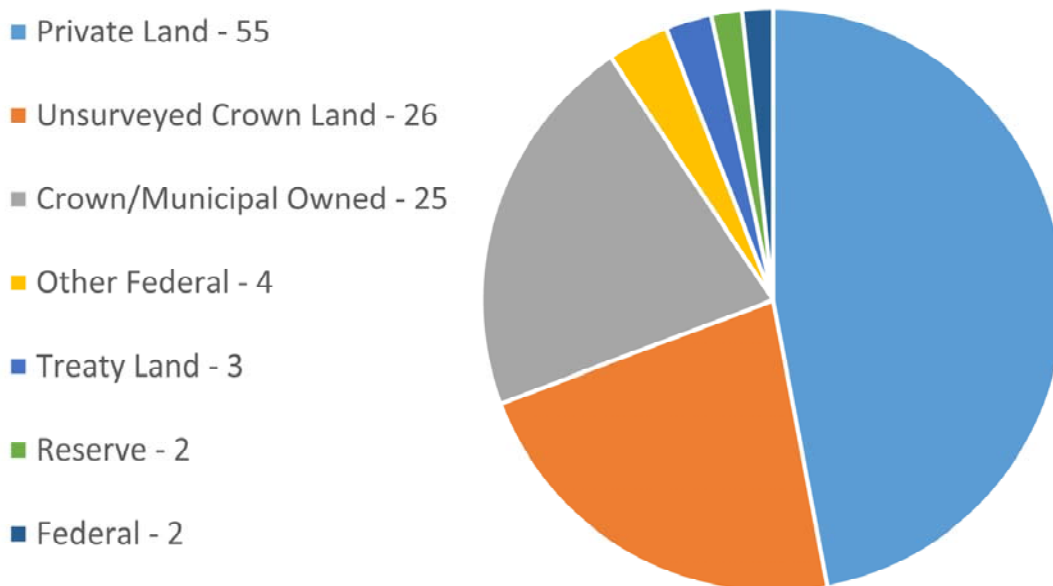


Figure 14. Distribution of chance finds based on land ownership.

Chance finds from private land (n = 55) comprise just over half of the entries in the ACF cases, while unsurveyed Crown land and Crown or municipal-owned land comprise the other major subsection (n = 51). The pie chart analysis in Figure 14 indicates that the majority of chance find reports from private land are from someone other than the landowner. However, private landowners are responsible for 38% (n = 21) of informant reports indicating reporting is occurring and self-incrimination may not be a reporting barrier for all (Figure 12).

Only eight ACF cases are associated with lands under federal jurisdiction. The lack of chance finds from federal land is not surprising as authorization from the province is not required to manage the resource; and, resultant non-permit HRM reports are not always available on PARL (see Section 1.2.2). Two of the ACF cases associated with federal land resulted from jurisdictional overlap with authorized HRM assessment (i.e., EeSu-2:72) and research (i.e., EbSh-13:108). One example is an ACF case from an Indigenous reserve (i.e., DgQu-4:27); three others are from treaty land.

3.3.2. Urban and Rural Areas

A spatial analysis was conducted to overlay defined municipal boundaries with all ACF cases collected (Appendices A, B, and C and Figure 15). Several municipalities have chance find occurrences within their bounds; the main clusters are in the abutting

municipalities that comprise the Greater Vancouver Regional District and the Capital Regional District (CRD). Kamloops, along with Golden, Lillooet, Cranbrook, Fernie, and several communities along the east coast of Vancouver Island have ACF cases within their bounds. Past development may have removed archaeological sites in urban areas, but the occurrence of chance finds from developed areas indicate otherwise. Finds reported from rural settings comprise 65 cases, 43 cases are from urban settings – a 60-40% split. Urban settings have been subject to previous land alterations, which can serve to limit or expose the presence of archaeological resources. The breakdown of found human remains in Table 11 provides further data related to urban and rural areas along with coastal and interior environments. Projects in urban areas are likely to follow a stringent regulatory policy regime; although, some municipalities' regulatory policies do not trigger HRM assessment independently.

As discussed in Section 1.4.7, many BC municipalities mitigate the risk of chance finds by triggering HRM assessments in their respective regulatory policy, or they may rely on an unwritten internal due diligence process like MOTI, or a professional reliance process like the OCG. ACF cases exist on the outskirts and adjacent to Osoyoos, Castlegar, Cache Creek, Invermere, and Kamloops. Based on this crude spatial analysis of all ACF cases, the risk of chance finds occurring in the interior is higher in rural areas that occupy the transition zone between urban and remote areas. Chance finds frequently occur in this transition zone, and more chance finds should be expected as municipalities grow. Land alterations in transition zones are more likely to evade regulatory approval, and thus there is no opportunity to trigger HRM assessment (e.g., clearing forested land for agriculture, expansion of existing commercial facilities). In most ACF cases where a project was not subject to HRM assessment in advance of construction, the proponent followed the province's, a municipality's, or a regional district's regulatory policy. However, these policies failed to trigger an HRM assessment. The lack of a regulator, inexperienced or untrained regulators, and the lack of a trigger in regulatory policy regimes are three root causes of chance find occurrence.

As shown in Figure 14, the majority of chance finds are from private land. Also, 60% of ACF cases are from rural and remote environments. The chance find reports that did not require an authorized response (Figures 3 and 4; Appendix A) are from rural settings; specific land ownership information was not readily available non-project ACF cases and left a gap in the analysis. When the chance finds associated with the Williston

Lake Reservoir (Appendix C) are added to the tally, more sites are reported from Crown land in remote environments. ACF cases at Williston Lake occur in high densities that skew analysis; most site records are the result of artifact discovery during remedial HRM assessment. Further inspection of the data revealed clustering of ACF cases in the municipalities that comprise the CRD, and closer inspection of these ACF cases was deemed appropriate.

3.3.3. Chance finds in the Capital Regional District

Municipalities of the CRD provide a focused catchment for a case study of chance find reports from the urban environment. ACF cases in the CRD (n = 76) are from two separate data sources: 1) Non-project ACF cases in Appendix A (n = 54); and, the project-related ACF cases from HRM permit reports in Appendix B (n = 22). These 76 ACF cases in Figure 15 show a higher frequency of reports where no authorized response was required. Project-related ACF cases in the CRD document authorized responses from projects undertaken by the federal government, municipal parks and infrastructure, single and multi-family residential construction, and tourism sectors. There are 22 ACF cases in the CRD where HRM work received authorization under the *Heritage Conservation Act* (1996), 17 of the 22 ACF cases are on private land, five are on municipal-owned land. Table 12 summarizes ACF cases by CRD municipality. The high number of chance finds from urbanized areas that did not require an authorized response is noteworthy. These cases may represent missed opportunities for HRM assessment, but they also reflect a dedication to heritage stewardship by the local community members.



Figure 15. Map of documented ACF cases in the Capital Regional District.

The CRD analysis illustrates the interaction of two types of chance find data associated with the developed environment. Not including the Williston Lake Reservoir, the ACF cases in the CRD represent the highest density of occurrences across BC, they occur in every CRD community except Sidney. Informant reports span several development sectors and occur in a variety of land ownership scenarios. For comparison, Vancouver and communities of the Fraser Valley have 23 documented ACF cases over a larger area (See inset map in Figure 4).

Table 12. Summary of ACF cases in Capital Regional District municipalities.

Municipality	Non-Project ACFs	Project-Related ACFs
Esquimalt	2	1
Langford	0	8
Highlands	0	3
Oak Bay	1	1
Saanich	22	2
Central and North Saanich	2	2
Sooke (includes East Sooke)	11	1
Victoria	1	3
Metchosin	11	0
Colwood	3	1
View Royal	1	0
Sidney	0	0
Subtotal	54	22
	Total	76

ACF cases from BC’s major municipalities highlight the need for the provincial governments and municipalities to develop a coincident HRM policy that includes a trigger for HRM assessment. In the CRD, spatial analysis indicates private property in urban and fringe rural areas contain undocumented archaeological resources and retain archaeological potential despite previous land disturbances. Non-project ACF cases in the CRD (Figure 15), like the cluster of chance finds in the southwest of BC (Figure 4), were recorded based on informant reports from citizens, neighbours, and archaeologists. Despite the display of stewardship, data analysis indicates there is a problem. Projects on private property are not consistently subject to review under a regulatory policy regime that would trigger an HRM assessment.

3.4. Fieldwork Effort by Development Sector

The chance find data collection table (Appendix B) was designed to allow for multiple columns and variables to be queried together for analysis. A multivariate query was conducted using the data filter tool in Excel to estimate fieldwork effort and costs across land development sectors. Data filters applied to the proponent field of the chance find information category (Section 2.3.1) and the HRM effort category (Section 2.3.5) were used to extract the data necessary to evaluate effort by each development sector grouping. The average number of fieldwork days per ACF case was calculated using each sector's data query results. The effort calculation uses the sum of crew days across sector-specific projects, multiplied by the average number of crew members. Then the number of cases in each sector were multiplied by the total person days. The total was divided by four to determine the average number of crew days per ACF case. In Figure 16, the orange bars depict the total number of person days per sector and correspond to the right axis. The lines correspond to the left axis and show the average person days and crew days. Column labels identify the number of ACF cases in each sector.

A crew for these calculations consists of two archaeologists and two Indigenous community representatives, which may not reflect the actual crew composition for a given ACF case. The effort shown in these graphs is in addition to the administrative tasks and timelines discussed in Chapter 1 (Figure 2), and any artifact analysis, specialist service, or reporting necessary to meet regulatory requirements. An experiment is possible using the effort data in Figure 16. A hypothetical daily rate for a crew of four undertaking one day of local fieldwork is estimated to be approximately CAD 2,500. This estimated value is up for debate, but it provides a way to estimate the cost of chance find fieldwork effort.

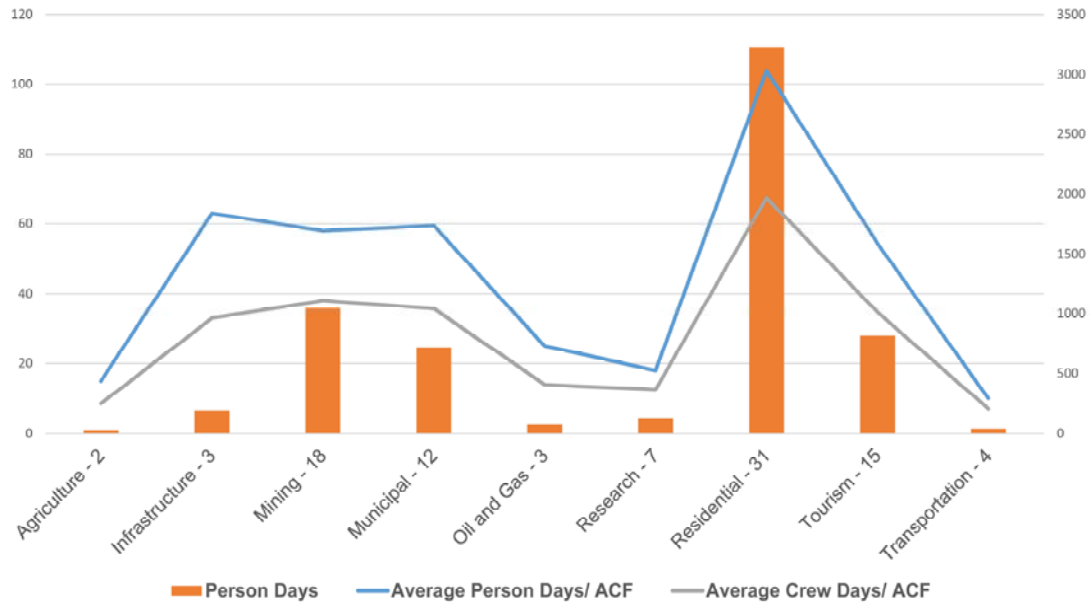


Figure 16. Chance find fieldwork effort by development sector.

Effort data reveals that the residential development sector is responsible for the highest number of authorized responses to chance finds. Also, ACF cases from residential projects required the most labour effort overall, and on average. Tourism, infrastructure, and municipal development sectors have a similar amount of cases as each other, and on average, the authorized responses to ACFs require less effort (Figure 16). Together these four sectors show the gaps in regulatory policy regimes that fail to trigger HRM assessment (see Section 1.3.2). The result for the mining sector is higher than the average; this is attributable to the multiple ACF cases from the Galore Creek project discussed in Section 1.7.2 and by Seip et al. (2012). Forestry and oil and gas proponents, along with MOTI, maintain *Section 14 Heritage Conservation Act* (1996) blanket inspection permits (see section 1.3.1). Data shows this practice can contribute to reducing timelines for authorizing HRM fieldwork after an informant reports a chance find.

A cost range for ACF cases was determined by sector using the data and simulated crew composition from Figure 16. The average fieldwork cost is estimated below by multiplying the crew day value of CAD 2,500 by the average crew days per ACF. Figure 17 summarizes the cost implications of fieldwork effort by sector.

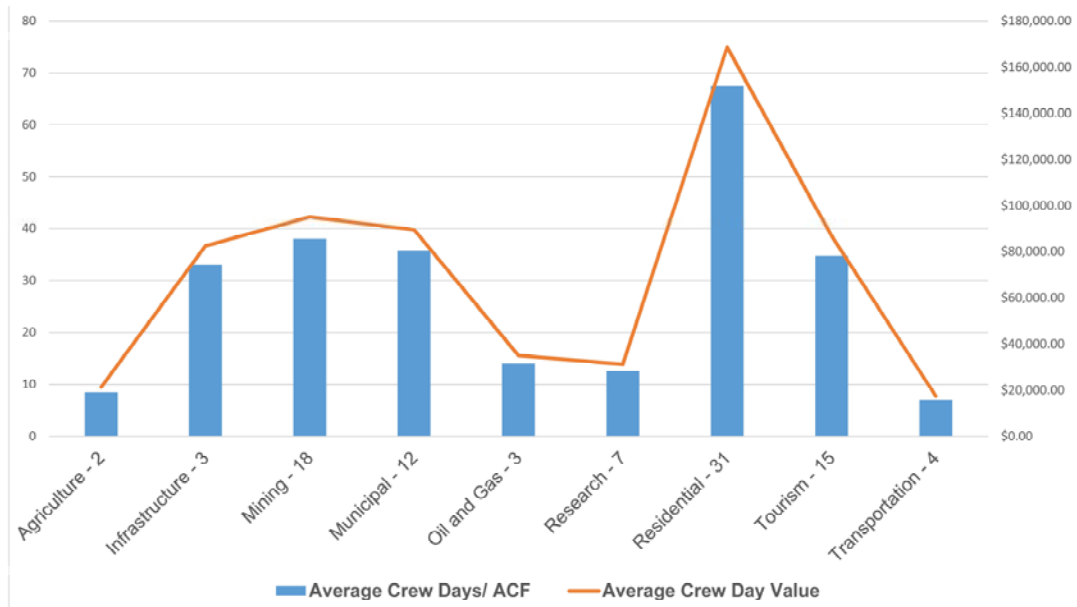


Figure 17. Cost estimate averages for ACF cases by sector.

In Figure 17, the vertical bars representing average crew days correspond to the left axis; the line representing average crew day value corresponds to the right axis. A secondary calculation indicates the average cost for fieldwork per ACF across all sectors: \$69,722. Sector-specific average costs per ACF range from \$0.00 to upwards of CAD 170,000, but costs for individual cases range between \$0.00 and CAD 1,700,000. Two null values in the data are attributable to pre-1996 ACF cases, in which human remains were unearthed, reported, and analyzed after construction was complete (Campbell-Brown 1970; Yearsly 1971). On the other end of the spectrum is a pre-1996 salvage excavation that utilized a significant amount of volunteer labour. In this case, volunteer labour is the same as paid labour (Bernick 1989). Data in Figure 17 suggest a defensible cost range for fieldwork per ACF in BC is approximately CAD 25,000 to CAD 100,000 in 2019. Polglase provides a cost estimate of USD 50,000 to USD 250,000 per chance find on international projects (Polglase 2019:Slide 3). Polglase’s estimate is likely to include work other than basic field effort, but there is overlap between the two ranges in five of the development sectors examined. These two cost estimates are a good starting point; comparison of these values needs to be cautious in the absence of additional information related to the scope of work.

3.5. Risk Implications

Analysis results indicate that the risk of a chance find during construction is reduced when HRM assessment includes subsurface testing for archaeological sites in advance of construction. Combining information from this thesis allows for a calculation of delay duration and sector-specific effort estimates. Consider that 86 ACF cases represent the discovery of a previously undocumented archaeological site (Figure 13), 34 of the 86 ACF cases represent authorized HRM assessment under an existing HRM permit. Of the 86 ACF cases, 67% (n = 58) required the acquisition of a new HRM permit. As indicated in Chapter 1, in 2018, it takes at least two months from application to issuance of permits under the *Heritage Conservation Act* (1996) (Figure 2). These timelines compound when one chance find requires multiple or sequential permits. Proponents should expect a minimum two-month timeline; data shows this delay is likely within 53% of all 108 ACF cases. Exceptions include projects with a current permit at the time of chance find discovery, or those projects situated entirely on federal land. In addition to permitting timelines, HRM fieldwork for ACFs from the residential sector averaged approximately 60 crew days. The next two highest sectors average 40 crew days. Across all sectors the average number of crew days per ACF is approximately 28. Based on the effort calculations, a delay range for residential development is approximately two and a half months to four months from the informant report to fieldwork completion. Timelines extend if the Archaeology Branch or Indigenous Nations require remedial HRM assessment and mitigation of past and proposed impacts.

It is conceivable that a proponent could avoid further damage to chance find occurrence by creating a larger than necessary no-work-zone surrounding a find location. Construction could continue elsewhere while authorizations are acquired. However, interim avoidance schemes are not always possible, depending on seasonal field conditions and construction schedules. Interim avoidance schemes may not be achievable on a single-family residential project, or where human remains occur. Avoidance may be feasible on a long linear project like a pipeline or road, but the design is usually too far advanced to make any significant changes. A chance find is likely to add disproportionately to the cost of projects. Proponents that have limited time, budget, and space to accommodate temporary construction shut-downs need to manage risk.

Delays cause proponents to incur costs on top of the cost for HRM professional services. Added costs are from borrowing money for more extended periods, engineering fees for project re-design, de-mobilization and re-mobilization of contractors, and stand-down time for idle machinery and contractor personnel. Other less tangible costs can be social or political deficits created when a loss of service delivery to taxpayers happens, or impacts occur within a sacred place. Deficits for taxpayers occur when a critical publicly-funded project is delivered late or over budget because of a chance find. Scenarios that create deficits drive negative public perceptions toward archaeology, Indigenous communities, elected officials, and can incite negative public perceptions toward heritage stewardship or a project in general.

3.6. Results Summary

Data analysis results address research questions. Chapter 4 synthesizes the various data inputs and adds context to the variations observed in policy and practice. Some general conclusions emerge from the analysis.

- ACFs require an informant. Most potential informants on BC projects lack formal training in archaeological site identification. Potential informants may perceive reporting a chance find as self-incriminating, or too costly. These potential barriers to reporting are of concern and have resulted in an unknown number of unauthorized disturbances to archaeological resources over time.
- Observations of divergence from standard HRM assessment practices in regulatory policy regimes indicate projects are approved before a complete assessment of potential effects on heritage resources can be completed. Regulatory policy regimes and regulators do not always trigger HRM assessment, and some projects do not require regulatory review.
- There are over 1000 ACF cases represented in BC's archaeological record; 75% are project-related ACFs, and authorized responses to 100% of the Williston Lake Reservoir ACF cases follow current HRM policy. This analysis was not conducted for non-project ACFs.
- Chance find reporting frequency and the pathways for encouraging and requiring reporting have changed over time in response to HRM policy in regulatory policy regimes. Statute revisions in 1994 and 1996 resulted in a higher frequency of chance find reports and authorized responses. Timelines also correspond to the emergence of chance finds related to early EIA approval and responses authorized under blanket permits. The most recent change to legislation created an HRM policy scenario that made existing project operations non-compliant and made chance finds associated with project operations a new reality. Future changes are likely to encourage higher reporting frequencies.

- Overlapping regulatory policy regimes trigger HRM assessment and require proponents to plan for chance finds in advance of construction. HRM policy and literature recognize that chance finds occur despite best efforts. Literature and archaeological data provide examples of projects with minimal HRM assessment effort that has both successful and adverse outcomes. Case- and project-specific solutions to chance finds are possible, and other jurisdictions have similar problems and different solutions available for adoption under the current HRM policy in BC.
- Chance finds are predictable in their manifestation within a policy jurisdiction. Trends in the data indicate that it is possible to develop an ACF typology for BC. HRM policy and practice change have brought about new types of chance finds that are worthy of consideration in future policy initiatives.
- Chance finds involving human remains, particularly cases involving Indigenous ancestral remains, dominate the project-related ACF cases, representing 51% of the total. Human remains found during construction have the highest likelihood of adversely affecting project schedules and costs because additional inputs from descendants are required to inform government decision making. Human remains are a separate ACF case in HRM policy, they share attributes with other types of ACFs, but need to be considered separately.
- In 100% of project-related ACF cases, informant reports are the result of unanticipated, yet irreparable damage to archaeological sites. In 80% of these ACF cases, the implementation of EIM methods was necessary, which further affects the integrity of archaeological resources. Measures that compel proponents to overcompensate for site damages are more appropriate. Overcompensation can be used to penalize non-conforming proponents or reward proponents that follow established HRM assessment process.
- Chance finds result in unanticipated scheduling delays and cost increases for development proponents, often after project approval. Conservatively, a 2.5- to 4-month delay range is associated with a chance find from reporting to fieldwork completion. Field costs typically range from CAD 25,000 to CAD 100,000. At the far ends of the spectrum, the average cost per chance find ranges from \$0.00 to upwards of CAD 170,000. Individual cases range from \$0.00 to CAD 1,700,000, but these ACF case values represent outliers in the data.
- Chance finds are a financial risk that can increase project costs or decrease project revenue. Chance finds that affect project revenue is limited to those reported during a project's operations phase. All other project-related ACFs affect project costs.
- Chance finds sometimes result in the discovery of significant archaeological resources that will not be adversely affected by a specific project. Some rare finds encourage academic HRM research that attracts positive media attention and public interest. These research endeavours also require authorization from the Archaeology Branch.

Chapter 4.

Summation and Recommendations

HRM policy and chance find policy element comparisons, ACF data, and the results of data analysis provide the basis for additional consideration of the study's research questions, reiterated below.

1. What types of ACFs occur in BC and at what frequencies?
2. What types of reports identify ACFs in BC and at what frequencies do these occur? What are the relationships between report type and site type?
3. Have policy changes affected the types and frequencies of ACFs, and if so, how?
4. Are ACFs reported more frequently on private or public land? On projects in rural or urban settings?
5. To what extent is HRM practice in BC aligned with policy? What policy reforms are recommended to improve this alignment?

Answers to research questions are discussed in order, in the sections and subsections that follow. Each ACF case generates a multifaceted set of case-specific risks; these risks are predictable along the project lifecycle and can be measured using the data variables that comprise the ACF data table.

Each ACF case requires an informant. An informant may consist of several actors operating in a variety of scenarios. The high proportion of non-landowner informants (Figure 12) could indicate there are perceived self-incrimination barriers or financial burdens associated with reporting a chance find, but the result is not conclusive. The example from MOTI in Section 1.7.1 indicates some proponents relieve their contractors of most financial burdens associated with reporting a chance find and encourage reporting through the provision of ACFMP training to front-line workers, admittedly with varying degrees of success (see Section 1.4.7). In instances where HRM professionals report chance finds or encroachments, there is potential for the blurring of HRM professional ethics and caution must be exercised (see Section 1.4.8).

Planning documents that guide actions related to chance finds on projects are working in practice (Oil and Gas Commission 2019:1). However, given the lack of HRM professional involvement in construction monitoring, it is impossible to be confident about how many sites may have been missed or remain unreported. Chance finds cause delays due to administrative processing time and HRM fieldwork (see Figure 2, Section 1.3.1). Delays can adversely affect project schedules, costs, and sometimes, revenue. Where project approvals require an HRMP or ACFMP during construction, and where there is an active HRM permit in place there is less potential for delay from a chance find. Where a project's regulatory approval does not require HRM assessment or professional oversight, the typical construction delay ranges from 2.5 to 4 months.

4.1. Suggested Classification Typology

Chance find data is elusive in BC's archaeological record because sites found by the luck of the draw are documented like any other site. Initial ACF data gathering efforts revealed that an exact quantification of chance finds was not going to be possible within the scope of this thesis. Instead, using the methods described in Chapter 2, three datasets of ACF cases considered representative of BC's chance finds were amassed (Appendices A, B, and C). These ACF data were considered together to determine appropriate subdivisions for suggested ACF types in BC.

The suggested typology considers HRM policy, available literature, financial support, and then site type. ACF data and the policy analysis in Chapter 1 requires that chance finds be prioritized to separate the discovery of human remains from all other archaeological site types. Non-Permit ACFs are the lowest priority unless they involve human remains or result in academic research. Of priority are project-related ACFs that require authorized HRM work, and secondarily Non-Permit ACFs that result in research or inaction. Where human remains are involved in any of the ACF types, a different policy applies, and the archaeological site type takes priority (see Section 1.3.1). Six types of ACFs are apparent in BC's archaeological record: 1) Critical Path; 2) Concurrent; 3) Regime Change; 4) Research; 5) Non-Permit; and, 6) Human Remains. Each ACF type definition is supported by example cases referenced by Borden number. ACF cases involving authorized responses cite the Borden number and corresponding ACF data table number (e.g., DhRx-44:38). Figure 18 illustrates the various ACF types

and ranks them according to their assigned priority. The ACF types in the figure are colour coded green to red to indicate increasing financial risk.

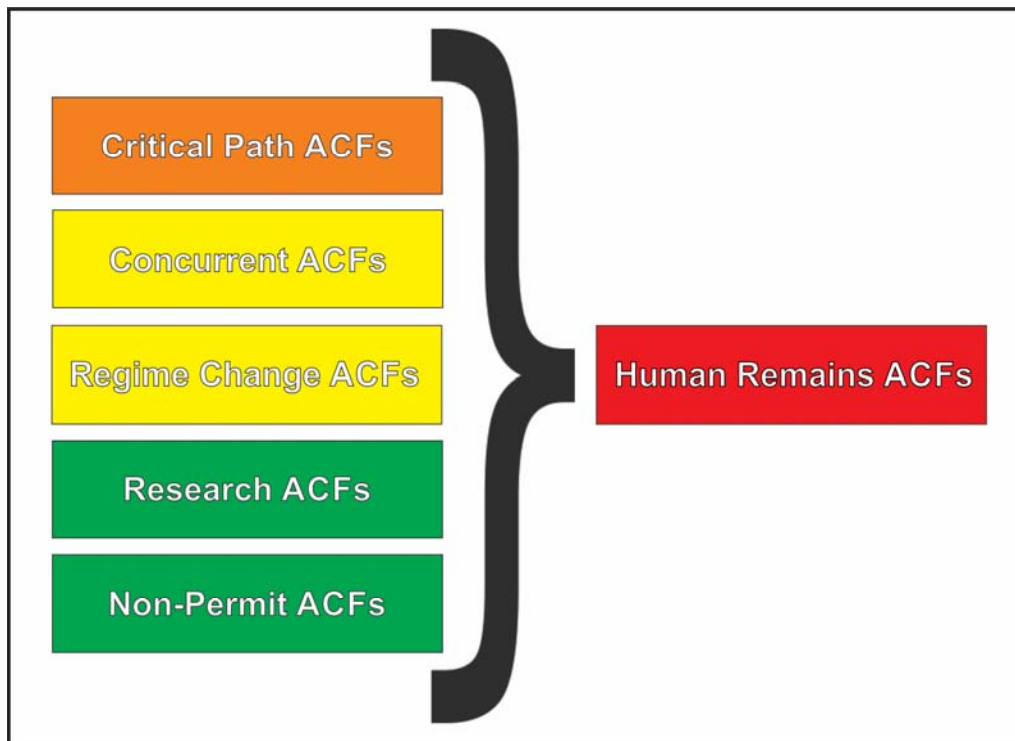


Figure 18. ACF typology.

This typology was crafted to assist with analysis and identify the variation in financial risk. If dissected to remove the low-risk ACF types, the graphic is a communication tool for regulators and HRM practitioners. This typology also allows for the creation of specific policies that can be used to manage financial risk and create processes applicable to each ACF type.

4.1.1. Critical Path ACFs

Critical Path ACFs are informant reports of unauthorized impacts to archaeological resources that occur during a project's construction phase, during which there is no active *Heritage Conservation Act* (1996) permit. Impacts on archaeological resources can happen intentionally or unintentionally where HRM assessment has been completed or not. Critical Path ACFs are most problematic where HRM assessment triggers are absent before construction. Section 1.3.2 reviews the assessment triggers found in regulatory policy. Where triggers are absent, a less sophisticated development

proponent may choose not to conduct HRM assessment as part of internal environmental due diligence studies (e.g., DhRx-44:38). Complexities arise for proponents when unrecorded archaeological resources are inadvertently disturbed and then subsequently reported to authorities.

Critical Path ACFs have the potential to halt construction and create scheduling delays (e.g., DjPw-24:51, EeRf-4:78). They also result in immediate unauthorized impacts that degrade the integrity of archaeological data. Common mitigation actions discussed in Section 1.3.1 and analysis in Sections 31.4 and 3.1.5 indicate HRM work in response to an ACF typically requires remedial HRM assessment and the implementation of EIM methods for authorized mitigation through preservation-by-record. Where unauthorized disturbances have already occurred to an archaeological resource, there are obvious limitations for implementing less destructive avoidance mitigation measures.

Critical Path ACFs create complexity and delays for projects when the Archaeology Branch requires an authorized remedial HRM assessment and permitting timelines delay construction (e.g., DjPw-24:51, EeRf-4:78). Financial risks specific to HRM professional fees are related to the time and cost for permit acquisition, the cost of remedial HRM assessment, and the cost of implementing destructive mitigation and monitoring options (see Section 1.8).

4.1.2. Concurrent ACFs

Concurrent ACFs can only occur on development projects where HRM assessment, mitigation, or construction monitoring is ongoing. Concurrent ACFs occur on projects that have an HRMP and ACFMP in place, along with an active *Heritage Conservation Act* (1996) inspection or site alteration permit. This scenario requires some level of ongoing HRM professional involvement during a project's construction phase. Project approval conditions discussed in Section 1.4.1 (e.g., and EAC) tend to mandate preparation of an HRMP, and many require HRM permits to be active throughout a project's construction phase. An active project-specific permit allows for HRM assessment of any gaps and quicker response times to chance find reports. Where proponents employ blanket inspection permits, regulators may require additional HRM assessment, but these sector-specific permits serve to reduce administrative timelines to

30 days or less instead of the two months needed to acquire a new permit (see Section 1.4.5). Concurrent ACFs also include newly recorded archaeological sites found during HRM assessment and construction monitoring undertaken in gap areas, or within an area added to a project's physical footprint.

ACF cases manifested as reports of artifacts found following a proponent's established ACFMP and addressed under a proponent- or sector-specific Section 14 *Heritage Conservation Act* (1996) blanket inspection permit (e.g., DcRu-1234:90). Concurrent ACFs also include encroachments within recorded archaeological sites because protection and avoidance measures have failed (e.g., DjSf-57:89); where archaeologists are unable to contemplate late changes to project design (e.g., HgTo-1-9, HgTo-19-23, HgTq-1 and 2:52-67); or, where a new portion of a site exists beyond an established site boundary (e.g., DdSc-17:106).

4.1.3. Regime Change ACFs

Regime Change ACFs are instances where newly identified archaeological resources conflict with the project's established physical footprint during the operations phase, as mentioned in Section 1.7.3, financial risk is related to revenue instead of project costs. The root cause of these chance finds extends from project approvals issued under previous regulatory policy regimes, or out of date HRM policy. Regime Change ACFs are the result of remedial HRM assessment and mitigation work that is necessary for an existing project to remain compliant with current HRM policy. HRM assessment and mitigation happens during a development's operations phase, and financial risk is associated with project revenue. Regime Change ACF data is currently limited to archaeological sites found in association with various hydroelectric generating facilities in operation around the province. All the Regime Change ACFs in the data collected from the PHR (Archaeology Branch 2018f:n.p) are from around BC Hydro's Williston Lake Reservoir (Appendix C).

More Regime Change ACFs are bound to occur on existing developments not associated with the power sector. Example cases from other sectors were not identified. The risk for additional occurrences of Regime Change ACFs seems most apparent in urban settings, contrary to the remote setting of the archaeological sites found around BC's reservoirs. As discussed in Section 1.3, many of BC's urban settings were

constructed before the enactment of the *Heritage Conservation Act* (1996) and associated guidelines for HRM assessment. Where roads, highways, infrastructure, and structures overlap with unrecorded archeological sites. These archaeological sites could be categorized as Regime Change ACFs if reported; and, if authorized remedial HRM assessment is required by resource regulators (see Section 1.4.7). Where a chance find report occurs during a bridge replacement project, the find would be categorized as either a Critical Path ACF, or Concurrent ACF, depending on the presence or absence of an HRMP, an ACFMP, and a current permit for the project.

4.1.4. Research ACFs

Research ACFs result from informant reports of significant archaeological sites found in the absence of a project. Section 1.6 describes non-project ACFs that required subdivision into Non-Permit ACFs and Research ACFs when developing this typology. Two factors force consideration of this subdivision in the ACF typology – financial support and objectives of the HRM work. This subdivision was necessary to capture HRM research authorized by the Archaeology Branch, but not associated with a development project. Three projects represent eight cases in the ACF data table; they are related to HRM research initiated by informant reports (Lundy 1972; Puckett et al. 2014, Cullon and Pratt 2009; Cullon and Pratt 2019). The case of Kwäday Dän Ts'ınchi summarized in Section 1.6 provides an example of a Research ACF that is also a Human Remains ACF (Archaeology Branch 2000; Hebda et al. 2017). HRM research was authorized the Archaeological Branch as a mitigation measure to offset future natural impacts. Also, the discovery required consideration of the Archaeology Branch's *Found Human Remains* policy (Archaeology Branch 2018c:1-2).

Funding for HRM research comes from a variety of sources but is not intended to fund a development proponent's HRM assessment and mitigation requirements. Besides, there is ample time for researchers to formulate appropriate questions, consult and involve local Indigenous communities, undertake detailed fieldwork and analysis, and publish results. EIM measures are not needed, and field methods that meet the rigors of the academy can be employed (see Section 1.3.1). The referenced Research ACFs resulted in positive contributions to BC's archaeological record. They do not result in project delays or financial risks, even when human remains are involved.

4.1.5. Non-Permit ACFs

Non-Permit ACFs are archaeological materials identified to provincial authorities that do not require authorized HRM research, assessment, or mitigation. Non-Permit ACF cases (Appendix A) evidence archaeological sites found in a multitude of scenarios and environments. Cases are from private artifact collections (e.g., DdRu-82); informant reports about vandalism (e.g., DjRI-5, DkPw-25); or, archaeological materials found on public and private property. Non-Permit ACFs are from artifacts brought to the attention of the Archaeology Branch (e.g., DcRv-86, DhRr-214, DhSf-51) the Royal British Columbia Museum (e.g., DdRu-95, DcRt-62, DcRu-121) and other local museums (e.g., DgRI-41), along with Indigenous organizations (e.g., EcRi-82). Non-Permit ACFs are reported to provincial authorities by citizens, students, interest groups, Indigenous Nations, and even a professional hockey player (i.e., DcRv-86). In most instances, the Archaeology Branch and other authorities can gather enough information from informants to prepare an ASIF for a non-permit entry into the PHR. Another popular discovery mechanism for chance finds occurs when HRM professional and ethical obligations collide with personal time adventures. Several PHR entries document HRM professionals, including the author, donating their time to prepare and submit archaeological site inventory forms for their Non-Permit ACFs (e.g., DcRu-1187, GIRa-2, DjPv-6, DcRv-86).

4.1.6. Human Remains ACFs

Human Remains ACFs are unique in the context of automatically protected archaeological resources; burial or death locations are sacred or protected places in most cultural traditions. ACF policy elements provide separate directions to proponents, and HRM professionals for Human Remains ACFs. The distinction in the suggested typology is that Human Remains ACFs are classified by site type following HRM policy and risk assessments presented in Sections 1.3.1 and 1.8). Human Remains ACFs can occur in the context of the other five ACF types. Two examples of Critical Path ACFs involving human remains are DgRw-3:68 and EeRf-4:78, one Concurrent ACF (i.e., EeSu-2:81), and one Research ACF (i.e., EgSt-2:28). Development of the next steps for Human Remains ACFs considers law enforcement, other regulatory authorities, and the descendants of the deceased. The discovery of suspected human remains requires additional inputs and specialists. HRM professionals follow Indigenous HRM policy and

custom discussed in Section 1.4.5 to acquire authorizations from the Archaeology Branch.

An example of a Human Remains ACF (DjSf:89) involved a recorded site known to contain human remains. The site suffered an encroachment following the failure of HRM avoidance mitigation measures. A second example is from a historic cemetery that was much larger than ascertained during HRM assessment. Graves were disturbed during project construction in an area situated beyond the recorded site boundary (e.g., DjPs-4:73). The discovery of human remains during construction can change project approval conditions, a proponent’s social license to operate, and EIA effects assessments described in Section 1.4.1. There is a higher likelihood of prolonged delay when Human Remains ACFs occur during construction. Timelines for achieving free, prior, and informed consent are unknown, and the differentiators for Critical Path and Concurrent ACFs cease to apply. The discovery of new or additional human interments at any given archaeological site changes the assumed conditions that led to regulatory authorizations and social license approvals. Human Remains ACFs have resulted in more than one development project being delayed, redesigned, or even terminated because of ethical and social considerations relating to Indigenous custom (CBC News 2012). Where projects proceed, HRM assessment and mitigation costs are high, as is the potential for additional modifications to timelines.

4.1.7. ACF Typology Summary

Development of an ACF typology considered project financial risks, HRM policy, financial support for HRM work, and objectives of the work. The typology then considers archaeological site type to differentiate ACF types further (Table 13).

Table 13. ACF typology and frequency.

ACF Type	Appendix	Number
Critical Path	B	43
Concurrent	B	5
Regime Change	C	831
Research	B	8
Non-Permit	A	156
Human Remains	A and B	52
Total		1095

Frequency in Table 13 skews toward Regime Change and Non-Permit ACFs because of the data collection methods employed. The total data sample has a higher frequency of authorized responses to ACFs than Non-Permit ACFs overall. A determination of archaeological site types for individual Non-Permit ACFs is beyond the scope of this research, but the dataset comprises of a variety of archaeological site types. Regime Change ACFs are exclusively lithic sites, less than 5% of which contain features. Human Remains ACFs need to be considered independently from other site types following divisions in HRM policy, and as reflected in practice. If a report of human remains occurs in the absence of a permit or HRMP in the construction phase, the combination Critical Path - Human Remains ACF creates the highest financial risk scenario with the most potential to force schedule change.

Modifications to the suggested ACF typology for BC may be required to allow for applicability in other Canadian and international jurisdictions. Other HRM policy jurisdictions define, manage, and protect heritage resources differently than BC (see Section 1.2.3). Historical resources, Indigenous traditional resources, and palaeontological resources may be candidates for further subdivisions in the ACF typology. Data in the PHR did not support research into the full suite of heritage resources as defined in HRM policy. The risk for projects and proponents relating to chance finds of non-archaeological heritage resources is less evident in policy and available data as the automatic protection language in the *Heritage Conservation Act* (1996) is specific to archaeological resources as defined therein. Section 1.2.1 provides an analysis of the applicable policy elements.

4.2. HRM Policy Change and Frequency of ACF Occurrence

Following the suggested typology and using the collected ACF data, analysis indicates that HRM policy change is both the reason for an overall increase in the frequency of chance find reporting. Changes are responsible for the advent of Concurrent ACFs; and, policy change is the only reason for the existence of Regime Change ACFs. Data analysis reveals a significant and expected increase in authorized responses to chance finds. The increased frequency of authorized responses is also evident when the data is limited to the ACF data table (Appendix B). Increases to chance find reporting is the result of two main drivers. First, the jurisdiction of the *Heritage Conservation Act* (1996) is much broader than preceding legislation because it asserts

jurisdiction over private land holdings. At the same time, the statute defines and affords automatic protection to all BC's archaeological resources. The timing of these significant HRM policy changes marks the increase in the number of chance finds that require an authorized response (Figure 6). A second reason for the increase is related to shared heightened awareness and broader recognition on project teams that archaeological resources are valued components of the environment and link to the social fabric of Indigenous Nations (see Section 1.4.1). As displayed in Section 1.3.2, this increased awareness has influenced practice in North America and elsewhere to require HRM assessment with subsurface testing during project planning. This practice addresses the potential for a chance find during a project's construction and operations phases. As shown through examples in this thesis (e.g., FITe-33:107), planning for chance finds should also extend backward into a project's feasibility and design phase (see Section 1.4.3). Tasks involving ground-disturbing activities and tree felling are examples of documented impacts that resulted from early project works like geotechnical drilling and similar activities associated with mining exploration.

For many projects, approval comes with HRM conditions attached. HRM conditions can include preparation of a project-specific HRMP, acquisition of permits, an ACFMP, and appropriate training materials for front-line informants. Planning documents and knowledgeable informants have contributed to the increase in authorized responses to chance finds after 1996, mainly related to Concurrent and Critical Path ACFs (Appendix B). A clustered bar graph was prepared using the suggested ACF typology to illustrate reporting frequency, and the change to the types of ACFs reported before and after 1996 (Figure 19). Of note is the increase in Critical Path ACFs and the emergence of Concurrent ACFs.

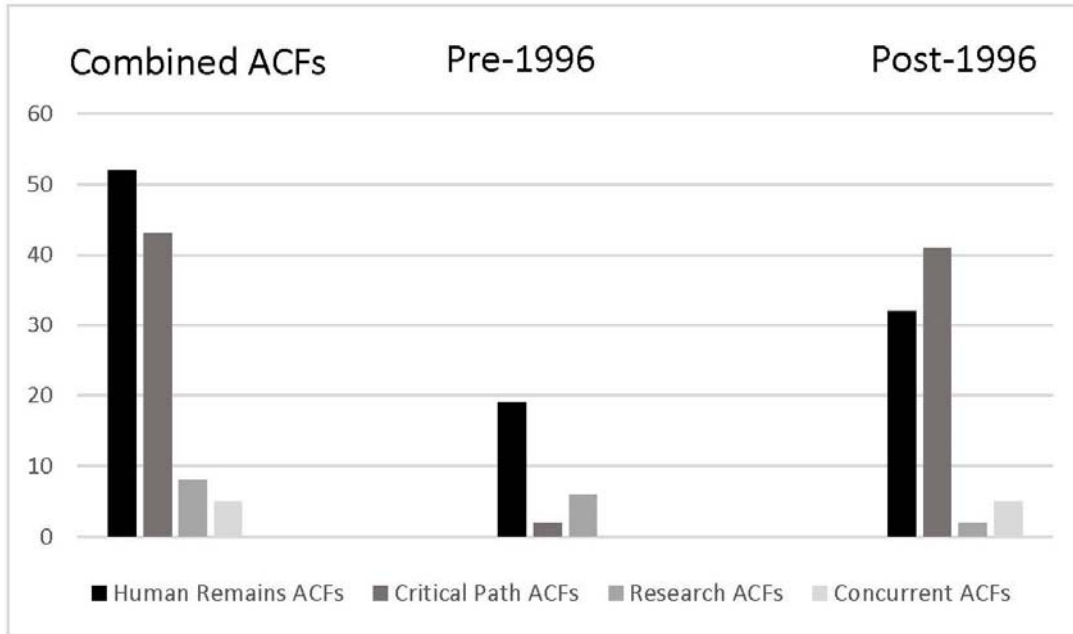


Figure 19. ACF typology and reporting frequency.

Human Remains ACFs have the highest frequency of reporting overall and are the most frequently reported ACF type overall. Critical Path ACFs occur more frequently after 1996. Concurrent ACFs are absent from the data table before the enactment of the *Heritage Conservation Act* (1996). The increase in Critical Path ACFs and the advent of Concurrent ACFs after 1996 is because previous legislation did not provide an automatic protection mechanism for archaeological resources as described in Section 1.2.1. As a result, regulatory policy regimes did not require proponents to undertake HRM assessments nor implement HRM planning tools (e.g., HRMP and ACFMP). Data presented in Figure 19 does not include the 831 Regime Change ACFs recorded in association with the Williston Lake Reservoir (Appendix C), nor ACF cases from authorized HRM assessment on other operating reservoirs around the province.

The increase in the frequency of informant reports and subsequently, the authorized responses to chance finds show that HRM planning tools are working in practice. Data also shows that Human Remains and Critical Path ACFs occur far too frequently. Changes to BC's HRM policy in the 1990s mark an abrupt change that forced regulators and development proponents to assess archaeological resources on public and private land in advance of project approval and to plan for chance finds during construction (see Section 1.2.1). These changes reflect an increase in the value society places on heritage resources, although all individuals may not share the same sense of

heritage stewardship or know what to do should a chance find occur. Costs associated with fieldwork on ACF cases can be substantial, an approximate range of \$25,000 to \$100,000 per case can be an onerous unanticipated cost that can affect the economic viability of small projects like home renovations. Field effort data analyses reveal that costs to residential development proponents are much higher than other proponents. Data also shows that ACF cases are reported on residential developments with more frequency than all other sectors, except power generation.

During the 1990s, BC was beginning to force all development proponents to follow a user-pay system for HRM assessment and mitigation. The system includes planning for and managing archaeological chance finds. Non-archaeologist informants play a crucial role in reporting finds and ensuring construction practices comply with societal values, a project's HRMP, and ACFMP. The involvement of environmental and Indigenous community monitors during a project's construction phase is a step in the right direction. Two projects are described in Section 1.7 where an initial response to a chance find report led to the discovery of multiple archaeological sites (Seip et al. 2012; Nicholls et al. 2008). Where regulatory approval and HRM assessment completion timing forces practice deviations from EIA policy (Section 1.4.1.), HRM construction monitoring effort is an appropriate recommendation. ACFMP training for a broader audience on construction sites is also appropriate in many circumstances. According to the data, more HRM professionals in construction monitoring roles should result in an even higher frequency of chance find reports and authorized responses.

4.3. ACF Reporting and Archaeological Site Types

Based on all the ACF data amassed (Appendices A, B, and C), the most oft-cited reason for recording an ACF in the PHR is because of changes to HRM policy (Appendix C). When the analysis is limited to authorized chance find responses (Appendix B), the discovery of a new archaeological site during construction work is the most frequently cited reason for reporting an ACF (Figure 13, Section 3.2.2). Where HRM assessment is complete, undocumented archaeological sites are still likely to be present and found during large-scale ground disturbances. Unrecorded sites are also likely to be identified during HRM assessment of gaps in areas of archaeological potential (see Section 1.3). Chance finds involving human remains are the most frequently newly recorded archaeological sites; whereas, lithic sites are the most common site type found during

remedial HRM assessment or in assessment gaps (Figure 19). This result evidences a deviation between practice and policy. Deviation occurs when new archaeological sites are identified after project approval and require subsequent authorized HRM assessment and mitigation. Five Concurrent ACF cases had HRM responses authorized by an active Section 14 *Heritage Conservation Act* (1996) permit when the initial informant report was received. As discussed in Section 1.3.1, chance finds and sites found after construction commences are subject to EIM measures. EIM methods are implemented to remediate unauthorized damages and mitigate future proposed impacts. Proponents were able to implement avoidance measures that limited further damage to 32% of all ACF cases. In most ACF cases, additional impacts to archaeological resources were necessary to complete ground-disturbing construction activities. In the Regime Change ACF cases, additional site impacts will occur as the hydroelectric generating facility discussed in Section 1.7.3 carries on with operations.

Within the new sites found, archaeological sites that contain human remains are most commonly reported, followed closely by lithic sites (Figure 8). The Regime Change ACF dataset is comprised entirely of lithic sites. The reason why human remains are reported most frequently in the ACF cases remains a mystery. Part of the reason could be attributed to the recognizability of archaeological bone by untrained informants, compared to stone chipping detritus or changes in soil colouration. Another contributing factor could be the common knowledge shared by construction contractors and the public, that when human remains are unearthed, all land altering activity should stop, the location secured, and local authorities contacted. Local policing authorities are the apparent default contact for most people when suspected human remains are found. This initial step is consistent with policy (Vancouver Board of Parks and Recreation 2015:2-15; Parks Canada 2017b:3).

Non-Permit ACFs (Appendix A) require an informant that is operating under an existing or de facto ACFMP, or perhaps the Archaeology Branch's *Found Human Remains Protocol* (Archaeology Branch 2018c), or other online resources (Archaeology Branch 2018b; 2018d; and 2018g). Private citizens and archaeologists identify archaeological sites in opportunistic scenarios and a variety of reporting mechanisms exist, but they are not highly publicized. Archaeological sites found and documented in the absence of authorization constitute a significant portion of the collected ACF data, and there are many more undiscovered Non-Permit ACF examples remaining in the

PHR. In the end, if a farmer picks up a projectile point and brings it to the museum for identification, they are in contravention of Section 13 of the *Heritage Conservation Act* (1996).

Despite the moderate to high frequency of occurrence, analysis of Non-Permit ACF data is lacking. It remains that some citizens and archaeologists are strong local advocates for the protection and proper management of the heritage resources located in their communities. For HRM professionals, reporting an ACF may be as simple as a brief phone call to familiar Archaeology Branch staff. In many instances, HRM professionals stand to benefit financially from future HRM assessment requirements associated with the chance finds they report, a brief discussion on ethics surrounding this practice occurs in Section 1.4.9. For example, there is potential for short-term gain from consulting fees needed to implement subsequent authorized HRM assessment. There are also long-term benefits for the archaeological record derived from HRM professionals acting as informants. Many HRM professionals volunteer time to develop the local archaeological record and promote heritage stewardship. Their work serves to encourage chance find reporting, thwart vandalism, and deter unauthorized impacts to protected archaeological resources.

Human Remains, Concurrent and Critical Path ACFs are highly dependent on informant reports by non-archaeologists. Informants range from homeowners (e.g., DcRt-9:30) to heavy equipment operators who discover archaeological materials while rebuilding or excavating (e.g., DcRu-45:24). Environmental and Indigenous community construction monitors are also responsible for being informants during the construction of larger projects. More complex risk situations arise when chance finds occur because development proponents chose to ignore HRM risk mitigation best practices (Archaeology Branch 1989:6; Stapp and Longenecker 2009) or the recommendations of HRM professionals (see Section 1.2).

The graph in Figure 20 illustrates the reason for an informant's report using the simplified archaeological site types. In many instances, human remains are within shell midden, which is also highly recognizable by non-archaeologists. Previous analysis indicates that 21 ACF cases are reports of impacts on human remains in shell midden (Figure 8). However, when using the ACF typology as the base filter criteria in Excel, the two archaeological site types are mutually exclusive in the analysis results.

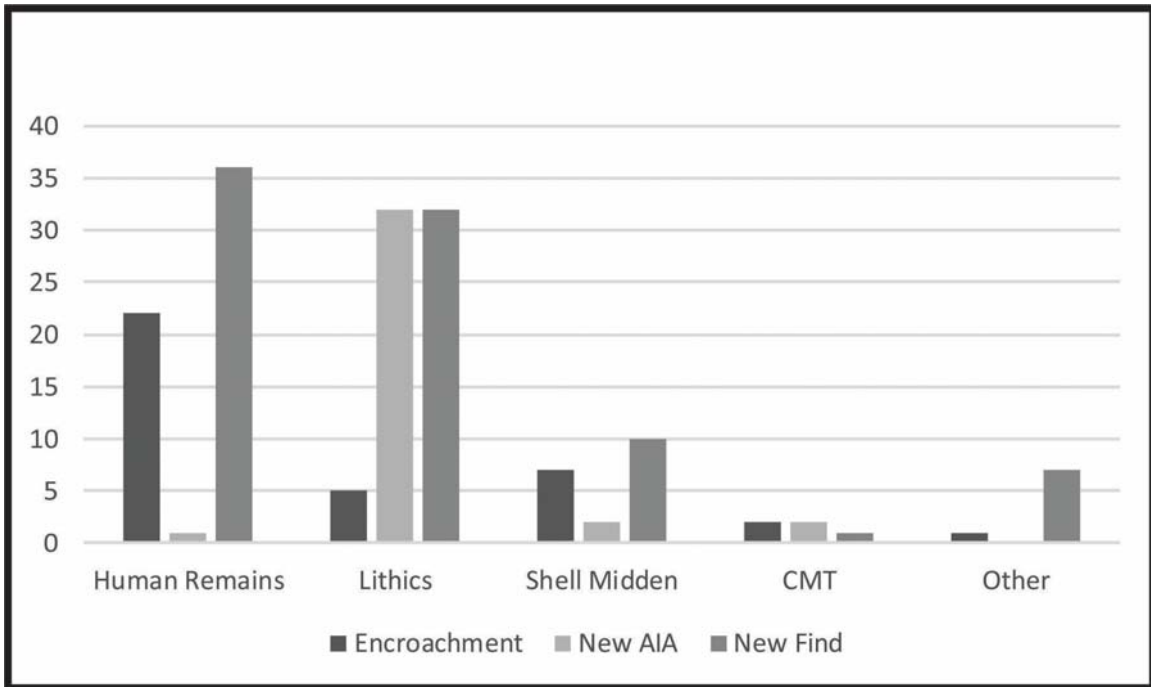


Figure 20. ACF report reasons by archaeological site type.

With one exception, the reasons for informant reports of Human Remains ACFs are because of encroachment or because the remains constitute a newly recorded site found during construction. As described in Section 1.7, the Galore Creek and Bear Mountain projects document multiple ACF cases involving mainly lithic sites. In both cases, a chance find report ultimately led to the identification and recording of additional unauthorized impacts on archaeological sites. This scenario is like Regime Change ACFs (Appendix C), where a few informant reports resulted in recording several hundred discrete archaeological site locations. Each of BC’s common archaeological site types has been subject to authorized HRM work resulting from an informant reporting a chance find. Informants have reported encroachments to recorded archaeological sites and impacts on unrecorded, protected archaeological resources. Encroachments to recorded archaeological sites are avoidable with HRM professional involvement ahead of ground altering activities. More effort is needed to protect cemeteries and other unmarked burial grounds from encroachments.

Of the Human Remains ACFs, a significant proportion is newly recorded site occurrences. The high number of newly recorded sites indicate that archaeological potential models are not able to, or perhaps not formulated to, effectively predict this archaeological site type. Also, authorized methods for HRM assessment are biased

toward identifying archaeological sites containing shellfish remains, CMTs, and lithic detritus. Additional research may be needed to inform more valid assessments of archaeological potential related to pre-contact human remains. Additional efforts are needed to reduce the number of future encroachments, and Human Remains ACFs, particularly those involving remains of Indigenous descent. Data queries summarized in Table 11, Section 3.1.3 shows that Human Remains ACFs occur in all of BC's culture regions and varied environments from the edges of receding glaciers to coastal beaches.

4.4. Land Ownership and Environmental Setting

As discussed in Section 1.3, jurisdiction over archaeological resources on public and private lands in BC resides with the Archaeology Branch of FLNRORD. HRM assessment of archaeological resources on federal land does not require provincial authorizations. However, chance find reports from discoveries on federal land occur in the data table; these cases are lumped together with those from public land for analysis. Of the project-related ACF cases (Appendix B) 55 occurred on private land and 60 on public land. When omitting federal land, 54 ACFs cases are from public land under the province's jurisdiction (Figure 14).

HRM policy change (i.e., Regime Change ACFs) is responsible for most of the documented unique Borden numbers associated with chance finds. Informant report frequency from finds on public or private land is almost equal. Someone other than the landowner made the majority of informant reports from private land. This trend could be the result of happenstance, where front line field workers are the ones encountering and reporting finds. The lack of landowner reporting may also be evidence of barriers like the perception of self-incrimination; or, could be the result of inactivity when a chance find is initially discovered and reported to superiors internally.

As expected, the frequency of authorized responses to chance find reports on private land increases significantly after revisions to the HRM policy in 1996. Of the 55 ACF cases from private land, HRM permits issued before 1996 authorized less than 26% of responses. A Section 14 *Heritage Conservation Act* (1996) permit authorized the response to approximately 75% of the ACF cases on private land. This result meets with an anticipated increase in reporting of chance finds from private land as a result of

changes to HRM policy. Section 1.2.1 discusses the implications of statutory change in BC's heritage legislation. The analysis result evidences the resource regulator's need for remedial HRM assessment work on projects that escape assessment triggers in project regulatory policy regimes.

Rural and remote environments capture 60% of the ACF cases in the data table. These sites coincide with recreational developments, multi-family residential subdivisions, transportation infrastructure maintenance and construction, oil and gas, and mining projects. As described in Section 1.4, projects in rural and remote areas are reviewed and authorized by FLNRORD, MEM, MoE, OGC, BCEAO, CEAA, and NEB. Where chance finds occur either HRM assessment is absent, or a recorded site was subject to encroachment, or a chance find occurred by the luck of the draw after HRM assessment was complete. Regardless, land altering projects in rural and urban settings on public and private land result in chance finds. Examination of ACF cases in the CRD indicates that archaeological resources on private property in urban and fringe rural areas are approximately equal. However, authorizations from the Archaeology Branch are issued more frequently for ACF cases in the transition zone from urban to rural environments.

4.5. Human Remains Concerns

A recurring theme in the data requires attention; more ACF cases contain human remains than all other archaeological site types. Analysis results in Section 3.1.3 compare Human Remains ACF types encountered by region and their environmental setting. In coastal regions of BC, Human Remains ACFs are found more frequently in urban environments than rural; the opposite is the case in the interior. Predicting the location of human remains protected by the *Heritage Conservation Act* (1996) is not a precise science. The high frequency of Human Remains ACFs compared to others in the data is compelling evidence that more action is needed. The loss of cultural heritage for Indigenous people that results from these chance finds must be assessed on a case by case basis by affected parties.

Indigenous ancestral human remains occur more frequently than historical human remains within the Human Remains ACF cases. An inability to accurately determine ancestry or antiquity of historical human remains in the field increases the

number of ACF cases that required authorization from the Archaeology Branch. In the ACF data, unauthorized impacts on human remains occur across landscapes and environments, regulatory jurisdictions, development sectors, property ownership scenarios, and time. Human Remains ACFs also represents one of the worst-case financial risk scenarios for a project from cost, scheduling, and social perspectives (see Section 1.8). A complete solution to this problem is not easy or evident, but more could be done in policy and practice to create better HRM outcomes for interments of Indigenous ancestry.

4.6. Policy and Practice

Archaeologists in BC interact with HRM policy in statutes, guidelines, special approval conditions, management protocols, and contract conditions. Section 1.5 provides a thorough review of these policies and associated practice. In the process, archaeologists need to generate revenue for their employer. These professionals work alongside Indigenous communities to incorporate HRM policy and custom into their work to meet a project's regulatory requirements. Indigenous policy contributions are welcome additions to the HRM policy universe. These policies roughly parallel provincial HRM policy but may not be aligned entirely with the province regarding the definition of heritage resources, terminology, and chance find response procedures described in Section 1.4.6.

It is common for a project's regulatory policy to require HRM assessment in the planning and design phase, before project approval (see Section 1.2). Practice in BC and the ACF data in this thesis indicate some developments evade triggers for HRM assessment. A review of EIA project documents in Section 1.4.1 identifies that HRM assessment can be ongoing at the time a project proceeds to construction. Early works before construction can adversely affect archaeological resources in the planning and design phase. Projects are subject to financial risk from chance finds and the discovery of new archaeological sites during construction. The Peru LNG project detailed in Section 1.7.5 provides an example of chance finds that occur when a minimalistic HRM assessment occurs before construction begins. The alternative Peruvian and IDB HRM assessment and mitigation process is functional but not suitable for projects in BC. The assessment process is different because archaeological sites receive automatic protection in BC, and regulatory policy requires an assessment of potential project

effects. However, the IDB's need for a detailed HRMP that includes provision for identification of archaeological resources during construction, predicts impacts will occur. Of interest is the project's HRMP which guides subsequent interactions with archaeological resources after a construction impact has occurred.

The literature and many successful past outcomes support BC's current HRM assessment process. Some aspects of the planning documentation for Peru LNG may be candidates for adoption in BC policy. Analyses indicate where HRM professional involvement begins in the project planning and design phase, policy and practice show evidence of alignment. There are many examples of projects in BC that follow the established risk management process, like the Evergreen LRT and CGL projects presented in Section 1.4. Unfortunately, ACF cases evidence projects where HRM professional involvement was absent, outdated, or sidelined. Several ACF cases have resulted from regulators not triggering HRM assessment before project approval or as a condition of approval (see Section 1.7.4).

Data provided elsewhere in this thesis evidences the occurrence of chance finds on large and small projects. More Regime Change ACFs are available in the data, but authorized responses to ACF cases from the construction phase occur with the most frequency over time. Research also revealed that chance finds reports come from all development phases (i.e., planning, construction, and operations), including the time before contemplating development (i.e., Non-Permit ACFs). Regardless of when a chance find occurs, HRM policy outlines shared immediate actions across the policy examined. Where a chance find occurs, all ground-disturbing activities in the vicinity must cease while notifying the appropriate authorities. HRM professionals assess the find and location; then work with regulators and Indigenous Nations to determine appropriate next steps if the find is archaeological. The discovery of human remains is a separate but parallel circumstance that is given special consideration in all chance find policy reviewed. Approval to resume land altering work happens after completing any required HRM mitigation; or, following special archaeological monitoring conditions requested by Indigenous Nations and communicated by the Archaeology Branch in their directives.

A variety of policy considerations can converge on a chance find. The overlap is evident on projects that proceed through multidisciplinary EIA. A project by project

approach to HRM planning and assessment is appropriate for EIA projects and others. Variation in the types of HRM permits issued (Figure 9), and the overlapping regulatory jurisdictions that converge on HRM (Figure 11) are the reasons behind the need for a project-specific HRMP and ACFMP. These planning documents address outstanding HRM assessment, and the variety of chance find scenarios a project might encounter. This customization of approach is also reflected in the ACF typology (Figure 18) and suggested process improvements (Figure 21).

HRM professional practice shift has occurred in response to HRM policy in EIA regulatory policy. Examples of practice discussed in Section 1.4 indicate HRM assessment (e.g., and AIA) is advanced as far as possible before project approval. Ongoing HRM assessment is conducted to fill assessment gaps after project approval. The preparation of an HRMP is a policy requirement. The HRMP is used to manage risk during the construction phase of larger projects. These documents also address the potential for chance finds and provide detailed guidance for a proper response. Guidance for the preparation of HRMPs and ACFMPs from the Archaeology Branch is either absent or is too vague to meet the necessities of practice. Instead, the assumption in policy is that HRM assessment is complete ahead of project approval. Development projects that maintain an active Section 14 *Heritage Conservation Act* (1996) inspection permit for the duration of construction or sector-specific proponents that use blanket inspection permits can respond to a chance find report quickest (see Sections 1.4.3 and 1.4.5).

These observations provide evidence of adapted proponent and HRM professional practice trends. Data analyses also suggest the advent of Concurrent ACFs after 1996; these chance finds are the result of project regulators requiring project-specific HRM assessment, construction monitoring, and associated planning documents as a condition of project approval. HRMPs for projects like Woodfibre LNG, KM LNG, the Evergreen LRT, and CGL projects were not available for review. Their HRMPs should require HRM permits to be in place for ground-disturbing work during the construction phase to meet the conditions of approval. Permitting requirements for an EIA project's future HRM assessment and monitoring requirements, as well as chance finds, are outlined in a project's EAC. Proponents that maintain a sector-specific blanket Section 14 permit like MOTI, forestry companies, or oil and gas companies use the permits to conduct multiple HRM assessments per year. These blanket permits also serve to

reduce administrative timelines and decrease response times. Approval for projects undergoing comprehensive EIA frequently require proponents and their contractors to follow a detailed HRMP that contains an ACFMP and maintain ongoing HRM professional involvement until ground-disturbing activities are complete (see Figure 2).

As discussed in Section 1.3 and shown in Figure 2, with or without an existing HRM permit, the HRM assessment process essentially restarts when an informant makes a chance find report during construction (Unist'ot'en 2019:n.p.; BC Oil and Gas Commission 2019:1-2). This assertion also presents clearly in responses to ACF cases authorized by permits under the *Heritage Conservation Act* (1996). In Figure 9, the analysis notes that since 1996, 77% of permits issued for ACF cases were Section 14 *Heritage Conservation Act* (1996) permits. As discussed in Section 1.3.1, Section 14 permits do not authorize large-scale mechanical impacts to archaeological resources. In the context of ACFs, Section 14 permits are used to assess confirmed ACF cases, conduct remedial HRM assessment of projects that escaped regulatory triggers, and to mitigate identified impacts. A stand-alone Section 12 *Heritage Conservation Act* (1996) site alteration permit authorized HRM responses in 22% of cases. Hurried approaches to HRM mitigation, coupled with the initial unauthorized impact results in sub-optimal outcomes for all Critical Path and Concurrent ACFs. One revelation from the analysis is the compounding impacts imposed on chance find sites from construction, testing, mitigation, and site removal. Compounding impacts are a consideration when assessing the frequency, range, duration, and cumulative effects for newly recorded sites as required in the Archaeology Branch guidelines (Archaeology Branch 1989).

In the aftermath of an informant report, there is alignment in policy and practice when the Archaeology Branch regulates HRM assessment and mitigation authorizations under the *Heritage Conservation Act* (1996). Where regulators fail to trigger HRM assessment, it creates risk for archaeological resources, project stakeholders, and Indigenous people. Premature EIA project approval discussed in Section 1.4.1 contributes to risk when HRM assessment and associated effects assessments cannot contemplate all archaeological sites. Newly recorded archaeological sites in HRM assessment gaps, as well as other chance finds reported during construction, are less likely to be avoided by project re-design. Any newly recorded site triggers unnecessarily complex HRM policy scenarios. Authorized mitigation measures for newly recorded

archaeological sites found during construction consistently result in sub-optimal outcomes for archaeological resources and buried human remains.

Overcompensation for unauthorized impacts on archaeological resources is appropriate in some circumstances and is achievable using compensation-in-kind agreements between affected parties (see Section 1.9). This policy mechanism is underutilized and only documented in two ACF cases (i.e., DcRu-25:47 and FITe:33:107). Considering this, and borrowing some concepts from international practice, a process improvement model was developed (Figure 21). The model provides a conceptual process for an EIA project where chance finds are bound to occur, and stakeholders determine compensation-in-kind parameters at the time of project approval. The resultant negotiated chance find response parameters form part of the project's HRMP and ACFMP. An underlying assumption of this approach is that HRM assessment is ongoing and well advanced before project approval, as occurs in current practice.

In this conceptual model, authorizations for chance find responses are already in place upon discovery of an archaeological site, or when an encroachment impacts a recorded site. An estimated value that is equal to the cost of consulting fees for remediation of unauthorized impacts is necessary at each chance find. At the same time, valuations can consider any proposed future impacts. The total valuation can then be used to determine compensation-in-kind payments or the monetary value of fines for enforcement. An impact valuation can be accomplished using existing literature and standards of practice in the SAA's *Professional Standards for the Determination of Archaeological Value* (Society for American Archaeology 2003:n.p.) and guidance from the National Park Service's *Technical Brief 20* (McAllister 2007:1-35). Archaeological value is assessed based on the change in site condition before and after the impact. Where unauthorized impacts occur, it may be appropriate to apply an offsetting calculation to allow for impact overcompensation. Determining an offsetting formula is beyond the scope of this thesis. However, formulas exist to calculate offsets for fisheries habitat enhancement projects (Bradford et al. 2016:6); and, models for proponent-funded biodiversity offsetting programs could be adapted for HRM purposes (Poulton 2014:13). The conceptual process in Figure 21 leverages existing policy to minimize administrative and fieldwork timelines, where appropriate. This alternative process follows established HRM risk management processes and BC's HRM policy but requires planning and consultation with Indigenous Nations for inclusion in a project's HRMP..

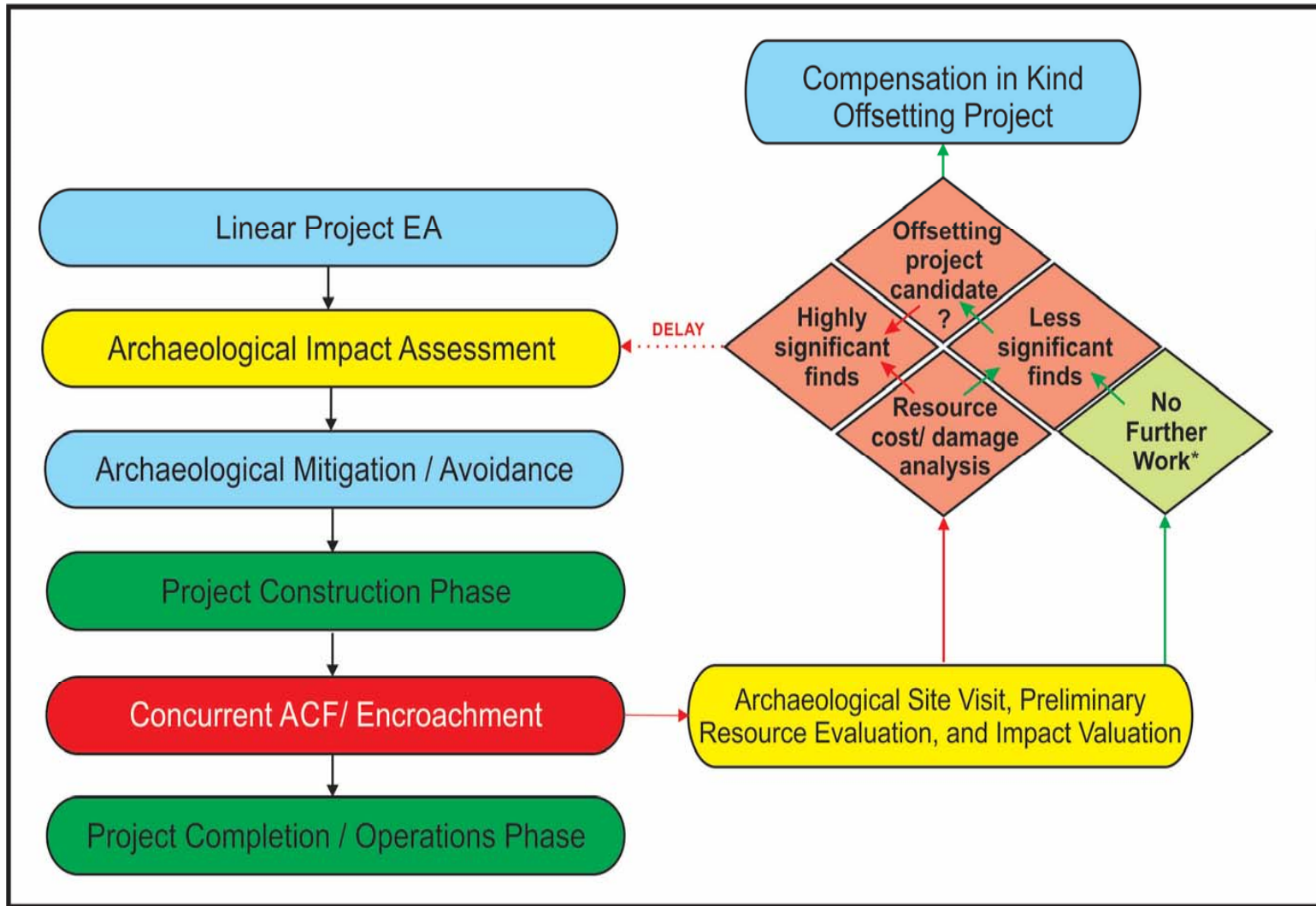


Figure 21. Alternative compensation-in-kind process for Concurrent ACFs.

The *Heritage Conservation Act* (1996) lacks a self-triggering mechanism for HRM assessment. Instead, HRM policy is reliant on regulatory policy regimes, a three-question checklist from FLNRORD, and proponents to trigger HRM assessment (see Section 1.4). Given that archaeological sites are automatically protected in BC, these efforts do not seem like enough to manage the province's unrecorded heritage resources, nor to manage risk for development proponents. As described in Section 1.4.7, some municipalities rely on the Archaeology Branch to trigger HRM assessment for development referrals, and as a result these lower-tier governments upload risk to the province and proponents. This practice serves to elevate the risk for chance finds because the questions in the FLNRORD checklist are not always specific enough to trigger HRM assessment.

Appropriate HRM protection and avoidance recommendations that include periodic construction monitoring by HRM professionals can help avoid the high number of encroachments showing in the data (Figure 13). HRM professionals can work with proponents and engineers to develop viable avoidance schemes that protect recorded archaeological resources. Where HRM assessment has been conducted the resultant HRM reports and acceptance letters from the Archaeology Branch provide minimalistic direction to proponents. In the event of a chance find after completion of an AIA, standard limitations in concurrence letters and HRM reports are the minimum levels of chance find policy.

Larger projects with multi-year construction phases are wise to maintain an active Section 14 *Heritage Conservation Act* (1996) inspection permit for the duration of construction-related ground disturbing activities from early works to operations. As discussed in Section 1.4, this permit may be a regulatory requirement in the terms and conditions associated with a project's regulatory approval. Where a permit is in place, Concurrent ACFs can still occur, but cause less delay because the next steps can be authorized quickly; unless a Human Remains ACF is reported or the find is highly significant. Authorization of compensation-in-kind strategies in advance could allow for one-time payments that allow proponents to avoid delays in some instances (Figure 21). Instead of proponents spending money to recover broken lithic detritus from a back-dirt pile in an active construction zone, the value of the one-time payment could be adjusted using an offsetting calculation that achieves equivalence (Bradford 2016:3) or overcompensates affected parties to offset planned or unplanned impacts (Poulton

2014:13). Payments from a proponent could then be used to fund meaningful HRM research elsewhere and later while allowing construction to continue.

As data collection and analysis advanced, it became clear that current HRM policy and legislation for addressing archaeological human remains were deficient. Reasons for the deficiency were not immediately apparent because policies show alignment across regulatory policy regimes. In each regulatory policy, specific elements reflect on chance finds and the discovery of human remains. Professional practice reflects these policies based on the data and HRM reports reviewed. As shown above (Figures 8, 17, 18, and 19) Human Remains ACFs are the most oft-reported archaeological site types before and after 1996 – so the current process is working? The observed deviation between policy and practice is in the regulatory process for smaller developments in rural and urban transition zones, especially where HRM assessment triggers are absent, or project regulators are ineffective.

A further policy and practice divergence influencing the high frequency of reporting for human remains is related to the inclusion of pre-colonial interments with archaeological resources under the *Heritage Conservation Act* (1996). Also, encroachments to recorded archaeological sites that are known to contain human remains result in too many ACF reports. It is uncertain if the Archaeology Branch's found human remains policy (Archaeology Branch 1990) is enough when compared to the specificity achieved in the USA with *Native American Graves Protection and Repatriation Act* (1990).

4.7. Recommendations

Chance finds happen! They almost invariably cause cost and schedule issues for projects as well as community trauma. Practice and policy require careful attention because both can be refined to limit proponent risk and achieve better outcomes for chance finds. Where proponents have exercised due diligence in HRM assessment and mitigation, they should not be penalized with unnecessary construction delays. Instead, rewards might be appropriate for proponents that adhere to HRM policy and process. Rewards could take the form of advantageous chance find management provisions in their HRMPs. One way to assist with this is for the province to mandate that project-specific HRM permits be in place to facilitate construction monitoring by HRM

professionals and to manage Concurrent ACFs. Alternatively, provisions could allow for emergency HRM permit issuance where Critical Path ACFs occur. Also, proponents should be eligible for concessions when chance finds create undue service delivery burdens on taxpayers. To affect change, the Archaeology Branch should consider creating specific guidelines for chance finds and a template table of contents for HRMPs and ACFMPs. Language in the various chance find policy elements described in Chapter 1 needs harmonization so that BC's automatically protected archaeological resources are separate from the rest, or different chance find protocols apply to non-archaeological heritage resources. Other special provisions may be appropriate in HRM policy for proponents that undertake single-family residential developments on their owned private land, or other proponents with projects that are mostly revenue neutral, or projects funded by taxpayers.

For larger projects, HRM professionals should be recommending a systematic archaeological monitoring program for areas where subsurface testing was inconclusive or spot-checks for areas where in-field assessment indicates low archaeological potential. HRM reports and HRMPs for a project need to state details about any HRM assessment gaps. The Archaeology Branch and project regulators should encourage proponents to conduct more HRM construction monitoring, even if limited to periodic spot checks, or continuous monitoring for archaeologically sensitive areas.

For smaller projects that do not trigger HRM assessment (e.g., installation of a residential lawn sprinkler system), the province should provide a service like BC OneCall for recorded archaeological sites. BC OneCall is used to identify buried utilities like gas, electrical, water, and sewer. Information is sought from BC OneCall by contractors, landowners, and development proponents on request, free of charge, and before undertaking ground-disturbing activities. Adding a standard ACFMP statement to all search results and adding recorded archaeological site locations to the purview of BC OneCall is one way to limit encroachments and may contribute to reducing the number of unauthorized impacts to Indigenous ancestral human remains on public and private property.

Detailed archaeological site identification training for front-line environmental monitors is warranted where HRM construction monitoring is not required. Front-line workers involved in initial land altering activities during construction are the primary

target audience. Environmental and Indigenous community monitors frequently become informants in their role and may not be equipped to make effective interim avoidance measures. Training along with public dissemination of information from chance finds are vital because they assist with encouraging a heritage stewardship culture across contractors, monitors, development proponents, and projects.

The Archaeology Branch should consider instituting a tracking mechanism for ACF cases in the PHR. Suggested changes are limited to adding a column to the PHR and an associated tick box on archaeological site inventory forms. Tracking chance finds for easy analysis could assist with identifying trends and managing risk. Better tracking may also contribute to determining the actual cost of responding to the variety of ACF types from various scenarios.

The province should impose planning standards on municipal governments. These standards should tie HRM assessment triggers into community planning documents and identify where HRM fits into the municipality's internal development processes. Municipalities should provide planning staff with enhanced training about the archaeological assessment process, and specific directions should be given to proponents indicating what to do when a chance find occurs. Front-line workers in the field should receive artifact identification training and have access to an established chance find reporting process.

Proponents should determine a contingency budget for chance finds. Contingency budgets could follow the range of average fieldwork costs presented in Section 3.4. Proponents also need to consider potential costs for additional HRM assessment, mitigation, and planning requirements contained within project-specific approval conditions. Where early EIA project approval occurs, risks to project costs from chance finds or newly discovered sites are evident. Risk assessments should also consider that subsurface conditions in recorded archaeological sites often change from that presented in baseline HRM assessment reports and the authorized scope of mitigation work is always subject to change based on results. Financial risk is most evident where HRM assessment is incomplete, and a subsequent chance find report involves significant archaeological resources or human remains during the construction phase. Some form of chance find insurance may be appropriate for specific projects if

proponents can find an insurer wise enough to understand the risks and brave enough to underwrite a policy.

Indigenous Nations should keep leveraging relationships with HRM professionals and the government to encourage the fair and respectful treatment of ancestral human remains and items of cultural patrimony. Private landowners and other proponents undertaking land altering activities need to work toward reducing immediate damage to Human Remains ACFs and work together with archaeologists and Indigenous Nations to prevent unauthorized impacts to all human remains.

4.8. Avenues for Future Research

The total collected ACF data in this thesis is an incomplete dataset. Search parameters used to find Non-Permit ACFs in the PHR were minimalistic and were intended to focus on a portion of the PHR that could be used to acquire a representative sample of these ACF cases. This sample is a contribution to the overall representative sample of ACF data amassed in this thesis. Similarly, there is a five-year data gap in the HRM reports reviewed from PARL; and, Regime Change ACFs are limited to those associated with the Williston Lake Reservoir. The dataset does not include sites found in association with other similar remedial HRM assessment work at other reservoirs around the province. Compilation of a comprehensive Regime Change ACF dataset would take significant effort, well beyond the scope of this thesis.

Several HRM reports for completed, and ongoing EIA projects where Crown corporations are the proponent are not available on PARL (e.g., the Interior to Lower Mainland Transmission Line and the Site C Clean Energy Project). A recent article in the Vancouver Sun identifies chance find responses for archaeological and palaeontological resources at Site C. Further, the article cites a recent request for proposal includes scoping for chance finds (Vancouver Sun 2019:1). A review of final HRM reports for Site C would provide additional Concurrent ACF cases. The release of Site C's Bison excavation photographs in the media is an innovative method that contributes to preservation-by-record goals for palaeontological resources. The public is informed about responses to chance finds and the article is a positive piece about a chance find from a controversial project (Vancouver Sun 2019:1). Review of HRM reports with more

examples of authorized responses to Concurrent ACFs could provide a better understanding of the range of authorized HRM next steps, timelines, and outcomes.

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Appendix A.

Non-Project Archaeological Chance Finds

Appendix A: Non-Project Archaeological Chance Find Dataset

OBJECT ID	BORDEN NUMBER	TY TYPOLOGY
40	DcRv-59	PRECONTACT,Cultural Material,Subsurface,Shell Midden
41	DcRv-56	PRECONTACT,Cultural Material,Subsurface,Shell Midden
42	DcRv-49	PRECONTACT,Cultural Material,Subsurface,Shell Midden
44	DcRv-41	PRECONTACT,Cultural Material,Subsurface,Shell Midden PRECONTACT,Cultural Material,Surface,Lithics
47	DcRv-4	PRECONTACT,Human Remains,Burial PRECONTACT,Cultural Material,Surface,Lithics
263	EfRI-14	PRECONTACT,Human Remains,Burial
368	EcQa-4	PRECONTACT,Other Feature,Cultural Depression,Function Unassigned
295	EeRk-11	PRECONTACT,Cultural Material,Surface,Lithics
670	GaSm-2	PRECONTACT,Cultural Material,Surface,Lithics STR,STR,STR,STR
956	DgRq-8	PRECONTACT,Cultural Material,Subsurface,Lithics STR,STR,STR,STR
2559	HdRe-12	PRECONTACT,Cultural Material,Surface,Lithics STR,STR,STR,STR
2865	DgRw-197	PRECONTACT,Ceremonial/Religious Feature,Rock Art,Petroglyph
2955	DcRu-58	PRECONTACT,Cultural Material,Surface,Lithics
2946	DjPv-5	PRECONTACT,Cultural Material,Surface,Lithics
2947	DjPv-7	PRECONTACT,Cultural Material,Subsurface,Lithics
3100	DkPw-24	PRECONTACT,Cultural Material,Surface,Lithics
3132	EaPu-1	PRECONTACT,Cultural Material,Surface,Lithics
3111	DcRu-119	PRECONTACT,Cultural Material,Surface,Lithics
3112	DcRu-94	PRECONTACT,Cultural Material,Subsurface,Shell Midden
3094	DkPw-16	PRECONTACT,Cultural Material,Surface,Lithics
3162	DgSj-13	PRECONTACT,Cultural Material,Subsurface,Shell Midden STR,STR,STR,STR
3378	DlPw-5	PRECONTACT,Cultural Material,Surface,Lithics
3454	DcRt-67	PRECONTACT,Cultural Material,Surface,Lithics
3458	DcRt-35	PRECONTACT,Cultural Material,Surface,Lithics
3415	DgRw-15	PRECONTACT,Cultural Material,Subsurface,Shell Midden
3450	DcRv-29	PRECONTACT,Human Remains,Burial
3701	EeRk-20	PRECONTACT,Cultural Material,Surface,Lithics
4228	DjSf-12	PRECONTACT,Cultural Material,Subsurface,Shell Midden
4725	DhRI-31	PRECONTACT,Cultural Material,Surface,Lithics
4790	DcRv-86	PRECONTACT,Cultural Material,Subsurface,Shell Midden STR,STR,STR,STR
5051	DiRj-31	PRECONTACT,Other Feature,Cultural Depression,Function Unassigned PRECONTACT,Habitation Feature,Cultural Depression,Housepit
5107	EgRj-12	PRECONTACT,Cultural Material,Surface,Lithics
5633	DcRt-137	PRECONTACT,Cultural Material,Subsurface,Shell Midden
6139	DhRI-11	PRECONTACT,Cultural Material,Surface,Lithics
6294	DcRu-34	PRECONTACT,Cultural Material,Surface,Lithics STR,STR,STR,STR
6301	DcRu-53	PRECONTACT,Cultural Material,Subsurface,Shell Midden
6420	DcRu-79	PRECONTACT,Cultural Material,Surface,Lithics
6422	DcRu-28	PRECONTACT,Cultural Material,Surface,Lithics
6400	DkPw-14	PRECONTACT,Cultural Material,Surface,Lithics
6401	DkPw-25	PRECONTACT,Cultural Material,Surface,Lithics
6439	DdRu-80	PRECONTACT,Cultural Material,Surface,Lithics
6424	DcRu-29	PRECONTACT,Cultural Material,Subsurface,Shell Midden
6425	DcRw-31	PRECONTACT,Cultural Material,Subsurface,Shell Midden
6698	GIRa-3	PRECONTACT,Cultural Material,Surface,Lithics
6679	HeRf-5	PRECONTACT,Cultural Material,Surface,Lithics
6767	DcRv-54	PRECONTACT,Cultural Material,Subsurface,Shell Midden
6736	DgRn-3	PRECONTACT,Cultural Material,Surface,Lithics
6769	DcRv-34	PRECONTACT,Human Remains,Burial
6986	EhRa-7	PRECONTACT,Subsistence Feature,Cultural Depression,Cache Pit PRECONTACT,Habitation Feature,Cultural Depression,Housepit
7004	EeRn-14	PRECONTACT,Cultural Material,
6883	EdSm-9	PRECONTACT,Ceremonial/Religious Feature,Rock Art,Petroglyph
7089	EkQe-3	PRECONTACT,Cultural Material,Surface,Lithics
7025	EeRk-5	PRECONTACT,Cultural Material,Surface,Lithics STR,STR,STR,STR
8246	DcRt-33	PRECONTACT,Cultural Material,Surface,Lithics
8523	FbRn-31	PRECONTACT,Other Feature,Cultural Depression,Function Unassigned General Features, PRECONTACT,Habitation Feature,Cultural Depression,Housepit
8729	DiRs-3	PRECONTACT,Cultural Material,Surface,Lithics
9624	DjPx-3	PRECONTACT,Cultural Material,Surface,Lithics
9022	IjSs-1	PRECONTACT,Subsistence Feature,Cultural Depression,Cache Pit
9298	DhRk-3	PRECONTACT,Cultural Material,Surface,Lithics
9464	DhRj-5	PRECONTACT,Other Feature,Cultural Depression,Function Unassigned
9648	DcRu-27	PRECONTACT,Cultural Material,Subsurface,Shell Midden
9643	DcRu-60	PRECONTACT,Cultural Material,Surface,
9641	DcRu-50	PRECONTACT,Cultural Material,Surface,Lithics
9644	DcRu-49	PRECONTACT,Cultural Material,Surface,Lithics
9645	DcRu-39	PRECONTACT,Cultural Material,Surface,Lithics

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OBJECT ID	BORDEN NUMBER	TY TYPOLOGY
9603	DIPv-3	PRECONTACT,Cultural Material,Surface,Lithics
9821	DdRu-79	PRECONTACT,Cultural Material,Surface,Lithics
9823	DdRu-96	PRECONTACT,Cultural Material,Subsurface,Shell Midden STR,STR,STR,STR
9797	DkPw-21	PRECONTACT,Cultural Material,Surface,Lithics
9798	DkPw-4	PRECONTACT,Cultural Material,Surface,Lithics
10695	DbRv-5	PRECONTACT,Ceremonial/Religious Feature,Rock Art,Petroglyph
10144	DcRv-3	PRECONTACT,Earthwork Feature,Mound
10086	DIPw-4	PRECONTACT,Cultural Material,Surface,Lithics
10115	DgRm-4	PRECONTACT,Cultural Material,Surface,Lithics
10132	DeRt-34	PRECONTACT,Cultural Material,Subsurface,Shell Midden PRECONTACT,Cultural Material,Surface,
10136	DcRx-2	PRECONTACT,Cultural Material,Subsurface,Shell Midden
10383	EgRi-14	PRECONTACT,Cultural Material,Surface,Lithics
10554	EeRi-16	PRECONTACT,Human Remains,Burial PRECONTACT,Cultural Material,Surface,
10781	GiRi-7	PRECONTACT,Cultural Material,Subsurface,Lithics
10952	DiSc-7	PRECONTACT,Cultural Material,Subsurface,Shell Midden
11011	DhRi-14	PRECONTACT,Habitation Feature,Cultural Depression,Housepit
11066	DgRq-7	PRECONTACT,Cultural Material,Surface,lithics
12529	DeSg-70	TRADITIONAL USE,Culturally Modified Tree,bark-stripped,tapered scar
13205	DcRu-121	PRECONTACT,Cultural Material,Surface,Lithics
12889	DhRi-10	PRECONTACT,Cultural Material,Surface,Lithics
12890	DgRi-9	PRECONTACT,Habitation Feature,
12690	HbRa-4	PRECONTACT,Cultural Material,Surface,Lithics
12901	DeRw-3	PRECONTACT,Cultural Material,Surface,Lithics
13193	DkPw-26	PRECONTACT,Cultural Material,Surface,Lithics
13194	DkPw-23	PRECONTACT,Cultural Material,Surface,Lithics
13240	DgRn-6	PRECONTACT,Habitation Feature,
13515	DgRn-5	PRECONTACT,Cultural Material,Surface,Lithics
13803	EeRi-162	PRECONTACT,Cultural Material,Surface,Lithics
13536	DcRv-51	PRECONTACT,Cultural Material,Subsurface,Shell Midden
13900	EfQu-7	General Features, PRECONTACT,Habitation Feature,Cultural Depression,Housepit
13541	DcRv-26	PRECONTACT,Cultural Material,Surface,Lithics
13542	DcRv-18	PRECONTACT,Cultural Material,Surface,Lithics
13544	DcRt-62	PRECONTACT,Cultural Material,Surface,Lithics STR,STR,STR,STR
14201	GdRq-1	PRECONTACT,Cultural Material,Surface,Lithics
14350	DiSh-2	PRECONTACT,Cultural Material,Surface,Lithics
14224	GiRi-6	PRECONTACT,Cultural Material,Surface,Lithics
15799	DcRu-591	PRECONTACT,Cultural Material,Subsurface,Shell Midden
15565	DcRv-66	PRECONTACT,Cultural Material,Subsurface,Shell Midden
15905	FjTi-10	PRECONTACT,Subsistence Feature,Fishing,Fish Trap
16151	HbRa-3	PRECONTACT,Cultural Material,Surface,Lithics
16363	DeRw-1	PRECONTACT,Cultural Material,Surface,Lithics
16501	DjPv-6	PRECONTACT,Cultural Material,Surface,Lithics
16640	DkPw-22	PRECONTACT,Cultural Material,Surface,Lithics
16506	DcRu-48	PRECONTACT,Human Remains,Burial PRECONTACT,Cultural Material,Subsurface,Shell Midden
16507	DcRu-73	PRECONTACT,Cultural Material,Subsurface,Shell Midden
16943	GiRa-2	PRECONTACT,Cultural Material,Surface,Lithics
17029	DcRv-47	PRECONTACT,Cultural Material,Subsurface,Shell Midden PRECONTACT,Cultural Material,Surface,Lithics
17032	DcRv-37	PRECONTACT,Human Remains,Burial
17033	DcRv-35	PRECONTACT,Cultural Material,Surface,
17034	DcRv-28	PRECONTACT,Cultural Material,Subsurface,Shell Midden
17265	EeRi-163	PRECONTACT,Cultural Material,Surface,Lithics
17275	EeRi-62	PRECONTACT,Other Feature,Cultural Depression,Function Unassigned
17361	EcQa-3	PRECONTACT,Other Feature,Cultural Depression,Function Unassigned
17833	DiSd-9	PRECONTACT,Cultural Material,Subsurface,Shell Midden PRECONTACT,Cultural Material,Surface,
18593	DcRu-564	PRECONTACT,Cultural Material,Surface,Lithics
19207	EfQu-4	General Features, PRECONTACT,Cultural Material,Surface,Lithics PRECONTACT,Habitation Feature,Cultural Depression,Housepit
19991	DgQd-16	PRECONTACT,Cultural Material,Surface,Lithics
19756	DgRw-47	PRECONTACT,Human Remains,Burial
19704	DhRj-1	PRECONTACT,Cultural Material,Surface,Lithics
19977	DgQi-4	PRECONTACT,Cultural Material,Surface,Lithics
19559	EfSr-5	PRECONTACT,Human Remains,Burial
20377	DcRv-53	PRECONTACT,Cultural Material,Subsurface,Shell Midden
20308	DjPs-2	PRECONTACT,Ceremonial/Religious Feature,Rock Art,Petroglyph
20383	DcRt-37	PRECONTACT,Cultural Material,Surface,Lithics
20033	DdRu-31	PRECONTACT,Cultural Material,Subsurface,Lithics

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OBJECT ID	BORDEN NUMBER	TY TYPOLOGY
20283	GIRa-4	PRECONTACT,Cultural Material,Surface,Lithics
20010	DjPv-9	PRECONTACT,Cultural Material,Surface,Lithics
20038	DdRu-93	PRECONTACT,Cultural Material,Surface,Lithics STR,STR,STR,STR
20595	EhRv-3	PRECONTACT,Cultural Material,Surface,Lithics
20770	DjSa-39	PRECONTACT,Cultural Material,Subsurface,Shell Midden
20429	DjQv-2	PRECONTACT,Human Remains,Burial
20919	FhRa-1	PRECONTACT,Cultural Material,Surface,Lithics STR,STR,STR,STR
22618	DeRt-39	PRECONTACT,Cultural Material,Subsurface,Shell Midden
22569	IgRo-1	PRECONTACT,Cultural Material,Surface,Lithics
23159	DeRv-132	PRECONTACT,Cultural Material,Surface,Lithics
23251	DjPx-4	PRECONTACT,Cultural Material,Surface,Lithics
23162	DfRv-94	PRECONTACT,Human Remains,Burial
23263	DjPx-7	PRECONTACT,Cultural Material,Surface,Lithics
23449	HaRj-8	PRECONTACT,Cultural Material,Subsurface,Lithics PRECONTACT,Cultural Material,Surface,Lithics
23252	DjPx-10	PRECONTACT,Cultural Material,Surface,Lithics
23253	DjPx-11	PRECONTACT,Cultural Material,Surface,Lithics
23311	DIRu-53	PRECONTACT,Cultural Material,Subsurface,Shell Midden
23429	DcRw-10	PRECONTACT,Cultural Material,Subsurface,Shell Midden
23435	DdRu-95	PRECONTACT,Cultural Material,Subsurface,Shell Midden STR,STR,STR,STR
23485	HbRf-4	PRECONTACT,Human Remains,Burial
23594	HcRg-16	PRECONTACT,Cultural Material,Surface,Lithics STR,STR,STR,STR
23407	DkPw-7	PRECONTACT,Cultural Material,Surface,Lithics
23440	DdRu-82	PRECONTACT,Cultural Material,Surface,Lithics STR,STR,STR,STR
23442	DfRv-104	PRECONTACT,Cultural Material,Surface,lithics
23773	DcRt-32	PRECONTACT,Cultural Material,Surface,
24024	EeRI-76	PRECONTACT,Habitation Feature,Cultural Depression,Housepit
23766	DcRv-55	PRECONTACT,Cultural Material,Subsurface,Shell Midden
23768	DcRv-30	PRECONTACT,Cultural Material,Subsurface,Shell Midden
23694	DIPw-10	PRECONTACT,Cultural Material,Surface,Lithics
23700	DgQh-9	PRECONTACT,Other Feature,Cultural Depression,Function Unassigned PRECONTACT,Subsistence Feature,Cultural Depression,Cache Pit
23761	DcRw-21	PRECONTACT,Cultural Material,Subsurface,Shell Midden
24375	FISp-1	PRECONTACT,Other Feature,Cultural Depression,Function Unassigned
24871	DgRx-21	PRECONTACT,Cultural Material,Surface,Lithics STR,STR,STR,STR
27451	GdTc-28	No data.
25146	EaRj-60	No data.
25389	DcRv-90	PRECONTACT,Cultural Material,Surface,Lithics
26117	EaSh-57	PRECONTACT,Ceremonial/Religious Feature,Rock Art,Petroglyph
26033	DcRu-590	PRECONTACT,Cultural Material,Subsurface,Shell Midden STR,STR,STR,STR
26019	FcSo-11	TRADITIONAL USE,Culturally Modified Tree,bark-stripped,large rectangular scar
26371	EeQw-105	PRECONTACT,Other Feature,Cultural Depression,Function Unassigned
26354	HbRa-5	PRECONTACT,Cultural Material,Surface,Lithics
26661	DjPx-6	PRECONTACT,Cultural Material,Surface,Lithics
26767	DgQc-7	PRECONTACT,Cultural Material,Surface,Lithics
26786	DcRu-31	PRECONTACT,Cultural Material,Surface,Lithics
27503	EbPx-1	PRECONTACT,Cultural Material,Surface,Lithics
27035	DgQb-8	PRECONTACT,Cultural Material,Surface,Lithics
27407	HbRf-52	PRECONTACT,Cultural Material,Surface,Lithics
27511	EbPx-47	PRECONTACT,Subsistence Feature,Cultural Depression,Cache Pit
27302	DjSe-1	PRECONTACT,Cultural Material,Subsurface,Shell Midden PRECONTACT,Subsistence Feature,Fishing,Fish Trap
27105	DcRu-93	PRECONTACT,Cultural Material,Surface,Shell
27364	DIRx-6	No data.
27462	DiSc-24	PRECONTACT,Cultural Material,
27111	EcQa-12	PRECONTACT,Human Remains,Burial PRECONTACT,Cultural Material,Surface,Lithics
27112	FISI-1	PRECONTACT,Other Feature,Cultural Depression,Function Unassigned PRECONTACT,Subsistence Feature,Cultural Depression,Cache Pit
27470	EaSh-32	PRECONTACT,Cultural Material,Subsurface,Shell Midden
27575	EbRj-27	PRECONTACT,Cultural Material,Surface,Lithics
27275	DdSe-1	No data.
27281	EjSa-4	PRECONTACT,Cultural Material,
27485	DcRu-90	PRECONTACT,Cultural Material,Surface,Shell
27638	EdRj-1	PRECONTACT,Cultural Material,Subsurface,Lithics STR,STR,STR,STR
27335	DcRv-25	PRECONTACT,Earthwork Feature,Mound
27341	DgRI-16	PRECONTACT,Habitation Feature,
27705	EIRn-16	PRECONTACT,Habitation Feature, PRECONTACT,Human Remains,Burial
27938	GhSw-1	PRECONTACT,Ceremonial/Religious Feature,Rock Art,Petroglyph

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OBJECT ID	BORDEN NUMBER	TY TYPOLOGY
28098	HbRg-34	PRECONTACT,Cultural Material,Surface,Lithics
28346	DcRt-22	PRECONTACT,Cultural Material,Surface,Lithics
28050	DISs-5	PRECONTACT,Human Remains,Burial
28301	EdQr-16	PRECONTACT,Other Feature,Cultural Depression,Function Unassigned PRECONTACT,Subsistence Feature,Cultural Depression,Cache Pit STR,STR,STR,STR
27718	DiRd-1	PRECONTACT,Habitation Feature,Cultural Depression,Housepit
27761	DcRu-561	PRECONTACT,Cultural Material,Surface,Lithics
27676	DhRh-3	POSTCONTACT,Human Remains,burial
28023	DhQk-1	PRECONTACT,Human Remains,Burial
28125	DkSf-9	PRECONTACT,Cultural Material,Subsurface,Shell Midden
27735	IFTw-2	PRECONTACT,Subsistence Feature,Cultural Depression,Cache Pit
27880	FcSi-3	PRECONTACT,Subsistence Feature,Fishing,Fish Trap
28515	DfRv-15	PRECONTACT,Cultural Material,Subsurface,Shell Midden
27843	DhRk-16	PRECONTACT,Cultural Material,Surface,Lithics PRECONTACT,Habitation Feature,Cultural Depression,Housepit
28545	DgRI-8	PRECONTACT,Cultural Material,Surface,Lithics
28480	HbRf-49	PRECONTACT,Cultural Material,Surface,Lithics
32065	DgRq-36	PRECONTACT,Cultural Material,Surface,Lithics
28573	DkSg-3	PRECONTACT,Cultural Material,Surface,lithics
54466	DkRs-13	PRECONTACT,Cultural Material,Surface,Lithics
58174	DeSg-74	TRADITIONAL USE,Culturally Modified Tree,bark-stripped,tapered scar
69682	EcPx-74	PRECONTACT,Cultural Material,Surface,Lithics
78642	EcRi-82	PRECONTACT,Cultural Material,Surface,Lithics
105238	DcRv-108	PRECONTACT,Human Remains,Petroform,Burial Cairn PRECONTACT,Other Feature,Petroform,Cairn
105568	DjRI-5	PRECONTACT,Ceremonial/Religious Feature,Rock Art,Pictograph
181446	HcRa-3	PRECONTACT,Cultural Material,Surface,lithics
200618	GiRj-11	PRECONTACT,Cultural Material,Surface,lithics
204458	HcRa-4	PRECONTACT,Cultural Material,Surface,lithics
243510	DhRr-214	PRECONTACT,Cultural Material,Surface,lithics
367060	GbTn-31	PRECONTACT,Ceremonial/Religious Feature,Rock Art,Petroglyph
491542	DdSc-25	TRADITIONAL USE,Culturally Modified Tree,bark-stripped,tapered scar
509172	DiSc-55	PRECONTACT,Cultural Material,Subsurface,Shell Midden
433621	DhRp-98	PRECONTACT,Cultural Material,Surface,lithics
257585	FfRp-14	PRECONTACT,Subsistence Feature,Cultural Depression,Cache Pit
277110	DcRu-1187	PRECONTACT,Cultural Material,Subsurface,Shell Midden
285748	EeRI-232	PRECONTACT,Ceremonial/Religious Feature,Rock Art,Pictograph
278717	FaRm-3	PRECONTACT,Cultural Material,Surface,lithics
300790	EbRo-13	PRECONTACT,Cultural Material,Surface,lithics
301454	EdRs-2	PRECONTACT,Subsistence Feature,Cultural Depression,Cache Pit PRECONTACT,Habitation Feature,Cultural Depression,Housepit
301439	EdRs-3	PRECONTACT,Subsistence Feature,Cultural Depression,Cache Pit PRECONTACT,Habitation Feature,Cultural Depression,Housepit
336306	DgRw-253	PRECONTACT,Ceremonial/Religious Feature,Rock Art,Petroglyph
347831	DjRv-3	TRADITIONAL USE,Culturally Modified Tree,bark-stripped,large rectangular scar TRADITIONAL USE,Culturally Modified Tree,other modified tree, TRADITIONAL USE,Culturally Modified Tree,bark-stripped,tapered scar
360961	IfRp-1	PRECONTACT,Cultural Material,Surface,lithics
360988	DhRx-121	PRECONTACT,Cultural Material,Subsurface,Shell Midden
359665	DiSe-38	PRECONTACT,Cultural Material,Subsurface,Shell Midden
358733	DgRx-139	POSTCONTACT,Human Remains,burial
357752	DgRI-41	PRECONTACT,Cultural Material,Surface,lithics
508851	GfSs-2	No data.
454107	EaQu-79	PRECONTACT,Other Feature,Cultural Depression,Function Unassigned
476821	EeRh-296	PRECONTACT,Cultural Material,Subsurface,Lithics PRECONTACT,Cultural Material,Surface,lithics
517837	DjSg-11	PRECONTACT,Cultural Material,Surface,lithics
517812	EeQb-37	PRECONTACT,Cultural Material,Surface,lithics
522936	EIRa-12	No data.
544064	DeRu-198	PRECONTACT,Cultural Material,Subsurface,Shell Midden
544369	DeRu-199	PRECONTACT,Cultural Material,Subsurface,Shell Midden
545330	DhRs-1276	PRECONTACT,Cultural Material,Subsurface,Lithics
544371	DeRu-200	PRECONTACT,Cultural Material,Subsurface,Shell Midden
544372	DfRv-126	PRECONTACT,Cultural Material,Subsurface,Shell Midden
544373	DfRv-127	PRECONTACT,Cultural Material,Subsurface,Shell Midden
544374	DgRw-259	PRECONTACT,Cultural Material,Subsurface,Shell Midden
544375	DgRw-260	PRECONTACT,Cultural Material,Subsurface,Shell Midden

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OBJECT ID	BORDEN NUMBER	TY TYPOLOGY
544376	DgRw-261	PRECONTACT,Cultural Material,Subsurface,Shell Midden
544377	DgRw-262	PRECONTACT,Cultural Material,Subsurface,Shell Midden
544378	DgRw-263	PRECONTACT,Cultural Material,Subsurface,Shell Midden
544062	DeRu-196	PRECONTACT,Cultural Material,Subsurface,Shell Midden
544063	DeRu-197	PRECONTACT,Cultural Material,Subsurface,Shell Midden
590465	DhSf-51	PRECONTACT,Cultural Material,Surface,lithics

Appendix B.

Project-Related Archaeological Chance Finds

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Chance Find Information												
	Project Name	Culture Region	Municipality	Sector	Subsector	Borden #	ACF Typology	Previously Recorded Site	Archaeological Site Type	Previous Project AIA	ACFMP Present	HRM Permit No.	Consulting Firm
1	Accidental Discovery on Reserve	Interior	Chase	None	None	EeQw-1	Human Remains	No	Human Remains	No	No	1960-1	UBC
2	Accidental Discovery on Private Property	Interior	Fort Steele	Residential	Single Family	DjPv-1	Human Remains	No	Human Remains, Lithics	No	No	1969-17	UofC
3	Response to Looting and Associated Exposed AHR	Interior	Lillooet	None	None	EeRi-18	Human Remains	Yes	Lithics, Historical	No	No	1968-19	SFU
4	Excavation of Exposed Burials in Highway Cut	Interior	Grand Forks	Transportation	Highways	DgQo-1	Human Remains	No	Human Remains	No	No	1969-1	Private
5	Otter Lake Residence Construction	Interior	Vernon	Residential	Single Family	EcQt-1	Human Remains	No	Human Remains	No	No	1969-24	Doctor
6	Parksville Residence Construction	Coastal	Parksville	Residential	Single Family	None	Human Remains	No	Human Remains	No	No	1970-9	Private
7	Crescent Beach Sewer Installation	Coastal	Surrey	Municipal	Services	DgRr-1	Human Remains	Yes	Human Remains, Shell Midden, Features, Perishables	No	No	1972-5	SFU
8	Pitt Lake Pictographs	Coastal	Pitt Meadows	Research	Academic	DiRp-1	Research	No	Rock Art	No	No	1972-41	SFU
9	Pitt Lake Pictographs	Coastal	Pitt Meadows	Research	Academic	DiRp-5	Research	No	Rock Art	No	No	1972-41	SFU
10	Pitt Lake Pictographs	Coastal	Pitt Meadows	Research	Academic	DiRp-6	Research	No	Rock Art	No	No	1972-41	SFU
11	Pitt Lake Pictographs	Coastal	Pitt Meadows	Research	Academic	DiRp-11	Research	No	Rock Art	No	No	1972-41	SFU
12	Brocklehurst Burial Salvage	Interior	Kamloops	Mining	Aggregate	EeRc-8	Human Remains	No	Human Remains	No	No	1971-47	Private
13	Glenrose Cannery Preliminary Excavations	Coastal	Delta	Industrial	Aquaculture	DgRr-6	Critical Path	No	Human Remains, Shell Midden, Perishables	No	No	1969-6	SFU
14	Montague Burial Salvage	Coastal	Galiano Island	None	None	DfRu-13	Human Remains	Yes	Shell Midden	Yes	No	1974-7	BC Provincial Museum
15	Owikeno Lake Burials	Coastal	Rivers Inlet	None	None	EkSp-13	Human Remains	Yes	Human Remains, Historical Human Remains	Yes	No	1975-8	Archaeology Survey of Canada
16	Salvage Excavation DcRu-122	Coastal	Victoria	Residential	Single Family	DcRu-122	Critical Path	No	Human Remains, Shell Midden	No	No	1975-23	Private
17	Klanawa Project	Coastal	Port Renfrew	Research	Non-academic	None	Research	No	Shipwreck	No	No	1977-28	Private
18	5177 Agate Lane	Coastal	Victoria	Residential	Single Family	DdRu-81	Human Remains	No	Human Remains, Shell Midden, Features, Historical	No	No	1976-16	BC Provincial Museum

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Regulatory Jurisdiction											Land Ownership								Rationale							
	Provincial								Federal			Provincial				Federal				People			ACF Triggers				
	HCA 1996	Pre-HCA	BCEAA	DPPIR	OGC	FLNRO	MEM	Other	CEAA	NEB	Other	Unsurveyed Crown Land	Crown/Municipal Owned	Private Land	Treaty Land	Reserve	Federal	Parks Canada	Other	Landowner	Indigenous Informant	Informant	New find	Vandalism	Out-of-Date Regime	Encroachment	New AIA Work
1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	1	0	1	0
2	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0
3	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	0	0	0
4	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0
5	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0
6	0	1	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	1	0	0	1	0	0	0	0
7	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0
8	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
9	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
10	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
11	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
12	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0
13	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	1	0
14	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
15	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0
16	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0
17	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0
18	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Rationale cont'd													HRM Effort										References Cited	
	Actions													Field Work					Analysis						
	Archaeology Regulator					Consultant					Proponent			Days	Archae-ologists	Community Reps.	Specialists	Urban	Rural	Total Stone	Total Faunal	Specialized	HR		Other
	Directive Issued	Existing Permit	New Permit	S12	S14	AIA	SDR	EIM	Monitoring	NFW	Avoidance	Legal Action	Comp. in Kind												
1	0	0	1	0	0	0	0	1	0	0	0	0	0	1	2	0	1	0	1	1	1	0	1	0	Borden 1960
2	0	0	1	0	0	0	0	1	0	0	0	0	0	1	2	0	0	0	1	1	1	0	1	0	Turnbull 1968
3	0	0	1	0	0	0	0	1	0	0	0	0	0	1	2	0	0	0	1	1	1	0	1	0	Stryd and Baker 1968
4	0	0	1	0	0	0	0	1	0	0	0	0	0	2	1	0	0	0	1	1	1	0	1	0	Barlee 1969
5	0	0	1	0	0	0	0	1	0	0	0	0	0	3	0	0	2	0	1	1	1	0	1	0	Campbell-Brown 1970
6	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	Yearsly 1971
7	0	0	1	0	0	0	0	1	1	0	0	0	0	26	4	0	1	1	0	1	1	1	1	1	Percy 1972a
8	0	0	1	0	0	0	1	0	0	0	0	0	0	1	2	0	0	0	1	0	0	0	0	1	Lundy 1972
9	0	0	1	0	0	0	1	0	0	0	0	0	0	1	2	0	0	0	1	0	0	0	0	1	Lundy 1972
10	0	0	1	0	0	0	1	0	0	0	0	0	0	1	2	0	0	0	1	0	0	0	0	1	Lundy 1972
11	0	0	1	0	0	0	1	0	0	0	0	0	0	1	2	0	0	0	1	0	0	0	0	1	Lundy 1972
12	0	0	1	0	0	0	0	1	0	0	0	0	0	1	2	0	0	0	1	1	1	0	1	0	Wilson R. 1972
13	0	0	1	0	0	0	1	0	0	0	1	0	0	22	6	0	0	1	0	1	1	0	0	0	Percy 1972b
14	0	1	0	0	0	0	0	1	0	0	0	0	0	1	2	0	0	0	1	0	0	0	1	0	Brand 1974
15	0	0	1	0	0	0	1	0	0	0	1	0	0	45	4	0	0	0	1	1	1	1	1	1	Cybulski 1975; Seymour 1977
16	0	0	1	0	0	0	1	0	0	0	0	0	0	2	2	0	0	1	0	1	0	0	0	0	Loy 1976
17	1	0	1	0	0	0	0	0	0	1	1	0	0	2	2	0	0	0	1	0	0	1	0	1	Ochs 1977
18	1	1	0	0	0	0	0	1	0	0	0	0	0	2	3	0	0	1	0	1	1	1	1	0	Powell 1978

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Chance Find Information												
	Project Name	Culture Region	Municipality	Sector	Subsector	Borden #	ACF Typology	Previously Recorded Site	Archaeological Site Type	Previous Project AIA	ACFMP Present	HRM Permit No.	Consulting Firm
19	Piers Island Burial	Coastal	Piers Island	Residential	Single Family	DeRu-144	Human Remains	Yes	Shell Midden	No	No	1976-16	BC Provincial Museum
20	Canoe Creek Burials	Interior	Clinton	Residential	Single Family	EiRn-15	Human Remains	No	Human Remains	No	No	1978-8	Rousseau
21	Lillooet Historic Carin Burial Excavation	Interior	Lillooet	None	None	EeRI-169	Human Remains	No	Human Remains, Historical	No	No	1976-9	SFU
22	Masset Trailer Court Sewer Burial	Coastal	Masset	Residential	Multi Family	GaUa-2	Human Remains	No	Human Remains, Shell Midden	No	No	1983-46	SFU
23	Spindrift Burial	Coastal	Saltspring Island	Residential	Single Family	DfRu-42	Human Remains	No	Human Remains, Shell Midden	No	No	1983-46	SFU
24	Songhees Burial Salvage	Coastal	Esquimalt	Residential	Single Family	DcRu-45	Human Remains	Yes	Shell Midden, Features, Historical	No	No	1981-35	BC Provincial Museum
25	Millard Creek Burial Salvage	Coastal	Courtenay	Residential	Single Family	DkSf-2	Human Remains	Yes	Human Remains, Shell Midden	No	No	1983-46b	SFU
26	Fountain Creek Burial	Interior	Lillooet	Transportation	Highways	EeRI-19	Human Remains	Yes	Human Remains, Lithics, Features	No	No	1986-20d	SFU
27	Osoyoos Burial Recovery	Interior	Osoyoos	Tourism	Campground	DgQu-4	Human Remains	No	Human Remains	No	No	1986-20	VCC
28	Cache Site on Seymour Inlet	Coastal	Seymour Inlet	Forestry	None	EgSt-2	Research	No	Perishables	No	No	1979-36	BC Provincial Museum
29	DcRt-10 Screening Project	Coastal	Oak Bay	Municipal	Parks	DcRt-10	Human Remains	Yes	Human Remains, Shell Midden, Features	No	No	1985-1	UVic
30	Cadboro Bay Burial Salvage	Coastal	Oak Bay	Residential	Single Family	DcRt-9	Human Remains	Yes	Human Remains, Shell Midden	No	No	1986-32	BC Provincial Museum
31	Moricetown Remains Analysis	Interior	Moricetown	None	None	GgSt-6	Human Remains	No	Human Remains	No	No	1987-2a	SFU
32	Plover Road Remains Analysis	Coastal	Lantzville	Residential	Single Family	DhSa-9	Human Remains	No	Shell Midden	No	No	1987-2c	SFU

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Regulatory Jurisdiction											Land Ownership								Rationale							
	Provincial								Federal			Provincial				Federal				People			ACF Triggers				
	HCA 1996	Pre-HCA	BCEAA	DPiR	OGC	FLNRO	MEM	Other	CEAA	NEB	Other	Unsurveyed Crown Land	Crown/Municipal Owned	Private Land	Treaty Land	Reserve	Federal	Parks Canada	Other	Landowner	Indigenous Informant	Informant	New find	Vandalism	Out-of-Date Regime	Encroachment	New AIA Work
19	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0
20	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0
21	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0
22	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0
23	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0
24	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
25	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0
26	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
27	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0
28	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0
29	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
30	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	1	0
31	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
32	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Rationale cont'd													HRM Effort										References Cited	
	Actions													Field Work					Analysis						
	Archaeology Regulator					Consultant					Proponent			Days	Archae-ologists	Community Reps.	Specialists	Urban	Rural	Total Stone	Total Faunal	Specialized	HR		Other
	Directive Issued	Existing Permit	New Permit	S12	S14	AIA	SDR	EIM	Monitoring	NFW	Avoidance	Legal Action	Comp. in Kind												
19	1	1	0	0	0	0	1	1	0	0	0	0	0	2	7	0	0	0	1	1	1	1	1	0	Powell 1978
20	0	0	1	0	0	0	0	1	0	0	1	0	0	2	2	2	1	0	1	1	1	1	1	0	Rousseau and Rousseau 1978
21	0	1	0	0	0	0	1	0	0	0	0	0	0	2	7	0	1	0	1	0	0	0	1	0	Richards 1982
22	1	1	0	0	0	0	0	1	0	0	0	0	0	2	1	0	0	1	0	0	0	1	1	0	Skinner 1984
23	1	1	0	0	0	0	1	1	0	0	0	0	0	2	1	0	0	0	1	0	1	1	1	0	Skinner 1984
24	0	0	1	0	0	0	0	1	0	0	0	0	0	2	2	0	0	1	0	0	0	1	1	0	Condrashoff 1984
25	1	1	0	0	0	0	0	1	0	0	1	0	0	1	1	0	0	1	0	0	0	0	1	0	Skinner 1985
26	0	1	0	0	1	0	0	1	0	0	0	0	0	2	2	0	0	0	1	1	1	1	1	0	McLeod and Skinner 1986
27	0	1	0	0	1	0	0	1	0	0	1	0	0	1	2	0	0	0	1	1	1	0	1	0	Copp 1986
28	0	0	1	0	0	0	1	0	0	0	1	0	0	7	3	0	1	0	1	1	1	1	1	1	Chechik and Hutchcroft 1986
29	0	0	1	0	0	0	0	1	0	0	1	0	0	30	10	0	0	1	0	1	1	0	1	0	Mitchell 1986
30	0	0	1	1	0	0	0	1	0	0	0	0	0	20	2	0	0	1	0	1	1	1	1	1	Keddie 1987
31	0	1	0	0	1	0	0	1	0	0	1	0	0	1	1	0	0	0	1	0	0	0	1	0	Skinner 1987b
32	0	1	0	0	1	0	0	1	0	0	0	0	0	1	2	0	0	1	0	0	1	0	1	0	Skinner 1987c

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Chance Find Information												
	Project Name	Culture Region	Municipality	Sector	Subsector	Borden #	ACF Typology	Previously Recorded Site	Archaeological Site Type	Previous Project AIA	ACFMP Present	HRM Permit No.	Consulting Firm
33	Bamfield Teacherage Site Burial Analysis	Coastal	Bamfield	Infrastructure	Institutional	DeSg-47	Human Remains	No	Human Remains	No	No	1986-20e	SFU
34	Coldicutt Creek Site Burial Analysis	Coastal	White Rock	Municipal	Maintenance	DgRq-19	Human Remains	No	Human Remains	No	No	1986-20f	SFU
35	Golden Pioneer Cemetery Burial Analysis	Interior	Golden	None	None	EhQf-3	Human Remains	No	Historic Human Remains	No	No	1987-2d	SFU
36	Masonic Temple Human Remains	Interior	Quesnel	Infrastructure	Institutional	None	Human Remains	No	Human Remains	No	No	1986-20d	SFU
37	Quilchena Hotel Burial Site	Interior	Nicola Lake	Residential	Single Family	EaRd-14	Human Remains	Yes	Human Remains, Shell Midden, Features	No	No	1987-2b	SFU
38	Piper's Lagoon Burial Excavation	Coastal	Nanaimo	Residential	Single Family	DhRx-44	Human Remains	Yes	Human Remains, Shell Midden, Historical	No	No	1988-1b	IRWilson
39	Mueller Cabin Burial	Coastal	Gabriola Island	None	None	DgRw-20	Human Remains	No	Human Remains, Shell Midden, Features	No	No	1987-2g	SFU
40	Vinsulla Human Remains	Interior	Kamloops	Agriculture	New Fields	EfRb-20	Human Remains	No	Human Remains	No	No	1988-1a	Arcas
41	Masset Found Human Remains	Coastal	Masset	Residential	Subdivision	FIUa-4	Human Remains	Yes	Human Remains, Shell Midden	No	No	1988-1c	IRWilson
42	Qualicum Beach Found Human Remains	Coastal	Qualicum Beach	Residential	Single Family	DiSc-26	Human Remains	Yes	Human Remains, Shell Midden, Features	No	No	1989-34I	Oliver
43	Beach Grove Burial Recovery	Coastal	Beach Grove	Residential	Single Family	DgRs-1	Human Remains	Yes	Human Remains, Shell Midden, Features, Perishables	No	No	1989-34b	Knusel

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Regulatory Jurisdiction											Land Ownership								Rationale							
	<i>Provincial</i>								<i>Federal</i>			<i>Provincial</i>				<i>Federal</i>				<i>People</i>			<i>ACF Triggers</i>				
	HCA 1996	Pre-HCA	BCEAA	DPIR	OGC	FLNRO	MEM	Other	CEAA	NEB	Other	Unsurveyed Crown Land	Crown/Municipal Owned	Private Land	Treaty Land	Reserve	Federal	Parks Canada	Other	Landowner	Indigenous Informant	Informant	New find	Vandalism	Out-of-Date Regime	Encroachment	New AIA Work
33	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0
34	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
35	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0
36	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
37	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1	0
38	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1	0
39	1	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	1	0	0	0	0
40	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0
41	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0
42	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1	0
43	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1	0

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Rationale cont'd													HRM Effort										References Cited	
	Actions													Field Work					Analysis						
	Archaeology Regulator					Consultant					Proponent			Field Work					Analysis						
	Directive Issued	Existing Permit	New Permit	S12	S14	AIA	SDR	EIM	Monitoring	NFW	Avoidance	Legal Action	Comp. in Kind	Days	Archae-ologists	Community Reps.	Specialists	Urban	Rural	Total Stone	Total Faunal	Specialized	HR		Other
33	1	1	0	0	1	0	0	1	0	0	1	0	0	2	1	0	0	0	1	0	1	0	1	0	McLeod and Skinner 1987
34	1	1	0	0	1	0	0	1	0	0	0	0	0	2	1	0	0	1	0	1	1	1	1	0	Oliver and Skinner 1987
35	1	1	0	0	1	1	0	1	0	0	1	0	0	30	7	0	0	1	0	0	0	0	1	1	Skinner and Oliver 1987
36	1	1	0	0	1	0	0	1	0	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0	Skinner 1987a
37	1	1	0	0	1	0	0	1	0	0	0	0	0	1	1	0	0	0	1	1	1	0	1	0	Skinner and Thacker 1987
38	1	1	0	0	1	0	1	1	0	0	0	0	0	1	1	0	0	1	0	1	0	0	1	0	Wilson 1988a
39	1	1	0	0	1	0	0	1	0	0	0	0	0	2	2	0	0	0	1	1	1	0	1	0	Skinner and Thacker 1988
40	1	1	0	0	1	0	0	1	0	0	1	0	0	1	2	0	0	0	1	0	0	0	1	0	Stryd 1988
41	1	1	0	0	1	0	0	1	0	0	1	0	0	2	2	0	0	1	0	0	0	0	1	0	Wilson 1988b
42	1	1	0	0	1	0	0	1	0	0	0	0	0	1	1	1	0	1	0	0	0	0	1	0	Oliver 1989
43	1	1	0	0	1	0	0	1	0	0	0	0	0	1	4	2	0	1	0	0	0	0	1	0	Knusel 1989a

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Chance Find Information												
	Project Name	Culture Region	Municipality	Sector	Subsector	Borden #	ACF Typology	Previously Recorded Site	Archaeological Site Type	Previous Project AIA	ACFMP Present	HRM Permit No.	Consulting Firm
44	Goloff Point Subdivision Burial	Interior	Castlegar	Residential	Multi Family	DhQj-5	Human Remains	Yes	Human Remains	No	No	1988-1d	Choquette
45	Water Hazard Artifact Recovery	Coastal	Beach Grove	Tourism	Golf	DgRs-30	Critical Path	No	Perishables	No	No	1988-55	UBC
46	Pitt Meadows Burial Recovery	Coastal	Pitt Meadows	Municipal	Services	DhRq-33	Human Remains	No	Historic Human Remains	No	No	1989-34k	SFU
47	Victoria Inner Harbour Burial Recovery	Coastal	Victoria	Residential	Multi Family	DcRu-25	Human Remains	Yes	Human Remains, Shell Midden, Historical	No	No	1989-34	SFU
48	Sondrup Site Burial Salvage	Coastal	Port Hardy	Residential	Single Family	EeSu-39	Human Remains	Yes	Shell Midden	No	No	1988-77	Somogyi-Csimazia
49	Berry Island Burial Site	Coastal	Berry Island	None	None	EdSp-75	Human Remains	No	Human Remains	No	No	1989-34j	Curtin
50	Esquimalt South Jetty Access Data Recovery	Coastal	Esquimalt	Government	Infrastructure	DcRu-760	Human Remains	Yes	Human Remains, Shell Midden, Features	No	No	None	Millennia
51	Cranbrook Visitor Centre Water Pipeline	Interior	Cranbrook	Municipal	Services	DjPw-24	Critical Path	Yes	Lithics	No	No	2016-115	Tipi Mountain
52	Galore Creek Monitoring and Data Recovery	Interior	N/A	Mining	Mineral	HgTo-1	Critical Path	No	Lithics	Yes	Yes	2007-163	Rescan
53	Galore Creek Monitoring and Data Recovery	Interior	N/A	Mining	Mineral	HgTo-2	Critical Path	No	Lithics	Yes	Yes	2007-164	Rescan

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Regulatory Jurisdiction											Land Ownership								Rationale							
	<i>Provincial</i>								<i>Federal</i>			<i>Provincial</i>				<i>Federal</i>				<i>People</i>			<i>ACF Triggers</i>				
	HCA 1996	Pre-HCA	BCEAA	DPiR	OGC	FLNRO	MEM	Other	CEAA	NEB	Other	Unsurveyed Crown Land	Crown/Municipal Owned	Private Land	Treaty Land	Reserve	Federal	Parks Canada	Other	Landowner	Indigenous Informant	Informant	New find	Vandalism	Out-of-Date Regime	Encroachment	New AIA Work
44	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
45	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1	0
46	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0
47	1	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	1	1	0	0	1	0
48	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0
49	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0
50	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	1	0	0	1	0
51	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
52	1	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
53	1	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Rationale cont'd													HRM Effort										References Cited	
	Actions													Field Work					Analysis						
	Archaeology Regulator					Consultant					Proponent			Days	Archae-ologists	Community Reps.	Specialists	Urban	Rural	Total Stone	Total Faunal	Specialized	HR		Other
	Directive Issued	Existing Permit	New Permit	S12	S14	AIA	SDR	EIM	Monitoring	NFW	Avoidance	Legal Action	Comp. in Kind												
44	1	1	0	0	1	0	0	1	0	0	0	0	0	1	2	0	0	0	1	1	1	0	1	0	Choquette 1989
45	1	0	1	1	0	0	0	1	0	0	0	0	0	68	50	15	1	1	0	1	1	1	0	1	Bernick 1989
46	1	1	0	0	1	0	0	1	0	0	0	0	0	2	2	0	0	1	0	0	0	0	1	0	Knusel 1989b
47	1	1	0	0	1	0	0	1	0	0	0	0	1	2	3	0	1	1	0	0	1	0	1	0	Oliver 1990
48	1	0	1	1	0	0	1	1	0	0	0	0	0	25	4	0	0	0	1	1	1	1	1	0	Somogyi-Csimazia 1990
49	1	1	0	0	1	1	1	0	0	0	1	0	0	2	2	0	0	0	1	0	0	0	1	0	Curtin 1990
50	0	0	0	0	0	0	1	1	0	0	1	0	0	31	8	5	0	1	0	1	1	0	1	0	Vincent et. Al. 2003
51	1	0	1	1	0	0	1	1	1	0	0	0	0	10	3	4	0	1	0	1	1	0	0	0	Tamasi 2017
52	0	0	1	0	1	1	0	1	0	0	0	0	0	1	2	2	0	0	1	1	0	0	0	0	Seip et al 2012 (5-4)
53	0	0	1	0	1	1	0	1	0	0	0	0	0	1	2	2	0	0	1	1	0	0	0	0	Seip et al 2012 (5-5)

Appendix B: Project-Related Archaeological Chance Find Data Table

Chance Find Information													
ACF Number	Project Name	Culture Region	Municipality	Sector	Subsector	Borden #	ACF Typology	Previously Recorded Site	Archaeological Site Type	Previous Project AIA	ACFMP Present	HRM Permit No.	Consulting Firm
54	Galore Creek Monitoring and Data Recovery	Interior	N/A	Mining	Mineral	HgTo-3	Critical Path	No	Lithics	Yes	Yes	2007-165	Rescan
55	Galore Creek Monitoring and Data Recovery	Interior	N/A	Mining	Mineral	HgTo-4	Critical Path	No	Lithics, Faunal, Perishables	Yes	Yes	2007-166	Rescan
56	Galore Creek Monitoring and Data Recovery	Interior	N/A	Mining	Mineral	HgTo-5	Critical Path	No	Lithics	Yes	Yes	2007-167	Rescan
57	Galore Creek Monitoring and Data Recovery	Interior	N/A	Mining	Mineral	HgTo-6	Critical Path	No	Lithics	Yes	Yes	2007-168	Rescan
58	Galore Creek Monitoring and Data Recovery	Interior	N/A	Mining	Mineral	HgTo-7	Critical Path	No	Lithics	Yes	Yes	2007-169	Rescan
59	Galore Creek Monitoring and Data Recovery	Interior	N/A	Mining	Mineral	HgTo-8	Critical Path	No	Lithics	Yes	Yes	2007-170	Rescan
60	Galore Creek Monitoring and Data Recovery	Interior	N/A	Mining	Mineral	HgTo-9	Critical Path	No	Lithics	Yes	Yes	2007-171	Rescan
61	Galore Creek Monitoring and Data Recovery	Interior	N/A	Mining	Mineral	HgTo-19	Critical Path	No	Lithics	Yes	Yes	2007-172	Rescan
62	Galore Creek Monitoring and Data Recovery	Interior	N/A	Mining	Mineral	HgTo-20	Critical Path	No	Lithics	Yes	Yes	2007-173	Rescan
63	Galore Creek Monitoring and Data Recovery	Interior	N/A	Mining	Mineral	HgTo-21	Critical Path	No	Lithics	Yes	Yes	2007-174	Rescan

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Regulatory Jurisdiction											Land Ownership								Rationale							
	Provincial								Federal			Provincial				Federal				People			ACF Triggers				
	HCA 1996	Pre-HCA	BCEAA	DPIC	OGC	FLNRO	MEM	Other	CEAA	NEB	Other	Unsurveyed Crown Land	Crown/Municipal Owned	Private Land	Treaty Land	Reserve	Federal	Parks Canada	Other	Landowner	Indigenous Informant	Informant	New find	Vandalism	Out-of-Date Regime	Encroachment	New AIA Work
54	1	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
55	1	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
56	1	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
57	1	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
58	1	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
59	1	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
60	1	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
61	1	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
62	1	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
63	1	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Rationale cont'd													HRM Effort										References Cited	
	Actions													Field Work					Analysis						
	Archaeology Regulator					Consultant					Proponent			Days	Archae-ologists	Community Reps.	Specialists	Urban	Rural	Total Stone	Total Faunal	Specialized	HR		Other
	Directive Issued	Existing Permit	New Permit	S12	S14	AIA	SDR	EIM	Monitoring	NFW	Avoidance	Legal Action	Comp. in Kind												
54	0	0	1	0	1	1	1	1	1	0	1	0	0	20	2	2	1	0	1	1	0	0	0	0	Seip et al 2012 (5-5 to 5-15)
55	0	0	1	0	1	1	1	1	1	0	1	0	0	5	2	2	0	0	1	1	0	0	0	0	Seip et al 2012 (5-15 to 5-21)
56	0	0	1	0	1	1	1	1	1	0	0	0	0	4	2	2	1	0	1	1	0	1	0	0	Seip et al 2012 (5-21 to 5-27)
57	0	0	1	0	1	1	1	1	1	0	0	0	0	9	2	2	0	0	1	1	0	0	0	0	Seip et al 2012 (5-27 to 5-33)
58	0	0	1	0	1	1	1	1	1	0	0	0	0	12	2	2	1	0	1	1	0	1	0	0	Seip et al 2012 (5-33 to 5-39)
59	0	0	1	0	1	1	1	1	1	0	1	0	0	4	2	2	1	0	1	1	0	1	0	0	Seip et al 2012 (5-39 to 5-44)
60	0	0	1	0	1	1	1	1	1	0	1	0	0	2	2	2	1	0	1	1	0	1	0	0	Seip et al 2012 (5-44 to 5-46)
61	0	0	1	0	1	1	1	1	1	0	1	0	0	13	2	2	1	0	1	1	0	1	0	0	Seip et al 2012 (5-46 to 5-51)
62	0	0	1	0	1	1	1	1	1	0	1	0	0	10	2	2	2	0	1	1	1	1	0	1	Seip et al 2012 (5-51 to 5-58)
63	0	0	1	0	1	1	1	1	1	0	0	0	0	4	2	2	1	0	1	1	0	1	0	0	Seip et al 2012 (5-58 to 5-60)

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Chance Find Information												
	Project Name	Culture Region	Municipality	Sector	Subsector	Borden #	ACF Typology	Previously Recorded Site	Archaeological Site Type	Previous Project AIA	ACFMP Present	HRM Permit No.	Consulting Firm
64	Galore Creek Monitoring and Data Recovery	Interior	N/A	Mining	Mineral	HgTo-22	Critical Path	No	Lithics	Yes	Yes	2007-175	Rescan
65	Galore Creek Monitoring and Data Recovery	Interior	N/A	Mining	Mineral	HgTo-23	Critical Path	No	Lithics	Yes	Yes	2007-176	Rescan
66	Galore Creek Monitoring and Data Recovery	Interior	N/A	Mining	Mineral	HgTq-1	Critical Path	No	Lithics	Yes	Yes	2007-177	Rescan
67	Galore Creek Monitoring and Data Recovery	Interior	N/A	Mining	Mineral	HgTq-2	Critical Path	No	Lithics	Yes	Yes	2007-178	Rescan
68	Gabriola Island Post Impact Assessment	Coastal	Gabriola Island	Residential	Single Family	DgRw-3	Critical Path	Yes	Human Remains, Shell Midden	No	No	2008-464	Millennia
69	Gambier Island Alterations	Coastal	Gambier Island	Residential	Single Family	DiRu-4	Critical Path	Yes	Lithics	Yes	No	2007-185	AMEC
70	Deacon Lane Galiano Island	Coastal	Galiano Island	Residential	Single Family	DgRv-18	Critical Path	Yes	Shell Midden, Features	No	No	2014-31	Arrowstone
71	Paisley Island Post Impact Assessment	Coastal	Paisley Island	Residential	Single Family	DiRu-36	Human Remains	Yes	Shell Midden	No	No	2015-15	AMEC
72	Port Hardy Bulk Plant	Coastal	Port Hardy	Oil and Gas	Downstream	EeSu-2	Critical Path	Yes	Human Remains, Shell Midden, Features, Shipwreck	No	No	2010-405	Golder

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Regulatory Jurisdiction											Land Ownership								Rationale							
	Provincial								Federal			Provincial				Federal				People			ACF Triggers				
	HCA 1996	Pre-HCA	BCEAA	DPiR	OGC	FLNRO	MEM	Other	CEAA	NEB	Other	Unsurveyed Crown Land	Crown/Municipal Owned	Private Land	Treaty Land	Reserve	Federal	Parks Canada	Other	Landowner	Indigenous Informant	Informant	New find	Vandalism	Out-of-Date Regime	Encroachment	New AIA Work
64	1	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
65	1	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
66	1	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
67	1	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
68	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0
69	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0
70	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0
71	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0
72	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	1	0	0	1	0

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Rationale cont'd													HRM Effort										References Cited	
	Actions													Field Work					Analysis						
	Archaeology Regulator					Consultant					Proponent			Days	Archae-ologists	Community Reps.	Specialists	Urban	Rural	Total Stone	Total Faunal	Specialized	HR		Other
	Directive Issued	Existing Permit	New Permit	S12	S14	AIA	SDR	EIM	Monitoring	NFW	Avoidance	Legal Action	Comp. in Kind												
64	0	0	1	0	1	1	1	1	1	0	0	0	0	3	2	2	0	0	1	1	0	0	0	0	Seip et al 2012 (5-60 to 5-62)
65	0	0	1	0	1	0	0	1	1	0	0	0	0	2	2	2	0	0	1	1	0	0	0	0	Seip et al 2012 (5-62 to 5-63)
66	0	0	1	0	1	1	0	1	1	0	0	0	0	1	2	2	0	0	1	1	0	0	0	0	Seip et al 2012 (5-63 to 5-66)
67	0	0	1	0	1	1	0	1	1	0	0	0	0	1	2	2	0	0	1	1	0	0	0	0	Seip et al 2012 (5:63 to 5-66)
68	1	0	1	0	1	0	0	1	0	0	0	0	0	2	1	2	1	0	1	1	1	0	1	1	Cooper 2009
69	0	1	0	1	0	0	1	1	0	0	1	0	0	1	1	1	0	0	1	1	0	0	0	0	Myles 2011
70	1	0	1	1	0	1	0	0	1	1	1	0	0	1	2	0	1	0	1	0	1	0	0	0	Hall et al 2014
71	1	0	1	1	0	1	0	1	1	0	1	0	0	1	2	2	0	0	1	1	0	0	1	0	Myers 2015
72	0	0	1	1	0	0	0	1	1	0	0	0	0	32	1	2	0	1	0	1	1	0	0	0	Brooke 2013

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Chance Find Information												
	Project Name	Culture Region	Municipality	Sector	Subsector	Borden #	ACF Typology	Previously Recorded Site	Archaeological Site Type	Previous Project AIA	ACFMP Present	HRM Permit No.	Consulting Firm
73	Silver Ridge Estates Historical Burials	Interior	Fernie	Residential	Multi Family	DjPs-4	Human Remains	Yes	Historic Human Remains	No	No	2008-314	Golder
74	Shuswap Road Kamloops	Interior	Kamloops	Residential	Single Family	EeRb-32	Critical Path	No	Lithics, Faunal, Features	No	No	2010-388	Ursus
75	Kootenay Silver Exploration Site	Interior	Vanderhoof	Mining	Exploration	FkSf-26	Concurrent	Yes	Lithics	No	Yes	2012-139	ArcherCRM
76	Nottingham Farm Perishables Analysis	Coastal	Delta	Transportation	Highways	DgRs-56	Critical Path	Yes	Lithics, Faunal, Historical	Yes	Yes	2012-233	Stantec
77	Craigflower Road Upgrades	Coastal	Esquimalt	Municipal	Roads	DcRu-1209	Critical Path	No	Shell Midden	Yes	Yes	2010-315	IRWilson
78	Steelhead Provincial Park Trench	Interior	Savona	Tourism	Parks	EeRf-4	Critical Path	Yes	Lithics, Cultural Depression, Petroform	No	No	2014-156	Stantec
79	SMR Encroachment Post-Impact	Interior	Fort Nelson	Oil and Gas	Upstream	IkRq-2	Critical Path	Yes	Lithics	Yes	No	2009-282	Ecofor
80	Saratoga Fish Traps	Coastal	Campbell River	Research	Non-academic	DISg-5	Research	Yes	Shell Midden	No	No	2008-305	Baseline
81	Tsulquate Midden Mounds	Coastal	Port Hardy	Municipal	Infrastructure	EeSu-2	Concurrent	Yes	Human Remains, Shell Midden, Features, Shipwreck	No	No	2009-221	Sources
82	Saanich Bike Lanes 1	Coastal	Saanich	Municipal	Transportation	DeRu-188	Concurrent	No	Shell Midden	No	No	2010-113	IRWilson
83	Saanich Bike Lanes 2	Coastal	Saanich	Municipal	Transportation	DdRu-156	Concurrent	No	Shell Midden	No	No	2012-331	Stantec

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Regulatory Jurisdiction											Land Ownership								Rationale							
	Provincial								Federal			Provincial				Federal				People			ACF Triggers				
	HCA 1996	Pre-HCA	BCEAA	DPiR	OGC	FLNRO	MEM	Other	CEAA	NEB	Other	Unsurveyed Crown Land	Crown/Municipal Owned	Private Land	Treaty Land	Reserve	Federal	Parks Canada	Other	Landowner	Indigenous Informant	Informant	New find	Vandalism	Out-of-Date Regime	Encroachment	New AIA Work
73	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0
74	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	1
75	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1
76	1	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1
77	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
78	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0
79	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
80	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1
81	1	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1	0
82	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
83	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Rationale cont'd													HRM Effort										References Cited					
	Actions													Field Work					Analysis										
	Archaeology Regulator					Consultant					Proponent			Days		Specialists			Urban		Rural				Total Stone	Total Faunal	Specialized	HR	Other
	Directive Issued	Existing Permit	New Permit	S12	S14	AIA	SDR	EIM	Monitoring	NFW	Avoidance	Legal Action	Comp. in Kind	Days	Archae-ologists	Community Reps.	Specialists	Urban	Rural	Total Stone	Total Faunal	Specialized	HR		Other				
73	1	0	1	1	0	0	0	1	1	0	0	0	0	12	3	0	1	1	0	0	0	0	0	1	0	Paquin 2009			
74	1	0	1	0	1	1	1	1	0	0	0	0	0	3	2	2	0	0	1	1	0	0	0	0	1	Cameron 2011			
75	1	0	1	0	1	1	1	0	0	0	1	0	0	5	5	2	0	0	1	1	0	0	0	0	0	MacLennan 2013			
76	1	1	1	1	1	1	1	1	1	0	0	0	0	10	11	7	2	0	1	1	0	1	0	1	Commisso et al 2017				
77	1	0	1	1	0	0	1	1	0	0	0	0	0	2	2	0	0	1	0	0	1	0	0	0	0	Hutchcroft 2010			
78	1	0	1	1	0	0	1	1	0	0	0	0	0	11	3	6	2	0	1	1	1	1	1	1	1	Perdue 2017			
79	0	0	1	0	1	1	1	1	0	0	1	0	0	10	4	3	0	0	1	1	0	0	0	0	0	Chester 2009			
80	0	0	1	0	1	1	1	0	0	0	0	0	0	3	1	2	2	0	1	0	0	1	0	1	0	Cullon and Pratt 2009			
81	1	1	0	0	1	0	0	1	0	0	0	0	0	6	2	1	0	1	0	1	1	0	1	0	0	Chatan et al 2011			
82	0	1	0	0	1	1	1	0	0	0	0	0	0	2	2	2	0	1	0	1	1	0	0	0	0	Wharram 2017			
83	0	1	0	0	1	1	1	0	0	0	0	0	0	1	2	2	0	1	0	0	1	0	0	0	0	Wharram 2017			

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Chance Find Information												
	Project Name	Culture Region	Municipality	Sector	Subsector	Borden #	ACF Typology	Previously Recorded Site	Archaeological Site Type	Previous Project AIA	ACFMP Present	HRM Permit No.	Consulting Firm
84	Salt Spring Island Recovery and Reburial	Coastal	Saltspring Island	Residential	Single Family	DeRv-6	Human Remains	Yes	Human Remains, Shell Midden	No	No	2009-408	Coast Research
85	Baltac Road Human Remains	Interior	Windemere	Residential	Multi Family	EcPx-8	Human Remains	Yes	Human Remains	No	No	2008-230	Arrow Archaeology
86	Sunriver Nature Trail	Coastal	Sooke	Municipal	Transportation	DcRw-37	Human Remains	Yes	Shell Midden	Yes	No	2016-402	Millennia
87	Huth Avenue Recovery Program	Interior	Penticton	Infrastructure	Services	DiQv-61	Human Remains	Yes	Human Remains, Lithics, Faunal	No	No	2011-172	Golder
88	Long Harbour Road Assessment	Coastal	Saltspring Island	Residential	Single Family	DfRu-30	Human Remains	Yes	Human Remains, Shell Midden	No	No	2008-472	Madrone
89	Spring Cove Stormwater Outfall	Coastal	Uculet	Municipal	Infrastructure	DjSf-57	Human Remains	Yes	Shell Midden	Yes	No	2008-88	IRWilson
90	Pioneer Square Park Remains	Coastal	Victoria	Municipal	Parks	DcRu-1234	Human Remains	No	Historic Human Remains	No	No	2010-403	Golder
91	Thadd Springs Data Recovery	Interior	Kamloops	Agriculture	Vineyard	EdRa-49	Critical Path	No	Lithics, Faunal	No	No	2009-74	Antiquus
92	Gabriola Island Ditch	Coastal	Gabriola Island	Transportation	Maintenance	DgRw-108	Concurrent	Yes	Shell Midden	No	No	2010-140	Golder
93	Montague Carin Salvage	Coastal	Galiano Island	Tourism	Parks	DfRu-100	Human Remains	Yes	Human Remains, Features	Yes	No	2008-64	UVic
94	Bear Mountain Resort	Coastal	Langford	Tourism	Multi Family	DcRv-158	Critical Path	No	Lithics, Faunal	No	No	2006-285	Golder
95	Bear Mountain Resort	Coastal	Langford	Tourism	Multi Family	DcRv-170	Critical Path	No	Lithics	No	No	2006-285	Golder

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Regulatory Jurisdiction											Land Ownership								Rationale							
	Provincial								Federal			Provincial				Federal				People			ACF Triggers				
	HCA 1996	Pre-HCA	BCEAA	DPIR	OGC	FLNRO	MEM	Other	CEAA	NEB	Other	Unsurveyed Crown Land	Crown/Municipal Owned	Private Land	Treaty Land	Reserve	Federal	Parks Canada	Other	Landowner	Indigenous Informant	Informant	New find	Vandalism	Out-of-Date Regime	Encroachment	New AIA Work
84	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	1	0
85	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	
86	1	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1	0	0	1	0	
87	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	
88	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	1	
89	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	
90	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	
91	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1	
92	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	
93	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	
94	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1	
95	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1	

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Rationale cont'd													HRM Effort										References Cited	
	Actions													Field Work					Analysis						
	Archaeology Regulator					Consultant					Proponent			Days	Archae-ologists	Community Reps.	Specialists	Urban	Rural	Total Stone	Total Faunal	Specialized	HR		Other
	Directive Issued	Existing Permit	New Permit	S12	S14	AIA	SDR	EIM	Monitoring	NFW	Avoidance	Legal Action	Comp. in Kind												
84	1	0	1	1	0	0	0	1	0	0	1	0	0	1	2	2	0	0	1	0	1	0	1	0	McLay 2010
85	1	0	1	0	1	1	0	1	1	0	0	0	0	78	4	2	0	0	1	0	0	0	1	0	Wood 2008
86	1	0	1	1	0	1	0	1	1	0	0	0	0	2	3	2	1	1	0	1	1	1	1	0	Lamoreaux 2017
87	1	0	1	1	0	1	1	1	1	0	1	0	0	120	4	8	1	1	0	1	1	0	1	0	Paquin and Martin 2013
88	1	0	1	0	1	1	1	1	0	0	0	0	0	2	1	1	0	0	1	1	1	0	1	0	Rogers 2009
89	1	0	1	1	0	0	1	1	1	0	1	0	0	5	2	1	0	1	0	1	1	1	1	0	Spady 2008
90	1	1	0	0	1	0	0	1	1	0	0	0	0	19	2	0	0	1	0	1	0	0	1	0	Huculak et al 2015
91	1	0	1	0	1	1	1	1	0	0	1	0	0	27	10	7	0	0	1	1	1	1	0	0	Rousseau et al 2012
92	1	1	0	0	1	0	1	1	1	0	1	0	0	2	2	2	0	0	1	1	1	0	0	0	Denley 2013
93	0	0	1	0	1	0	0	1	0	0	0	0	0	2	2	2	0	0	1	0	1	1	1	0	Mathews and McLay 2011
94	1	0	1	0	1	1	0	1	0	1	0	0	0	2	2	2	0	1	0	1	0	0	0	0	Nicholls et al 2008
95	1	0	1	0	1	1	0	0	0	0	0	0	0	1	2	2	0	1	0	1	0	0	0	0	Nicholls et al 2008

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Chance Find Information												
	Project Name	Culture Region	Municipality	Sector	Subsector	Borden #	ACF Typology	Previously Recorded Site	Archaeological Site Type	Previous Project AIA	ACFMP Present	HRM Permit No.	Consulting Firm
96	Bear Mountain Resort	Coastal	Langford	Tourism	Multi Family	DcRv-171	Critical Path	No	Lithics	No	No	2006-285	Golder
97	Bear Mountain Resort	Coastal	Langford	Tourism	Multi Family	DcRv-172	Critical Path	No	Lithics	No	No	2006-285	Golder
98	Bear Mountain Resort	Coastal	Langford	Tourism	Multi Family	DcRv-174	Critical Path	No	Lithics	No	No	2006-285	Golder
99	Bear Mountain Resort	Coastal	Langford	Tourism	Multi Family	DcRv-175	Critical Path	No	Lithics	No	No	2006-285	Golder
100	Bear Mountain Resort	Coastal	Langford	Tourism	Multi Family	DcRv-176	Critical Path	No	Lithics	No	No	2006-285	Golder
101	Bear Mountain Resort	Coastal	Langford	Tourism	Multi Family	DcRv-177	Critical Path	No	Lithics	No	No	2006-285	Golder
102	Bear Mountain Resort	Coastal	Langford	Tourism	Multi Family	DcRv-178	Critical Path	No	Lithics	No	No	2006-285	Golder
103	Bear Mountain Resort	Coastal	Langford	Tourism	Multi Family	DcRv-179	Critical Path	No	Lithics	No	No	2006-285	Golder
104	Bear Mountain Resort	Coastal	Langford	Tourism	Multi Family	DcRv-180	Critical Path	No	Lithics	No	No	2006-285	Golder
105	Cheslatta Lake Remains Salvage	Interior	Vanderhoof	Academics	None	FkSh-3	Human Remains	Yes	Historic Human Remains	No	No	2013-153	UNBC
106	Port Renfrew CMT Removal	Coastal	Port Renfrew	Residential	Single Family	DdSc-17	Critical Path	Yes	CMT - Coastal	No	No	2012-345	Millennia
107	Kitimat Geophysical Assessment	Coastal	Kitimat	Oil and Gas	Midstream	FITe-33	Critical Path	Yes	CMT - Coastal	Yes	Yes	2007-335	IRWilson

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Regulatory Jurisdiction											Land Ownership								Rationale							
	Provincial								Federal			Provincial				Federal				People			ACF Triggers				
	HCA 1996	Pre-HCA	BCEAA	DPiR	OGC	FLNRO	MEM	Other	CEAA	NEB	Other	Unsurveyed Crown Land	Crown/Municipal Owned	Private Land	Treaty Land	Reserve	Federal	Parks Canada	Other	Landowner	Indigenous Informant	Informant	New find	Vandalism	Out-of-Date Regime	Encroachment	New AIA Work
96	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1
97	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1
98	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1
99	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1
100	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1
101	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1
102	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1
103	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1
104	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1
105	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
106	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	1
107	1	0	1	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Rationale cont'd													HRM Effort										References Cited	
	Actions													Field Work					Analysis						
	Archaeology Regulator					Consultant					Proponent			Days	Archae-ologists	Community Reps.	Specialists	Urban	Rural	Total Stone	Total Faunal	Specialized	HR		Other
	Directive Issued	Existing Permit	New Permit	S12	S14	AIA	SDR	EIM	Monitoring	NFW	Avoidance	Legal Action	Comp. in Kind												
96	1	0	1	0	1	1	0	0	0	0	0	0	0	1	2	2	0	1	0	1	0	0	0	0	Nicholls et al 2008
97	1	0	1	0	1	1	0	0	0	0	0	0	0	1	2	2	0	1	0	1	0	0	0	0	Nicholls et al 2008
98	1	0	1	0	1	1	0	0	0	0	0	0	0	1	2	2	0	1	0	1	0	0	0	0	Nicholls et al 2008
99	1	0	1	0	1	1	0	0	0	0	0	0	0	1	2	2	0	1	0	1	0	0	0	0	Nicholls et al 2008
100	1	0	1	0	1	1	0	0	0	0	0	0	0	1	2	2	0	1	0	1	0	0	0	0	Nicholls et al 2008
101	1	0	1	0	1	1	0	0	0	0	0	0	0	1	2	2	0	1	0	1	0	0	0	0	Nicholls et al 2008
102	1	0	1	0	1	1	0	0	0	0	0	0	0	1	2	2	0	1	0	1	0	0	0	0	Nicholls et al 2008
103	1	0	1	0	1	1	0	0	0	0	0	0	0	1	2	2	0	1	0	1	0	0	0	0	Nicholls et al 2008
104	1	0	1	0	1	1	0	0	0	0	0	0	0	1	2	2	0	1	0	1	0	0	0	0	Nicholls et al 2008
105	1	0	1	1	0	0	0	1	0	0	0	0	0	1	2	2	0	0	1	1	0	0	1	1	Hackett 2013
106	1	0	1	1	0	1	1	1	0	0	1	0	0	2	2	1	0	0	1	0	0	1	0	0	Ramsay 2013
107	1	0	1	1	0	1	1	1	0	0	1	0	1	5	2	2	0	0	1	0	0	1	0	0	Kristensen 2008

Appendix B: Project-Related Archaeological Chance Find Data Table

	Chance Find Information												
ACF Number	Project Name	Culture Region	Municipality	Sector	Subsector	Borden #	ACF Typology	Previously Recorded Site	Archaeological Site Type	Previous Project AIA	ACFMP Present	HRM Permit No.	Consulting Firm
108	Quadra Island Clam Gardens	Coastal	Quadra Island	Research	Academic	EbSh-13	Research	Yes	Shell Midden, Features	No	No	2010-251	SFU

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Regulatory Jurisdiction											Land Ownership								Rationale							
	<i>Provincial</i>								<i>Federal</i>			<i>Provincial</i>				<i>Federal</i>				<i>People</i>			<i>ACF Triggers</i>				
	HCA 1996	Pre-HCA	BCEAA	DPiR	OGC	FLNRO	MEM	Other	CEAA	NEB	Other	Unsurveyed Crown Land	Crown/Municipal Owned	Private Land	Treaty Land	Reserve	Federal	Parks Canada	Other	Landowner	Indigenous Informant	Informant	New find	Vandalism	Out-of-Date Regime	Encroachment	New AIA Work
108	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1

Appendix B: Project-Related Archaeological Chance Find Data Table

ACF Number	Rationale cont'd													HRM Effort										References Cited	
	Actions													Field Work					Analysis						
	Archaeology Regulator					Consultant					Proponent			Days	Archae-ologists	Community Reps.	Specialists	Urban	Rural	Total Stone	Total Faunal	Specialized	HR		Other
108	0	0	1	0	1	1	1	0	0	0	1	0	0	20	10	4	2	0	1	1	1	1	0	1	Puckett et al 2014

Appendix C.

Williston Lake Reservoir Archaeological Chance Finds

Appendix C: Williston Lake Reservoir Operations Phase ACF Dataset

OBJECT ID	BORDEN NUMBER	TY TYPOLOGY
742	HaRp-1	PRECONTACT,Cultural Material,Surface,Lithics
667	GIRm-2	No data.
4159	HaRq-1	PRECONTACT,Cultural Material,Surface,Lithics
4693	HaRs-2	PRECONTACT,Cultural Material,Surface,Lithics
5690	HdSd-2	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural
10862	HfSf-1	PRECONTACT,Cultural Material,Surface,Lithics
15239	HdSd-3	PRECONTACT,Cultural Material,Surface,Lithics STR,STR,STR,STR
15238	HdSc-1	PRECONTACT,Cultural Material,Surface,Lithics STR,STR,STR,STR
19093	HdSc-3	PRECONTACT,Cultural Material,Surface,Lithics
19095	HdSd-10	PRECONTACT,Cultural Material,Surface,Lithics
23683	HaRo-1	PRECONTACT,Cultural Material,Surface,Lithics STR,
238719	HdSd-35	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Subsurface,Faunal
239671	HdSd-45	PRECONTACT,Cultural Material,Surface,lithics
239992	HdSd-61	PRECONTACT,Cultural Material,Surface,lithics
240314	HdSd-77	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
240330	HdSd-93	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
239027	HdSd-39	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
239675	HdSd-49	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
240346	HeSf-12	PRECONTACT,Cultural Material,Surface,lithics
238720	HdSd-36	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
239672	HdSd-46	PRECONTACT,Cultural Material,Surface,lithics
239993	HdSd-62	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
240315	HdSd-78	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
240331	HdSd-94	PRECONTACT,Cultural Material,Surface,lithics
240347	HeSf-13	PRECONTACT,Cultural Material,Surface,lithics
239025	HdSd-37	PRECONTACT,Cultural Material,Surface,faunal
239673	HdSd-47	PRECONTACT,Cultural Material,Surface,lithics
239994	HdSd-63	PRECONTACT,Cultural Material,Surface,lithics
240316	HdSd-79	PRECONTACT,Cultural Material,Surface,lithics
240332	HdSd-95	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
240348	HeSf-14	PRECONTACT,Cultural Material,Surface,lithics
239026	HdSd-38	PRECONTACT,Cultural Material,Surface,lithics
239674	HdSd-48	PRECONTACT,Cultural Material,Surface,lithics
239995	HdSd-64	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
240317	HdSd-80	PRECONTACT,Cultural Material,Surface,faunal
240333	HdSd-96	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
238075	HdSd-17	PRECONTACT,Cultural Material,Surface,lithics
238705	HdSd-23	PRECONTACT,Cultural Material,Surface,lithics
239997	HdSd-65	PRECONTACT,Cultural Material,Surface,lithics
240318	HdSd-81	PRECONTACT,Cultural Material,Surface,lithics
240334	HdSd-97	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
238076	HdSd-18	PRECONTACT,Cultural Material,Surface,lithics
238707	HdSd-24	PRECONTACT,Cultural Material,Surface,lithics
239676	HdSd-50	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
239998	HdSd-66	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics TRADITIONAL USE,Culturally Modified Tree,bark-stripped,cambium-stripped
240319	HdSd-82	PRECONTACT,Cultural Material,Surface,lithics
240335	HdSd-98	PRECONTACT,Cultural Material,Surface,faunal
238077	HdSd-19	PRECONTACT,Cultural Material,Surface,lithics
238708	HdSd-25	PRECONTACT,Cultural Material,Surface,lithics
239677	HdSd-51	PRECONTACT,Cultural Material,Surface,lithics
239999	HdSd-67	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
240320	HdSd-83	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
240336	HdSd-99	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
238078	HdSd-20	PRECONTACT,Cultural Material,Surface,lithics
238710	HdSd-26	PRECONTACT,Cultural Material,Surface,lithics
239678	HdSd-52	PRECONTACT,Cultural Material,Surface,lithics
240000	HdSd-68	PRECONTACT,Cultural Material,Surface,lithics
240321	HdSd-84	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
240337	HdSd-100	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
240961	HdSd-107	PRECONTACT,Cultural Material,Surface,lithics
238079	HdSd-21	PRECONTACT,Cultural Material,Surface,lithics
238711	HdSd-27	PRECONTACT,Cultural Material,Surface,lithics
239679	HdSd-53	PRECONTACT,Cultural Material,Surface,lithics

Appendix C: Williston Lake Reservoir Operations Phase ACF Dataset

OBJECT ID	BORDEN NUMBER	TY TYPOLOGY
240305	HdSd-69	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
240322	HdSd-85	PRECONTACT,Cultural Material,Surface,lithics
240338	HdSd-101	PRECONTACT,Cultural Material,Surface,lithics
238080	HdSd-22	No data.
238712	HdSd-28	PRECONTACT,Cultural Material,Surface,lithics
239680	HdSd-54	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
240306	HdSd-70	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
240323	HdSd-86	PRECONTACT,Cultural Material,Surface,lithics
240339	HdSd-102	PRECONTACT,Cultural Material,Surface,lithics
238713	HdSd-29	PRECONTACT,Cultural Material,Surface,lithics
239985	HdSd-55	PRECONTACT,Cultural Material,Surface,lithics
240307	HdSd-71	PRECONTACT,Cultural Material,Surface,lithics
240324	HdSd-87	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
239987	HdSd-57	PRECONTACT,Cultural Material,Surface,lithics
240345	HeSf-11	PRECONTACT,Cultural Material,Surface,lithics
240340	HdSd-103	PRECONTACT,Cultural Material,Surface,faunal
238714	HdSd-30	PRECONTACT,Cultural Material,Surface,lithics
239665	HdSd-40	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
239986	HdSd-56	PRECONTACT,Cultural Material,Surface,lithics
240308	HdSd-72	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
240325	HdSd-88	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
240341	HdSd-104	PRECONTACT,Cultural Material,Surface,lithics
238715	HdSd-31	PRECONTACT,Cultural Material,Surface,lithics
239666	HdSd-41	PRECONTACT,Cultural Material,Surface,lithics
240309	HdSd-73	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
240326	HdSd-89	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
240342	HdSd-105	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
238716	HdSd-32	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
239667	HdSd-42	PRECONTACT,Cultural Material,Subsurface,Lithics
239989	HdSd-58	PRECONTACT,Cultural Material,Surface,lithics
240310	HdSd-74	PRECONTACT,Cultural Material,Surface,lithics
240327	HdSd-90	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
240343	HdSd-106	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
238717	HdSd-33	PRECONTACT,Cultural Material,Surface,lithics
239668	HdSd-43	PRECONTACT,Cultural Material,Surface,lithics
239990	HdSd-59	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
240311	HdSd-75	PRECONTACT,Cultural Material,Surface,lithics
240328	HdSd-91	PRECONTACT,Cultural Material,Surface,lithics
240344	HfSf-3	PRECONTACT,Cultural Material,Surface,lithics
238718	HdSd-34	PRECONTACT,Cultural Material,Surface,lithics
239670	HdSd-44	PRECONTACT,Cultural Material,Surface,lithics
239991	HdSd-60	PRECONTACT,Cultural Material,Surface,lithics
240312	HdSd-76	PRECONTACT,Cultural Material,Surface,lithics
240329	HdSd-92	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
243200	HfSf-4	PRECONTACT,Cultural Material,Surface,lithics
366109	HaSb-10	PRECONTACT,Cultural Material,Surface,lithics
366107	HcSc-119	No data.
488027	HbSc-49	PRECONTACT,Cultural Material,Surface,lithics
488026	HbSc-48	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
488028	HbSc-50	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
488029	HbSc-51	PRECONTACT,Cultural Material,Surface,lithics
487731	HaSb-11	PRECONTACT,Cultural Material,Surface,lithics
488030	HbSc-52	PRECONTACT,Cultural Material,Surface,lithics
487732	HaSb-12	PRECONTACT,Cultural Material,Surface,lithics
488031	HbSc-53	PRECONTACT,Cultural Material,Surface,lithics
487733	HaSb-13	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
488338	HbSc-54	PRECONTACT,Cultural Material,Surface,lithics
487734	HbSb-67	PRECONTACT,Cultural Material,Surface,lithics
487735	HbSb-68	PRECONTACT,Cultural Material,Surface,lithics
488339	HdSd-373	PRECONTACT,Cultural Material,Surface,lithics
487736	HbSb-69	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
488340	HdSd-374	PRECONTACT,Cultural Material,Surface,lithics
488018	HbSb-70	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
488341	HdSd-375	PRECONTACT,Cultural Material,Surface,lithics
488022	HbSb-71	PRECONTACT,Cultural Material,Surface,lithics
488023	HbSb-72	PRECONTACT,Cultural Material,Surface,lithics
488024	HbSb-73	PRECONTACT,Cultural Material,Surface,lithics
488025	HbSb-74	PRECONTACT,Cultural Material,Surface,lithics

Appendix C: Williston Lake Reservoir Operations Phase ACF Dataset

OBJECT ID	BORDEN NUMBER	TY TYPOLOGY
380505	GiRt-17	PRECONTACT,Cultural Material,Surface,lithics
380506	GiRt-18	PRECONTACT,Cultural Material,Surface,lithics
262091	HdSd-118	PRECONTACT,Cultural Material,Surface,lithics
262092	HdSd-119	PRECONTACT,Cultural Material,Surface,lithics
261436	HaSa-2	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
261437	HaSa-3	PRECONTACT,Cultural Material,Surface,firebroken rock
262087	HdSd-114	PRECONTACT,Cultural Material,Surface,lithics
262088	HdSd-115	PRECONTACT,Cultural Material,Surface,lithics
261438	HaSa-4	PRECONTACT,Cultural Material,Surface,lithics
261439	HaSb-1	PRECONTACT,Cultural Material,Surface,lithics
262089	HdSd-116	PRECONTACT,Cultural Material,Surface,lithics
262090	HdSd-117	PRECONTACT,Cultural Material,Surface,lithics
261440	HaSb-2	PRECONTACT,Cultural Material,Surface,lithics
262093	HdSd-120	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
262094	HdSd-121	PRECONTACT,Cultural Material,Surface,lithics
262095	HdSd-122	PRECONTACT,Cultural Material,Surface,lithics
262096	HdSd-123	PRECONTACT,Cultural Material,Surface,lithics
262385	HdSd-124	PRECONTACT,Cultural Material,Surface,lithics
262386	HdSd-125	PRECONTACT,Cultural Material,Surface,lithics
262387	HdSd-126	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Subsistence Feature,Hearth PRECONTACT,Cultural Material,Surface,firebroken rock
262388	HdSd-127	PRECONTACT,Cultural Material,Surface,lithics
262389	HdSd-128	PRECONTACT,Cultural Material,Surface,lithics
262390	HdSd-129	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
262718	HdSd-135	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
262719	HdSd-136	PRECONTACT,Cultural Material,Surface,lithics
269111	HdSd-208	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,firebroken rock
269112	HdSd-209	PRECONTACT,Cultural Material,Surface,lithics
269752	HdSd-240	PRECONTACT,Cultural Material,Surface,lithics
269753	HdSd-241	PRECONTACT,Cultural Material,Surface,lithics
262720	HdSd-137	PRECONTACT,Cultural Material,Surface,faunal
262721	HdSd-131	PRECONTACT,Cultural Material,Surface,lithics
262722	HdSd-132	PRECONTACT,Cultural Material,Surface,lithics
262723	HdSd-133	PRECONTACT,Cultural Material,Surface,lithics
262724	HdSd-134	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
262705	HdSd-130	PRECONTACT,Cultural Material,Surface,lithics
262066	HdSd-108	PRECONTACT,Cultural Material,Surface,lithics
262083	HdSd-110	PRECONTACT,Cultural Material,Surface,lithics
262084	HdSd-111	PRECONTACT,Cultural Material,Surface,lithics
261435	HaSa-1	PRECONTACT,Cultural Material,Surface,lithics
262085	HdSd-112	PRECONTACT,Cultural Material,Surface,lithics
262086	HdSd-113	PRECONTACT,Cultural Material,Surface,faunal
268466	HdSd-189	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
268467	HdSd-190	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
269107	HdSd-204	PRECONTACT,Cultural Material,Surface,lithics
269108	HdSd-205	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
269747	HdSd-236	PRECONTACT,Cultural Material,Surface,lithics
269748	HdSd-237	PRECONTACT,Cultural Material,Surface,lithics
270389	HdSd-260	PRECONTACT,Cultural Material,Surface,lithics
270390	HdSd-261	PRECONTACT,Cultural Material,Surface,lithics
271027	HdSd-285	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
271028	HdSd-286	PRECONTACT,Cultural Material,Surface,lithics
268468	HdSd-191	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
268469	HdSd-192	PRECONTACT,Cultural Material,Surface,lithics
269109	HdSd-206	PRECONTACT,Cultural Material,Surface,lithics
269110	HdSd-207	PRECONTACT,Cultural Material,Surface,lithics
269750	HdSd-238	PRECONTACT,Cultural Material,Surface,lithics
269751	HdSd-239	PRECONTACT,Cultural Material,Surface,lithics
270391	HdSd-262	PRECONTACT,Cultural Material,Surface,lithics
270392	HdSd-263	PRECONTACT,Cultural Material,Surface,lithics
271029	HdSd-287	PRECONTACT,Cultural Material,Surface,lithics
271030	HdSd-288	PRECONTACT,Cultural Material,Surface,lithics
271031	HdSd-289	PRECONTACT,Cultural Material,Surface,lithics
268470	HdSd-193	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
268471	HdSd-196	PRECONTACT,Cultural Material,Surface,lithics
270393	HdSd-264	PRECONTACT,Cultural Material,Surface,lithics

Appendix C: Williston Lake Reservoir Operations Phase ACF Dataset

OBJECT ID	BORDEN NUMBER	TY TYPOLOGY
270394	HdSd-265	PRECONTACT,Cultural Material,Surface,lithics
268146	HdSd-177	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
270739	HdSd-276	PRECONTACT,Cultural Material,Surface,lithics
270742	HdSd-279	PRECONTACT,Cultural Material,Surface,lithics
268472	HdSd-197	PRECONTACT,Cultural Material,Surface,lithics
268473	HdSd-198	PRECONTACT,Cultural Material,Surface,lithics
269113	HdSd-210	PRECONTACT,Cultural Material,Surface,lithics
269114	HdSd-211	PRECONTACT,Cultural Material,Surface,lithics
269755	HdSd-242	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
269756	HdSd-243	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
270395	HdSd-266	PRECONTACT,Cultural Material,Surface,lithics
270396	HdSd-267	PRECONTACT,Cultural Material,Surface,lithics
268474	HdSd-199	PRECONTACT,Cultural Material,Surface,lithics
268475	HdSd-200	PRECONTACT,Cultural Material,Surface,lithics
269115	HdSd-212	PRECONTACT,Cultural Material,Surface,lithics
269116	HdSd-213	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
269757	HdSd-244	PRECONTACT,Cultural Material,Surface,lithics
269758	HdSd-245	PRECONTACT,Cultural Material,Surface,lithics
270397	HdSc-6	PRECONTACT,Cultural Material,Surface,lithics
270398	HdSd-268	PRECONTACT,Cultural Material,Surface,lithics
266248	HdSd-158	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
268476	HdSd-201	PRECONTACT,Cultural Material,Surface,lithics
268477	HdSd-202	PRECONTACT,Cultural Material,Surface,lithics
269117	HdSd-214	PRECONTACT,Cultural Material,Surface,lithics
269118	HdSd-215	PRECONTACT,Cultural Material,Surface,lithics
269759	HdSd-246	PRECONTACT,Cultural Material,Surface,lithics
269760	HdSd-247	PRECONTACT,Cultural Material,Surface,lithics
270399	HdSd-269	PRECONTACT,Cultural Material,Surface,lithics
270400	HdSd-270	PRECONTACT,Cultural Material,Surface,lithics
266249	HdSd-159	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
266250	HdSd-160	PRECONTACT,Cultural Material,Surface,lithics
269119	HdSd-216	PRECONTACT,Cultural Material,Surface,lithics
269120	HdSd-217	PRECONTACT,Cultural Material,Surface,lithics
270065	HdSd-248	PRECONTACT,Cultural Material,Surface,lithics
270067	HdSd-250	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
265935	HdSd-151	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
265936	HdSd-152	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
266251	HdSd-161	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
267197	HdSd-169	PRECONTACT,Cultural Material,Surface,lithics
267518	HdSd-173	PRECONTACT,Cultural Material,Surface,lithics
267519	HdSd-174	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
268145	HdSd-176	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
269425	HdSd-218	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
269426	HdSd-219	PRECONTACT,Cultural Material,Surface,lithics
270068	HdSd-251	PRECONTACT,Cultural Material,Surface,lithics
270069	HdSd-252	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
270414	HdSd-271	PRECONTACT,Cultural Material,Surface,firebroken rock
270415	HdSd-272	PRECONTACT,Cultural Material,Surface,lithics
270737	HdSd-274	PRECONTACT,Cultural Material,Surface,lithics
270738	HdSd-275	PRECONTACT,Cultural Material,Surface,lithics
266225	HdSd-153	PRECONTACT,Cultural Material,Surface,lithics
266226	HdSd-154	PRECONTACT,Cultural Material,Surface,lithics
266227	HdSd-155	PRECONTACT,Cultural Material,Surface,lithics
267198	HdSd-170	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
267520	HdSd-175	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
268147	HdSd-178	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
269427	HdSd-220	PRECONTACT,Cultural Material,Surface,firebroken rock
269428	HdSd-221	PRECONTACT,Cultural Material,Surface,lithics
270070	HdSd-253	PRECONTACT,Cultural Material,Surface,lithics
270071	HdSd-254	PRECONTACT,Cultural Material,Surface,lithics
270416	HdSd-273	PRECONTACT,Cultural Material,Surface,lithics
270740	HdSd-277	PRECONTACT,Cultural Material,Surface,lithics
265908	HdSd-138	PRECONTACT,Cultural Material,Surface,lithics
265909	HdSd-139	PRECONTACT,Cultural Material,Surface,firebroken rock

Appendix C: Williston Lake Reservoir Operations Phase ACF Dataset

OBJECT ID	BORDEN NUMBER	TY TYPOLOGY
266228	HdSd-156	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
266229	HdSd-157	PRECONTACT,Cultural Material,Surface,lithics
266881	HdSd-162	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
266882	HdSd-163	PRECONTACT,Cultural Material,Surface,lithics
267199	HdSd-171	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
268148	HdSd-179	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
269429	HdSd-222	PRECONTACT,Cultural Material,Surface,lithics
269430	HdSd-223	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
270072	HdSd-255	PRECONTACT,Cultural Material,Surface,lithics
270741	HdSd-278	PRECONTACT,Cultural Material,Surface,lithics
265910	HdSd-140	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
265911	HdSd-141	PRECONTACT,Cultural Material,Surface,lithics
266883	HdSd-164	PRECONTACT,Cultural Material,Surface,lithics
266884	HdSd-165	PRECONTACT,Cultural Material,Surface,lithics
266885	HdSd-166	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,firebroken rock
267200	HdSd-172	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
268149	HdSd-180	PRECONTACT,Cultural Material,Surface,lithics
268150	HdSd-181	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
269431	HdSd-224	PRECONTACT,Cultural Material,Surface,lithics
269432	HdSd-225	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
270743	HdSd-280	PRECONTACT,Cultural Material,Surface,lithics
270744	HdSd-281	PRECONTACT,Cultural Material,Surface,lithics
271345	HdSd-290	PRECONTACT,Cultural Material,Surface,lithics
271346	HdSd-291	PRECONTACT,Cultural Material,Surface,lithics
265912	HdSd-142	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
265913	HdSd-143	PRECONTACT,Cultural Material,Surface,lithics
267505	HdSd-167	PRECONTACT,Cultural Material,Surface,lithics
267506	HdSd-168	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
268151	HdSd-182	PRECONTACT,Cultural Material,Surface,lithics
268152	HdSd-183	PRECONTACT,Cultural Material,Surface,lithics
269433	HdSd-226	PRECONTACT,Cultural Material,Surface,lithics
269434	HdSd-227	PRECONTACT,Cultural Material,Surface,lithics
270745	HdSc-7	PRECONTACT,Cultural Material,Surface,lithics
270746	HdSc-8	PRECONTACT,Cultural Material,Surface,lithics
271347	HdSd-292	PRECONTACT,Cultural Material,Surface,lithics
265914	HdSd-144	PRECONTACT,Cultural Material,Surface,lithics
265915	HdSd-145	PRECONTACT,Cultural Material,Surface,lithics
265916	HdSd-146	PRECONTACT,Cultural Material,Surface,lithics
268153	HdSd-184	PRECONTACT,Cultural Material,Surface,lithics
268154	HdSd-185	PRECONTACT,Cultural Material,Surface,lithics
269435	HdSd-228	PRECONTACT,Cultural Material,Surface,lithics
269436	HdSd-229	PRECONTACT,Cultural Material,Surface,lithics
270747	HdSc-9	PRECONTACT,Cultural Material,Surface,lithics
270748	HdSc-10	PRECONTACT,Cultural Material,Surface,lithics
265917	HdSd-147	PRECONTACT,Cultural Material,Surface,lithics
265918	HdSd-148	PRECONTACT,Cultural Material,Surface,lithics
265919	HdSd-149	PRECONTACT,Cultural Material,Surface,lithics
268155	HdSd-186	PRECONTACT,Cultural Material,Surface,lithics
268156	HdSd-187	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
269437	HdSd-230	PRECONTACT,Cultural Material,Surface,lithics
269438	HdSd-231	PRECONTACT,Cultural Material,Surface,lithics
270749	HdSc-11	PRECONTACT,Cultural Material,Surface,lithics
270750	HdSc-12	PRECONTACT,Cultural Material,Surface,lithics
265920	HdSd-150	PRECONTACT,Cultural Material,Surface,lithics
268158	HdSd-194	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
269439	HdSd-232	PRECONTACT,Cultural Material,Surface,lithics
269440	HdSd-233	PRECONTACT,Cultural Material,Surface,lithics
270385	HdSd-256	PRECONTACT,Cultural Material,Surface,lithics
270386	HdSd-257	PRECONTACT,Cultural Material,Surface,lithics
270751	HdSc-13	PRECONTACT,Cultural Material,Surface,lithics
270752	HdSd-282	PRECONTACT,Cultural Material,Surface,lithics
268159	HdSd-195	PRECONTACT,Cultural Material,Surface,lithics
268465	HdSd-188	PRECONTACT,Cultural Material,Surface,lithics

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OBJECT ID	BORDEN NUMBER	TY TYPOLOGY
269105	HdSd-203	PRECONTACT,Cultural Material,Surface,lithics
269745	HdSd-234	PRECONTACT,Cultural Material,Surface,lithics
269746	HdSd-235	PRECONTACT,Cultural Material,Surface,lithics
270387	HdSd-258	PRECONTACT,Cultural Material,Surface,lithics
270388	HdSd-259	PRECONTACT,Cultural Material,Surface,faunal
271025	HdSd-283	PRECONTACT,Cultural Material,Surface,lithics
271026	HdSd-284	PRECONTACT,Cultural Material,Surface,lithics
272001	HdSd-293	PRECONTACT,Cultural Material,Surface,lithics
272002	HdSd-294	PRECONTACT,Cultural Material,Surface,lithics
272003	HdSc-14	PRECONTACT,Cultural Material,Surface,firebroken rock
277749	HfSf-5	PRECONTACT,Cultural Material,Surface,firebroken rock
278092	HdSd-295	TRADITIONAL USE,Culturally Modified Tree,other modified tree,
302080	HbSa-31	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
298865	GiRt-14	PRECONTACT,Cultural Material,Surface,lithics
298866	GiRt-15	PRECONTACT,Subsistence Feature,Hearth PRECONTACT,Cultural Material,Surface,firebroken rock
297600	GhRs-6	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
297905	GhRs-7	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Subsistence Feature,Hearth PRECONTACT,Cultural Material,Surface,firebroken rock
298241	GiRt-3	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
298242	GiRt-4	PRECONTACT,Subsistence Feature,Hearth PRECONTACT,Cultural Material,Surface,firebroken rock
298243	GiRt-5	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
298244	GiRt-6	PRECONTACT,Cultural Material,Surface,lithics
298545	GiRt-7	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Subsistence Feature,Hearth
298546	GiRt-8	PRECONTACT,Cultural Material,Surface,lithics
298547	GiRt-9	PRECONTACT,Cultural Material,Surface,lithics
298548	GiRt-10	PRECONTACT,Cultural Material,Surface,lithics
298549	GiRt-11	PRECONTACT,Cultural Material,Surface,lithics
298550	GiRt-12	PRECONTACT,Cultural Material,Surface,lithics
298551	GiRt-13	PRECONTACT,Cultural Material,Surface,lithics
303997	HbSc-24	PRECONTACT,Cultural Material,Surface,lithics
303998	HbSc-25	PRECONTACT,Cultural Material,Surface,lithics
305269	HcSc-35	PRECONTACT,Cultural Material,Surface,lithics
305270	HcSc-36	PRECONTACT,Cultural Material,Surface,lithics
305589	HcSc-58	PRECONTACT,Cultural Material,Surface,lithics
305590	HcSc-59	PRECONTACT,Cultural Material,Surface,lithics
306227	HcSd-8	PRECONTACT,Cultural Material,Surface,lithics
306228	HcSd-9	PRECONTACT,Cultural Material,Surface,lithics
307839	HdSd-326	PRECONTACT,Cultural Material,Surface,lithics
307840	HdSd-328	PRECONTACT,Cultural Material,Surface,lithics
300473	HdSc-15	PRECONTACT,Cultural Material,Surface,lithics
300785	HbSb-7	PRECONTACT,Cultural Material,Surface,lithics
302076	HaSa-6	PRECONTACT,Cultural Material,Surface,lithics
302077	HbSa-27	PRECONTACT,Cultural Material,Surface,lithics
302717	HbSb-16	PRECONTACT,Cultural Material,Surface,lithics
302718	HbSb-17	PRECONTACT,Cultural Material,Surface,lithics
303357	HbSb-46	PRECONTACT,Cultural Material,Surface,lithics
303358	HbSc-3	PRECONTACT,Cultural Material,Surface,lithics
303999	HbSc-26	PRECONTACT,Cultural Material,Surface,lithics
304000	HbSc-27	PRECONTACT,Cultural Material,Surface,lithics
304633	HcSc-10	PRECONTACT,Cultural Material,Surface,lithics
304634	HcSc-11	PRECONTACT,Cultural Material,Surface,lithics
305271	HcSc-37	PRECONTACT,Cultural Material,Surface,lithics
305272	HcSc-38	PRECONTACT,Cultural Material,Surface,lithics
305591	HcSc-60	PRECONTACT,Cultural Material,Surface,lithics
305592	HcSc-61	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
306229	HcSd-10	PRECONTACT,Cultural Material,Surface,lithics
306865	HdSd-308	PRECONTACT,Cultural Material,Surface,lithics
306866	HdSd-309	PRECONTACT,Cultural Material,Surface,lithics
308145	HdSd-324	PRECONTACT,Cultural Material,Surface,lithics
300786	HbSb-8	PRECONTACT,Cultural Material,Surface,lithics
300788	HbSc-1	PRECONTACT,Cultural Material,Surface,lithics
301425	HdSc-25	PRECONTACT,Cultural Material,Surface,lithics
301426	HdSc-26	PRECONTACT,Cultural Material,Surface,lithics
302078	HbSa-29	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
302079	HbSa-30	PRECONTACT,Cultural Material,Surface,faunal
302719	HbSb-18	PRECONTACT,Cultural Material,Surface,lithics
302720	HbSb-19	PRECONTACT,Cultural Material,Surface,lithics

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OBJECT ID	BORDEN NUMBER	TY TYPOLOGY
303359	HbSc-4	PRECONTACT,Cultural Material,Surface,lithics
303360	HbSc-5	PRECONTACT,Cultural Material,Surface,lithics
304305	HbSc-28	PRECONTACT,Cultural Material,Surface,lithics
304306	HbSc-29	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
304635	HcSc-12	PRECONTACT,Cultural Material,Surface,lithics
304636	HcSc-13	PRECONTACT,Cultural Material,Surface,lithics
305273	HcSc-39	PRECONTACT,Cultural Material,Surface,lithics
305274	HcSc-40	PRECONTACT,Cultural Material,Surface,lithics
305593	HcSc-62	PRECONTACT,Cultural Material,Surface,lithics
305594	HcSc-63	PRECONTACT,Cultural Material,Surface,lithics
306887	HdSd-313	PRECONTACT,Cultural Material,Surface,lithics
306888	HdSd-315	PRECONTACT,Cultural Material,Surface,faunal
307200	HbSa-37	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
307505	HbSa-38	PRECONTACT,Cultural Material,Surface,lithics
299825	GiRt-16	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Subsistence Feature,Hearth
300789	HbSc-2	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
301427	HdSc-27	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
303025	HbSb-20	PRECONTACT,Cultural Material,Surface,lithics
303026	HbSb-21	PRECONTACT,Cultural Material,Surface,lithics
303665	HbSc-6	PRECONTACT,Cultural Material,Surface,lithics
303666	HbSc-7	No data.
304307	HbSc-30	PRECONTACT,Cultural Material,Surface,lithics
304308	HbSc-31	PRECONTACT,Cultural Material,Surface,lithics
304637	HcSc-14	PRECONTACT,Cultural Material,Surface,lithics
304638	HcSc-15	PRECONTACT,Cultural Material,Surface,lithics
305275	HcSc-41	PRECONTACT,Cultural Material,Surface,lithics
305595	HcSc-64	PRECONTACT,Cultural Material,Surface,lithics
305596	HcSc-65	PRECONTACT,Cultural Material,Surface,lithics
306889	HdSd-317	No data.
306890	HdSd-319	PRECONTACT,Cultural Material,Surface,lithics
307507	HbSa-39	PRECONTACT,Cultural Material,Surface,lithics
307508	HbSb-47	PRECONTACT,Cultural Material,Surface,lithics
301428	HdSc-28	PRECONTACT,Cultural Material,Surface,lithics
301429	HcSc-4	PRECONTACT,Cultural Material,Surface,lithics
303027	HbSb-22	PRECONTACT,Cultural Material,Surface,lithics
303028	HbSb-23	PRECONTACT,Cultural Material,Surface,lithics
303667	HbSc-8	PRECONTACT,Cultural Material,Surface,lithics
303668	HbSc-9	PRECONTACT,Cultural Material,Surface,lithics
304309	HbSc-32	PRECONTACT,Cultural Material,Surface,lithics
304310	HbSc-33	PRECONTACT,Cultural Material,Surface,lithics
305277	HcSc-42	PRECONTACT,Cultural Material,Surface,lithics
305278	HcSc-43	PRECONTACT,Cultural Material,Surface,lithics
305597	HcSc-66	PRECONTACT,Cultural Material,Surface,lithics
305598	HcSc-67	PRECONTACT,Cultural Material,Surface,lithics
306231	HcSd-11	PRECONTACT,Cultural Material,Surface,lithics
306232	HcSd-12	PRECONTACT,Cultural Material,Surface,lithics
306869	HdSd-311	PRECONTACT,Cultural Material,Surface,lithics
306870	HdSd-312	PRECONTACT,Cultural Material,Surface,lithics
306891	HdSd-321	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
306892	HfSf-6	PRECONTACT,Cultural Material,Surface,lithics
307510	HbSb-48	PRECONTACT,Cultural Material,Surface,lithics
299827	HdSd-296	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
299828	HdSd-297	PRECONTACT,Cultural Material,Surface,lithics
302389	HbSa-13	PRECONTACT,Cultural Material,Surface,lithics
302390	HbSa-15	PRECONTACT,Cultural Material,Surface,lithics
303029	HbSb-24	PRECONTACT,Cultural Material,Surface,lithics
303030	HbSb-25	PRECONTACT,Cultural Material,Surface,lithics
303669	HbSc-10	PRECONTACT,Cultural Material,Surface,lithics
303670	HbSc-11	PRECONTACT,Cultural Material,Surface,lithics
304311	HbSc-34	PRECONTACT,Cultural Material,Surface,lithics
305279	HcSc-45	PRECONTACT,Cultural Material,Surface,lithics
306233	HcSd-13	PRECONTACT,Cultural Material,Surface,lithics
306234	HcSd-14	PRECONTACT,Cultural Material,Surface,lithics
306871	HdSd-314	PRECONTACT,Cultural Material,Surface,faunal
306872	HdSd-316	PRECONTACT,Cultural Material,Surface,lithics
307512	HbSb-49	PRECONTACT,Cultural Material,Surface,lithics
299829	HdSd-298	PRECONTACT,Cultural Material,Surface,lithics

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OBJECT ID	BORDEN NUMBER	TY TYPOLOGY
299830	HdSd-299	PRECONTACT,Cultural Material,Surface,lithics
302391	HbSa-17	PRECONTACT,Cultural Material,Surface,lithics
302392	HbSa-19	PRECONTACT,Cultural Material,Surface,lithics
303031	HbSb-26	PRECONTACT,Cultural Material,Surface,lithics
303032	HbSb-27	PRECONTACT,Cultural Material,Surface,lithics
303671	HbSc-12	PRECONTACT,Cultural Material,Surface,lithics
303672	HbSc-13	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
304945	HcSc-16	PRECONTACT,Cultural Material,Surface,lithics
304946	HcSc-17	PRECONTACT,Cultural Material,Subsurface,Lithics
306235	HcSd-15	No data.
306236	HcSd-16	PRECONTACT,Cultural Material,Surface,lithics
306873	HdSd-318	PRECONTACT,Cultural Material,Surface,lithics
306874	HdSd-320	PRECONTACT,Cultural Material,Surface,lithics
307514	HbSb-50	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
307515	HbSb-51	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Subsistence Feature,Hearth PRECONTACT,Cultural Material,Surface,firebroken rock
300798	HdSc-16	PRECONTACT,Cultural Material,Surface,lithics
300799	HdSc-17	PRECONTACT,Cultural Material,Surface,lithics
301747	HbSa-11	PRECONTACT,Cultural Material,Surface,lithics
302393	HbSa-21	PRECONTACT,Cultural Material,Surface,lithics
302394	HbSa-23	PRECONTACT,Cultural Material,Surface,lithics
303033	HbSb-28	PRECONTACT,Cultural Material,Surface,lithics
303034	HbSb-29	PRECONTACT,Cultural Material,Surface,lithics
303674	HbSc-14	PRECONTACT,Cultural Material,Surface,lithics
304947	HcSc-18	PRECONTACT,Cultural Material,Surface,lithics
305282	HcSc-44	PRECONTACT,Cultural Material,Surface,lithics
306237	HcSd-17	PRECONTACT,Cultural Material,Surface,lithics
306238	HcSd-18	PRECONTACT,Cultural Material,Surface,lithics
306875	HdSd-322	PRECONTACT,Cultural Material,Surface,lithics
307516	HbSb-52	PRECONTACT,Cultural Material,Surface,firebroken rock
307517	HbSb-53	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
300800	HdSc-18	PRECONTACT,Cultural Material,Surface,lithics
301105	HdSc-19	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
301748	HbSa-12	PRECONTACT,Cultural Material,Surface,lithics
303039	HbSb-34	PRECONTACT,Cultural Material,Surface,lithics
299839	HbSb-5	PRECONTACT,Cultural Material,Surface,lithics
300160	HbSb-2	PRECONTACT,Cultural Material,Surface,lithics
305911	HcSd-1	PRECONTACT,Cultural Material,Surface,lithics
305912	HcSd-2	PRECONTACT,Cultural Material,Surface,lithics
303035	HbSb-30	PRECONTACT,Cultural Material,Surface,lithics
303036	HbSb-31	PRECONTACT,Cultural Material,Surface,lithics
303037	HbSb-32	PRECONTACT,Cultural Material,Surface,lithics
304315	HbSc-35	PRECONTACT,Cultural Material,Surface,lithics
304949	HcSc-19	PRECONTACT,Cultural Material,Surface,lithics
304950	HcSc-20	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
299837	HbSb-3	PRECONTACT,Cultural Material,Surface,lithics
300159	HbSb-1	PRECONTACT,Cultural Material,Surface,lithics
301106	HdSc-20	PRECONTACT,Cultural Material,Surface,lithics
301107	HdSc-21	PRECONTACT,Cultural Material,Surface,lithics
302397	HbSa-25	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Subsistence Feature,Hearth
303038	HbSb-33	PRECONTACT,Cultural Material,Surface,lithics
304316	HbSc-36	PRECONTACT,Cultural Material,Surface,lithics
304317	HbSc-37	PRECONTACT,Cultural Material,Surface,lithics
304951	HcSc-21	PRECONTACT,Cultural Material,Surface,lithics
304952	HcSc-22	PRECONTACT,Cultural Material,Surface,lithics
305287	HcSc-46	PRECONTACT,Cultural Material,Surface,lithics
306547	HdSc-30	PRECONTACT,Cultural Material,Surface,lithics
307520	HbSb-54	PRECONTACT,Cultural Material,Surface,lithics
299838	HbSb-4	PRECONTACT,Cultural Material,Surface,lithics
301108	HdSc-22	PRECONTACT,Cultural Material,Surface,lithics
301109	HdSc-23	PRECONTACT,Cultural Material,Surface,lithics
302398	HaSa-5	PRECONTACT,Cultural Material,Surface,lithics
302399	HbSa-26	PRECONTACT,Cultural Material,Surface,lithics
303040	HbSb-35	PRECONTACT,Cultural Material,Surface,lithics
303986	HbSc-15	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
303987	HbSc-16	PRECONTACT,Cultural Material,Surface,lithics
304319	HbSc-38	PRECONTACT,Cultural Material,Surface,lithics

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OBJECT ID	BORDEN NUMBER	TY TYPOLOGY
304320	HbSc-39	PRECONTACT,Cultural Material,Surface,lithics
304953	HcSc-23	PRECONTACT,Cultural Material,Surface,lithics
304954	HcSc-24	PRECONTACT,Cultural Material,Surface,lithics
305288	HcSc-47	PRECONTACT,Cultural Material,Surface,lithics
305289	HcSc-48	PRECONTACT,Cultural Material,Surface,lithics
305290	HcSc-49	PRECONTACT,Cultural Material,Surface,lithics
306548	HdSd-302	PRECONTACT,Cultural Material,Surface,lithics
306549	HdSd-303	PRECONTACT,Cultural Material,Surface,lithics
307825	HbSb-55	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Subsistence Feature,Hearth PRECONTACT,Cultural Material,Surface,firebroken rock
299840	HbSb-6	PRECONTACT,Cultural Material,Surface,lithics
301110	HdSc-24	PRECONTACT,Cultural Material,Surface,lithics
302400	HbSa-28	PRECONTACT,Cultural Material,Surface,lithics
302705	HbSa-32	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
303988	HbSc-17	PRECONTACT,Cultural Material,Surface,lithics
303989	HbSc-18	PRECONTACT,Cultural Material,Surface,lithics
304625	HcSc-5	PRECONTACT,Cultural Material,Surface,lithics
304626	HcSc-6	PRECONTACT,Cultural Material,Surface,lithics
304955	HcSc-25	PRECONTACT,Cultural Material,Surface,lithics
304956	HcSc-26	PRECONTACT,Cultural Material,Surface,lithics
305291	HcSc-50	PRECONTACT,Cultural Material,Surface,lithics
305292	HcSc-51	PRECONTACT,Cultural Material,Surface,lithics
305913	HcSd-3	PRECONTACT,Cultural Material,Surface,lithics
306550	HdSc-31	PRECONTACT,Cultural Material,Surface,lithics
306551	HdSc-32	PRECONTACT,Cultural Material,Surface,lithics
307827	HbSb-56	PRECONTACT,Cultural Material,Surface,lithics
307828	HaSb-3	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Subsistence Feature,Hearth PRECONTACT,Cultural Material,Surface,firebroken rock
301442	HdSc-29	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
302706	HbSa-33	PRECONTACT,Cultural Material,Surface,lithics
302707	HbSa-34	PRECONTACT,Cultural Material,Surface,lithics
303346	HbSb-36	PRECONTACT,Cultural Material,Surface,lithics
303347	HbSb-37	PRECONTACT,Cultural Material,Surface,lithics
303990	HbSc-19	PRECONTACT,Cultural Material,Surface,lithics
303991	HbSc-20	PRECONTACT,Cultural Material,Surface,lithics
304627	HcSc-7	PRECONTACT,Cultural Material,Surface,lithics
304628	HcSc-8	PRECONTACT,Cultural Material,Surface,lithics
304957	HcSc-27	PRECONTACT,Cultural Material,Surface,lithics
304958	HcSc-28	PRECONTACT,Cultural Material,Surface,lithics
305293	HcSc-52	PRECONTACT,Cultural Material,Surface,lithics
305295	HcSc-53	PRECONTACT,Cultural Material,Surface,lithics
306552	HdSc-33	PRECONTACT,Cultural Material,Surface,lithics
306553	HdSc-34	PRECONTACT,Cultural Material,Surface,lithics
307829	HaSb-4	PRECONTACT,Cultural Material,Surface,lithics
307830	HaSb-5	PRECONTACT,Cultural Material,Surface,lithics
307831	HaSb-6	PRECONTACT,Cultural Material,Surface,lithics
301443	HbSa-6	PRECONTACT,Cultural Material,Surface,lithics
301444	HbSa-7	PRECONTACT,Cultural Material,Surface,lithics
302068	HbSa-14	PRECONTACT,Cultural Material,Surface,lithics
302069	HbSa-16	PRECONTACT,Cultural Material,Surface,lithics
302708	HbSa-35	PRECONTACT,Cultural Material,Surface,lithics
302709	HbSa-36	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
303348	HbSb-38	PRECONTACT,Cultural Material,Surface,lithics
303349	HbSb-39	PRECONTACT,Cultural Material,Surface,lithics
303992	HbSc-21	PRECONTACT,Cultural Material,Surface,lithics
303993	HbSc-22	PRECONTACT,Cultural Material,Surface,lithics
304629	HcSc-9	PRECONTACT,Cultural Material,Surface,lithics
304959	HcSc-29	PRECONTACT,Cultural Material,Surface,lithics
304960	HcSc-30	PRECONTACT,Cultural Material,Surface,lithics
305918	HcSd-4	PRECONTACT,Cultural Material,Surface,lithics
306554	HdSd-304	PRECONTACT,Cultural Material,Surface,lithics
306556	HdSd-305	PRECONTACT,Cultural Material,Surface,lithics
307832	HaSb-7	PRECONTACT,Cultural Material,Surface,lithics
307833	HaSb-8	PRECONTACT,Cultural Material,Surface,lithics
301445	HbSa-8	PRECONTACT,Cultural Material,Surface,lithics
301447	HbSa-9	PRECONTACT,Cultural Material,Surface,lithics

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OBJECT ID	BORDEN NUMBER	TY TYPOLOGY
302070	HbSa-18	PRECONTACT,Cultural Material,Surface,lithics
302071	HbSa-20	PRECONTACT,Cultural Material,Surface,lithics
302710	HbSb-9	PRECONTACT,Cultural Material,Surface,lithics
302711	HbSb-10	PRECONTACT,Cultural Material,Surface,lithics
303350	HbSb-40	No data.
303351	HbSb-41	PRECONTACT,Cultural Material,Surface,lithics
303994	HbSc-23	PRECONTACT,Cultural Material,Surface,lithics
305265	HcSc-31	PRECONTACT,Cultural Material,Surface,lithics
305266	HcSc-32	PRECONTACT,Cultural Material,Surface,lithics
305585	HcSc-54	PRECONTACT,Cultural Material,Surface,lithics
305586	HcSc-55	PRECONTACT,Cultural Material,Surface,lithics
305920	HcSd-5	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
306557	HdSd-306	PRECONTACT,Cultural Material,Surface,lithics
306558	HdSd-307	PRECONTACT,Cultural Material,Surface,lithics
307834	HdSd-323	PRECONTACT,Cultural Material,Surface,lithics
301448	HbSa-10	PRECONTACT,Cultural Material,Surface,lithics
302072	HbSa-22	PRECONTACT,Cultural Material,Surface,lithics
302073	HbSa-24	PRECONTACT,Cultural Material,Surface,lithics
302712	HbSb-11	PRECONTACT,Cultural Material,Surface,lithics
302713	HbSb-12	PRECONTACT,Cultural Material,Surface,lithics
302714	HbSb-13	PRECONTACT,Cultural Material,Surface,lithics
303352	HbSb-42	PRECONTACT,Cultural Material,Subsurface,Lithics
303353	HbSb-43	PRECONTACT,Cultural Material,Surface,lithics
305267	HcSc-33	PRECONTACT,Cultural Material,Surface,lithics
305268	HcSc-34	PRECONTACT,Cultural Material,Surface,lithics
305587	HcSc-56	PRECONTACT,Cultural Material,Surface,lithics
305588	HcSc-57	PRECONTACT,Cultural Material,Surface,lithics
306225	HcSd-6	PRECONTACT,Cultural Material,Surface,lithics
306226	HcSd-7	PRECONTACT,Cultural Material,Surface,lithics
306884	HdSd-310	PRECONTACT,Cultural Material,Surface,faunal
300471	HdSd-300	PRECONTACT,Cultural Material,Surface,lithics
300472	HdSd-301	PRECONTACT,Cultural Material,Surface,lithics
302715	HbSb-14	No data.
302716	HbSb-15	PRECONTACT,Cultural Material,Surface,lithics
303354	HbSb-44	PRECONTACT,Cultural Material,Surface,lithics
303355	HbSb-45	PRECONTACT,Cultural Material,Surface,lithics
308785	HbSa-41	No data.
308786	HbSa-42	No data.
308787	HbSa-43	No data.
308788	HbSa-44	No data.
308148	HdSd-325	PRECONTACT,Cultural Material,Surface,lithics
308789	HbSa-45	No data.
308790	HbSa-46	No data.
311346	HeSf-15	PRECONTACT,Cultural Material,Surface,lithics
308149	HdSd-327	PRECONTACT,Cultural Material,Surface,lithics
308791	HaSa-7	PRECONTACT,Cultural Material,Surface,lithics
308158	HcSc-68	PRECONTACT,Cultural Material,Surface,lithics
308152	HdSd-329	PRECONTACT,Cultural Material,Surface,lithics
308153	HdSd-330	PRECONTACT,Cultural Material,Surface,lithics
308794	HaSa-8	No data.
335051	HaSa-14	PRECONTACT,Cultural Material,Surface,lithics
308154	HdSd-331	PRECONTACT,Cultural Material,Surface,lithics
308156	HdSd-332	No data.
308157	HdSd-333	No data.
308795	HcSb-6	PRECONTACT,Cultural Material,Surface,lithics
308159	HcSc-69	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Subsistence Feature,Hearth PRECONTACT,Cultural Material,Surface,firebroken rock
308798	HbSb-57	PRECONTACT,Cultural Material,Surface,lithics
308160	HcSc-70	No data.
308465	HcSc-71	No data.
308466	HcSc-72	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
308467	HcSc-73	No data.
308468	HcSc-74	PRECONTACT,Cultural Material,Surface,lithics
308469	HcSc-75	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Cultural Material,Surface,firebroken rock
308470	HcSc-76	No data.
308471	HcSc-77	No data.
308473	HcSc-78	No data.
308474	HcSc-79	No data.

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OBJECT ID	BORDEN NUMBER	TY TYPOLOGY
308475	HcSc-80	No data.
308480	HbSa-40	No data.
335037	HcSc-103	PRECONTACT,Cultural Material,Surface,lithics
335351	HaSa-22	PRECONTACT,Cultural Material,Surface,lithics
335352	HaSa-23	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
334416	HdSd-334	PRECONTACT,Cultural Material,Surface,lithics
335353	HaSa-24	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
335354	HaSa-25	PRECONTACT,Cultural Material,Surface,lithics
334705	HdSc-38	PRECONTACT,Cultural Material,Surface,lithics
334706	HdSc-39	PRECONTACT,Cultural Material,Surface,lithics
334707	HdSc-40	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
334708	HdSc-41	PRECONTACT,Cultural Material,Surface,lithics
334709	HdSc-42	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
334710	HdSc-43	PRECONTACT,Cultural Material,Surface,lithics
334711	HcSc-81	PRECONTACT,Cultural Material,Surface,lithics
334712	HcSc-82	PRECONTACT,Cultural Material,Surface,lithics
335045	HbSa-47	PRECONTACT,Cultural Material,Surface,lithics
334713	HcSc-83	PRECONTACT,Cultural Material,Surface,lithics
334714	HcSc-84	PRECONTACT,Cultural Material,Surface,lithics
335046	HaSa-9	PRECONTACT,Cultural Material,Surface,lithics
335047	HaSa-10	PRECONTACT,Cultural Material,Surface,lithics
334715	HcSc-85	PRECONTACT,Cultural Material,Surface,lithics
334716	HcSc-86	PRECONTACT,Cultural Material,Surface,lithics
335048	HaSa-11	PRECONTACT,Cultural Material,Surface,lithics
335049	HaSa-12	PRECONTACT,Cultural Material,Surface,lithics
334717	HcSc-87	PRECONTACT,Cultural Material,Surface,lithics
334718	HcSc-88	PRECONTACT,Cultural Material,Surface,lithics
335050	HaSa-13	PRECONTACT,Cultural Material,Surface,lithics
345911	HbSc-44	No data.
345912	HbSc-45	No data.
334719	HcSc-89	PRECONTACT,Cultural Material,Surface,lithics
334720	HcSc-90	PRECONTACT,Cultural Material,Surface,lithics
335025	HcSc-91	PRECONTACT,Cultural Material,Surface,lithics
335026	HcSc-92	PRECONTACT,Cultural Material,Surface,lithics
334396	HdSd-335	PRECONTACT,Cultural Material,Surface,lithics
334397	HdSd-336	PRECONTACT,Cultural Material,Surface,lithics
335027	HcSc-93	PRECONTACT,Cultural Material,Surface,lithics
335028	HcSc-94	PRECONTACT,Cultural Material,Surface,lithics
335347	HaSa-18	PRECONTACT,Cultural Material,Surface,lithics
335348	HaSa-19	PRECONTACT,Cultural Material,Surface,lithics
334398	HdSc-35	PRECONTACT,Cultural Material,Surface,lithics
334399	HdSc-36	PRECONTACT,Cultural Material,Surface,lithics
335029	HcSc-95	PRECONTACT,Cultural Material,Surface,lithics
335030	HcSc-96	PRECONTACT,Cultural Material,Surface,lithics
335056	HaSa-15	PRECONTACT,Cultural Material,Surface,lithics
334400	HdSc-37	PRECONTACT,Cultural Material,Surface,lithics
335031	HcSc-97	PRECONTACT,Cultural Material,Surface,lithics
335032	HcSc-98	PRECONTACT,Cultural Material,Surface,lithics
335345	HaSa-16	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
335346	HaSa-17	PRECONTACT,Cultural Material,Surface,lithics
335033	HcSc-99	PRECONTACT,Cultural Material,Surface,lithics
335034	HcSc-100	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
335035	HcSc-101	PRECONTACT,Cultural Material,Surface,lithics
335036	HcSc-102	PRECONTACT,Cultural Material,Surface,lithics
335349	HaSa-20	PRECONTACT,Cultural Material,Surface,lithics
335350	HaSa-21	PRECONTACT,Cultural Material,Surface,lithics
335986	HbSa-60	PRECONTACT,Cultural Material,Surface,lithics
335987	HbSa-61	PRECONTACT,Cultural Material,Surface,lithics
336633	HdSd-338	PRECONTACT,Cultural Material,Surface,lithics
336634	HdSd-339	PRECONTACT,Cultural Material,Surface,lithics
337922	HaSb-9	PRECONTACT,Cultural Material,Surface,lithics
337923	HaSa-28	PRECONTACT,Cultural Material,Surface,lithics
335988	HbSa-62	PRECONTACT,Cultural Material,Surface,lithics
335989	HbSa-63	PRECONTACT,Cultural Material,Surface,lithics
336635	HdSd-340	PRECONTACT,Cultural Material,Surface,lithics
336636	HbSc-41	PRECONTACT,Cultural Material,Surface,lithics
337276	HdSd-362	PRECONTACT,Cultural Material,Surface,lithics
337924	HaSa-29	PRECONTACT,Cultural Material,Surface,lithics

Appendix C: Williston Lake Reservoir Operations Phase ACF Dataset

OBJECT ID	BORDEN NUMBER	TY TYPOLOGY
335355	HaSa-26	PRECONTACT,Cultural Material,Surface,lithics
335356	HaSa-27	PRECONTACT,Cultural Material,Surface,floral
335990	HbSa-64	PRECONTACT,Cultural Material,Surface,lithics
335991	HbSa-65	PRECONTACT,Cultural Material,Surface,lithics
336637	HdSd-354	PRECONTACT,Cultural Material,Surface,lithics
336638	HdSd-355	PRECONTACT,Cultural Material,Surface,lithics
336639	HdSd-356	PRECONTACT,Cultural Material,Surface,lithics
337277	HdSd-363	PRECONTACT,Cultural Material,Surface,lithics
337278	HdSd-364	PRECONTACT,Cultural Material,Surface,firebroken rock
337279	HfSf-7	PRECONTACT,Cultural Material,Surface,lithics
336336	HcSc-114	PRECONTACT,Cultural Material,Surface,lithics
337271	HdSd-358	PRECONTACT,Cultural Material,Surface,lithics
337272	HdSd-359	PRECONTACT,Cultural Material,Surface,lithics
335992	HbSa-66	PRECONTACT,Cultural Material,Surface,lithics
335993	HbSa-67	PRECONTACT,Cultural Material,Surface,lithics
337280	HfSf-8	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
337585	HdSd-360	PRECONTACT,Cultural Material,Surface,lithics
335994	HbSa-68	PRECONTACT,Cultural Material,Surface,lithics
335995	HbSa-69	PRECONTACT,Cultural Material,Surface,lithics
336945	HdSd-341	PRECONTACT,Cultural Material,Surface,lithics
336946	HdSd-342	PRECONTACT,Cultural Material,Surface,lithics
337586	HdSd-361	PRECONTACT,Subsistence Feature,Hearth
337587	HdSd-365	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Subsistence Feature,Hearth
335996	HbSa-70	PRECONTACT,Cultural Material,Surface,lithics
335997	HbSa-71	PRECONTACT,Cultural Material,Surface,lithics
336948	HdSd-344	PRECONTACT,Cultural Material,Surface,lithics
337588	HdSd-366	PRECONTACT,Cultural Material,Surface,firebroken rock
335998	HbSa-72	PRECONTACT,Cultural Material,Surface,lithics
336949	HdSd-345	PRECONTACT,Cultural Material,Surface,lithics
336950	HdSd-346	PRECONTACT,Cultural Material,Surface,lithics
336951	HdSd-347	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
336952	HdSd-348	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
336327	HcSc-104	PRECONTACT,Cultural Material,Surface,lithics
336328	HcSc-106	PRECONTACT,Cultural Material,Surface,lithics
336953	HdSd-349	PRECONTACT,Cultural Material,Surface,lithics
336954	HdSd-350	PRECONTACT,Cultural Material,Surface,lithics
336955	HdSd-351	PRECONTACT,Cultural Material,Surface,lithics
335668	HbSb-58	PRECONTACT,Cultural Material,Surface,lithics
335669	HbSa-48	PRECONTACT,Cultural Material,Surface,lithics
336329	HcSc-107	PRECONTACT,Cultural Material,Surface,lithics
336330	HcSc-108	PRECONTACT,Cultural Material,Surface,lithics
336956	HdSd-352	PRECONTACT,Cultural Material,Surface,lithics
336957	HdSd-353	PRECONTACT,Cultural Material,Surface,lithics
336958	HbSc-43	PRECONTACT,Cultural Material,Surface,lithics
335670	HbSa-49	PRECONTACT,Cultural Material,Surface,lithics
335671	HbSa-50	PRECONTACT,Cultural Material,Surface,lithics
336331	HcSc-109	PRECONTACT,Cultural Material,Surface,lithics
336332	HcSc-110	PRECONTACT,Cultural Material,Surface,lithics
336959	HbSb-60	PRECONTACT,Cultural Material,Surface,lithics
336960	HbSb-61	PRECONTACT,Cultural Material,Surface,lithics
335672	HbSb-59	PRECONTACT,Cultural Material,Surface,lithics
335673	HbSa-51	PRECONTACT,Cultural Material,Surface,lithics
336333	HcSc-111	PRECONTACT,Cultural Material,Surface,lithics
336334	HcSc-112	PRECONTACT,Cultural Material,Surface,lithics
336335	HcSc-113	PRECONTACT,Cultural Material,Surface,lithics
335674	HbSa-52	PRECONTACT,Cultural Material,Surface,lithics
335675	HbSa-53	PRECONTACT,Cultural Material,Surface,lithics
337267	HbSc-42	PRECONTACT,Cultural Material,Surface,lithics
335676	HbSa-54	PRECONTACT,Cultural Material,Surface,lithics
335677	HbSa-55	PRECONTACT,Cultural Material,Surface,lithics
337905	HfSf-9	PRECONTACT,Cultural Material,Surface,lithics
338590	HdSd-367	PRECONTACT,Cultural Material,Surface,lithics
335678	HbSa-56	PRECONTACT,Cultural Material,Surface,lithics
335679	HbSa-57	PRECONTACT,Cultural Material,Surface,lithics
336626	HcSc-105	PRECONTACT,Cultural Material,Surface,faunal PRECONTACT,Cultural Material,Surface,lithics
336627	HdSc-44	PRECONTACT,Cultural Material,Surface,lithics
337270	HdSd-357	PRECONTACT,Cultural Material,Surface,lithics PRECONTACT,Subsistence Feature,Hearth
337906	HfSf-10	PRECONTACT,Cultural Material,Surface,lithics

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OBJECT ID	BORDEN NUMBER	TY TYPOLOGY
335680	HbSa-58	PRECONTACT,Cultural Material,Surface,lithics
335985	HbSa-59	PRECONTACT,Cultural Material,Surface,lithics
336630	HdSd-337	PRECONTACT,Cultural Material,Surface,lithics
336631	HbSc-40	PRECONTACT,Cultural Material,Surface,lithics
345594	HeSf-16	No data.
345595	HdSd-368	No data.
345596	HdSd-369	No data.
345597	HdSd-370	No data.
345599	HdSc-45	No data.
345600	HcSd-19	No data.
345905	HcSd-20	No data.
345906	HcSc-115	No data.
345907	HcSc-116	No data.
345908	HcSc-117	No data.
345909	HcSc-118	No data.
345910	HbSb-62	No data.
345913	HbSc-46	No data.
345914	HbSc-47	No data.
345915	HbSb-63	No data.
345916	HbSb-64	No data.
345917	HbSb-65	No data.
345918	HaSa-30	No data.
345919	HaSa-31	No data.
345920	HbSa-73	No data.
394900	HaSa-36	PRECONTACT,Cultural Material,Surface,lithics
386581	HaSa-35	PRECONTACT,Cultural Material,Surface,lithics
458258	HbRx-2	PRECONTACT,Cultural Material,Surface,firebroken rock
457940	HbRx-1	PRECONTACT,Cultural Material,Surface,lithics
532529	HbSb-75	PRECONTACT,Cultural Material,Surface,lithics
532530	HbSb-76	PRECONTACT,Cultural Material,Surface,lithics
532531	HbSb-77	PRECONTACT,Cultural Material,Surface,lithics
532532	HbSb-78	PRECONTACT,Cultural Material,Surface,lithics
532533	HbSb-79	PRECONTACT,Cultural Material,Surface,lithics
532534	HbSb-80	PRECONTACT,Cultural Material,Surface,lithics
532535	HcSd-22	PRECONTACT,Cultural Material,Surface,lithics
542142	HfSf-13	PRECONTACT,Cultural Material,Surface,lithics
542143	HfSf-14	PRECONTACT,Cultural Material,Surface,lithics
542144	HfSf-15	PRECONTACT,Cultural Material,Surface,lithics
538942	HdSd-376	PRECONTACT,Cultural Material,Surface,lithics
547921	HaRm-26	PRECONTACT,Cultural Material,Surface,lithics
542774	HcSc-120	PRECONTACT,Cultural Material,Surface,lithics
542775	HcSc-121	PRECONTACT,Cultural Material,Surface,lithics