Arrow Archaeology Limited

HERITAGE RESOURCES IMPACT ASSESSMENT

FINAL REPORT

7th AVENUE LAND SUBDIVISION, PLAN 101220152 EXT 8, PARCEL 164077106 MOOSE JAW

Prepared for:
Alvin Reinhard Fritz Architect Inc.
Lethbridge
and
Seven Edge Success
Moose Jaw

Saskatchewan Archaeological Resource Investigation Permit 20-038

Neil Mirau
May, 2020

PROJECT PERSONNEL

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ACKNOWLEDGEMENTS

The authors would like to thank Alvin Reinhard Fritz Architect and Charles Vanden Broek for retaining Arrow and for their assistance and the information and data they provided to facilitate this HRIA. On behalf of the Saskatchewan Heritage Conservation Board, we thank these firms for their attention to, and work in preserving Saskatchewan's Heritage Resources.

Cover Photo: View southeast at the proposed development area.

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EXECUTIVE SUMMARY

INTRODUCTION

Arrow Archaeology Limited conducted a preconstruction Heritage Resource Impact Assessment (HRIA) for the 7th Avenue Land Subdivision rezoning in Moose Jaw under permit 20-038. This HRIA was initiated at the request of the property developer and his agent; the HRIA/project was not reviewed prior to the submission of the permit application by Saskatchewan Heritage Conservation Branch (SHCB). The project was subsequently assigned file number 20-584 by SHCB at the permit application stage. The HRIA was conducted in May 2020.

This HRIA was completed for:

Alvin Reinhard Fritz Architect Inc.
Lethbridge
and
Seven Edge Success
Moose Jaw

Table 1. Development name, location and area.

Project Name	Surface Location	Development area
7th Avenue Land Subdivision, Plan 101220152 ext. 8, Parcel 164077106 Moose Jaw	11,14-29-16-26 W3M, in the City of Moose Jaw	10.4 ha

The HRIA was intended to locate, assess and report on heritage resources, determine any conflicts between the development and heritage resources that could be disturbed or impacted by the development and to provide recommendations for avoidance, mitigation and preservation of those resources. The report was undertaken in snow free and frost-free conditions. One previously unrecorded site was discovered within the project area and is now designated EcNj-20. A previously recorded site, EcNj-5, was thought to be in potential conflict with the development but was not relocated within the development. On the basis of our field observations, EdNj-5 is just east of the proposed subdivision area. Both these sites are discussed further below.

Recommendation

We recommend conditional approval of this project subject to further investigation of EcNj-20 prior to any land disturbance activity in the area. There are no plans or anticipated timing for development of the area. (See developer statement in Appendix C). Any future

development will consider the site and avoid it if possible and therefore a controlled excavation is not recommended at this time.

We recommend additional testing and assessment to determine the vertical and horizontal extent of EcNj-20. This work was not done during the current HRIA since avoidance was considered possible. Confirming the exact boundaries of the site will facilitate future avoidance planning.

We further recommend that when development plans for the project are available, they be submitted to SHCB to determine/assess additional requirements and/or site avoidance plans.

We are confident that EcNj-5 is not impacted by the development and therefore there are no avoidance or recommendations with regard to that site.

TABLE OF CONTENTS

Acknowledgements	ii
Executive Summary	iii
Table of Contents	v
List of Figures	vi
Introduction	1
Environmental and Contextual Data	2
Project Description	2
Land Use	2
General Area Description	4
Soils	11
Previous Archaeological Research	13
Research Strategy and Methodology	16
Results	18
Newly Recorded Site, EcNj-20	25
Revisited Site, EcNj-5	34
Recommendation	40
References Cited	41
Appendix A–Project Plans	42
Appendix B-Artifact Catalogue	44
Appendix C-Developer Statement	48

LIST OF FIGURES AND TABLES

Figure 1	Project area on NTS 1:50000	3
Figure 2	Project area superimposed on 1950 air photo	4
Figure 3	View shed for selected photos in report	6
Figure 4	View southeast at project area	7
Figure 5	View west at portion of project area	7
Figure 6	View east at southern portion of project area	8
Figure 7	View east from inside project area	8
Figure 8	View east at access road in project area	9
Figure 9	View east from west boundary of area	9
Figure 10	View west from east boundary of area	10
Figure 11	View southeast in project area	10
Figure 12	Typical soil profile in area	12
Figure 13	Alluvial terrace riser erosional exposure	13
Figure 14	NTS section showing location of nearby recorded sites	15
Figure 15	General view in project area	18
Figure 16	Tree rows from former nursery	20
Figure 17	Patio related to residence	20
Figure 18	View of south-facing creek bank	21
Figure 19	Project area shovel test locations	22
Figure 20	EcNj-20 site area from prairie level	28
Figure 21	EcNj-20 site sketch	29
Figure 22	View north at EcNj-20	30
Figure 23	View of EcNc-20 site	30
Figure 24	Typical soil profile in EcNj-20	31
Figure 25	EcNj-20 bone fragments	31
Figure 26	Flakes, tooth from EcNj-20	32
Figure 27	Bison teeth from EcNj-20	32
Figure 28	Expedient tool from EcNj-20	33
Figure 29	Cultural material from EcNj-20	33
Figure 30	Hearth feature	34
Figure 31	1950 air photo of project area	35
Figure 32	1965 air photo of project area	36
Figure 33	1989 air photo of project area	36
Figure 34	EcNj-5 site area	37
Figure 35	Wagon remains in EcNj-5 area	37

Figure 36	View west at depression at EcNj-5	38
Figure 37	EcNj-5 site sketch	39
Table 1	Development location and area.	1
Table 2	Data for recorded sites near project area	14
Table 3	Shovel test data	22
Table 4	Material recovered from shovel tests	27

INTRODUCTION

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ENVIRONMENTAL AND CONTEXTUAL DATA

Project Description

This HRIA was conducted to facilitate a land subdivision rezoning application to permit future residential development. A final plan of development has not been completed however, a conceptual plan includes single and multi-family residences, recreational facilities and normal urban residential infrastructure, including but not limited to, utilities, roads and related elements. An illustration of the concept is contained in Appendix A. There is no schedule for the completion of a subdivision layout or project plan.

Land Use

The project in Moose Jaw city limits in the Wakamow (Moose Jaw Creek) Valley, just south of modern urban development. The project area has been used by Euro-Canadians since the 19th century. The project area has been partly cultivated and has had various uses for the last 100+ years. Most of the project area was used as a commercial tree nursery for approximately 40 years in the mid and latter part of the 20th century. After closure of the nursery, the property was owned by a resident who lived in a still-existing house within the project area.

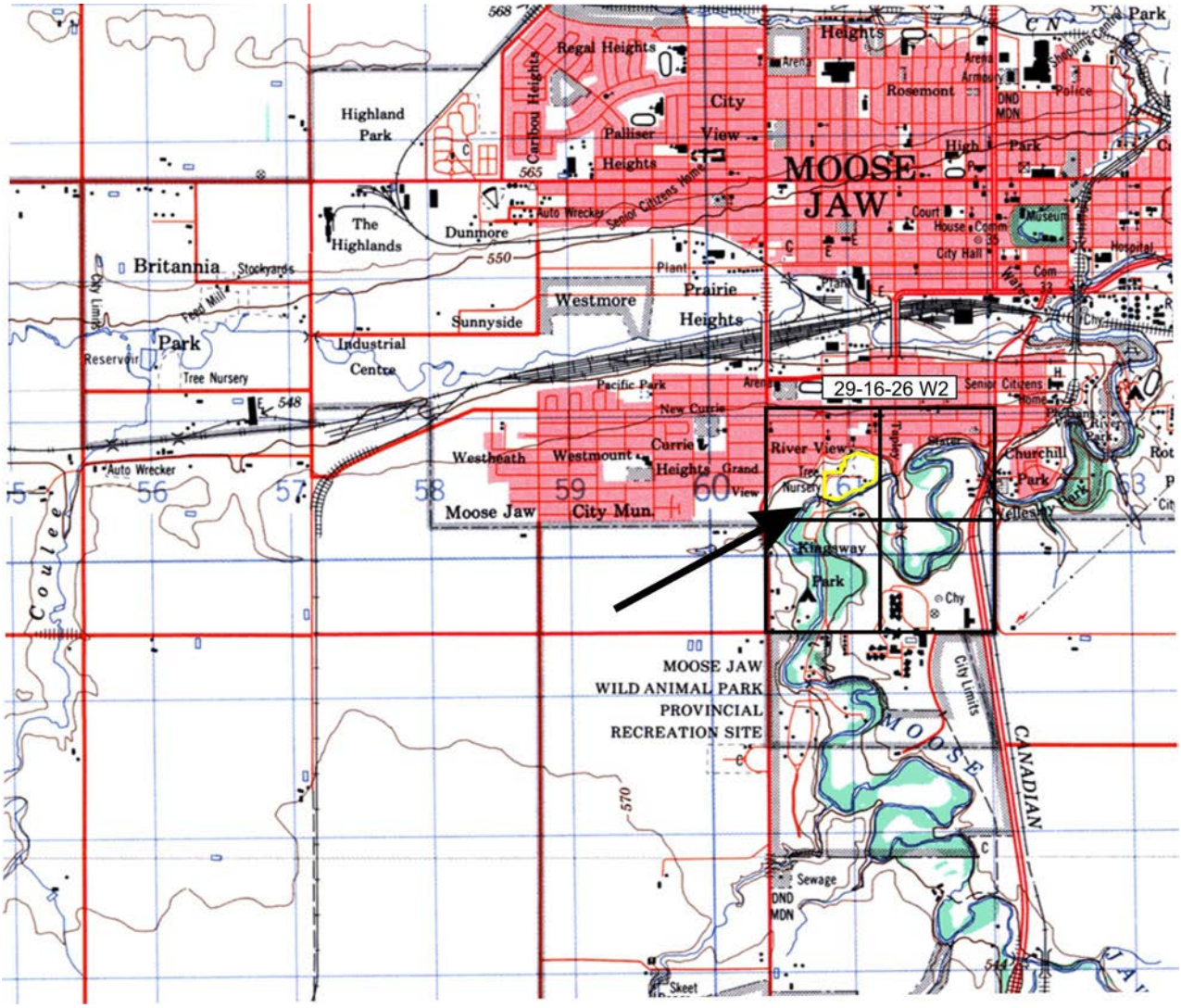


Figure 1. Subdivision area outlined in yellow indicated by arrow on 72I/5 map sheet segment. The entire outlined subdivision area was subject to the HRIA assessment.

Figure 2. 1950 air photo of the project area showing areas of cultivation, apparent natural vegetation in north part of project. The red arrow indicates the location of a residence that is still present in the subdivision area. This air photo from Tetra Tech Canada (2019). The star in the subdivision was added by Tetra Tech.

General Description of Project Area

Moose Jaw Creek drains from the southeast, south of the project, then turns to the northeast near the project. This creek bend is visible in Figures 1 and 2. This bend has historically been referred to as “The Turn” (Knight 1984). The creek empties into the Qu’Appelle River approximately 25 km northeast of Moose Jaw. The valley is relatively narrow in the area of

the subdivision (500 to 700 m) but widens to 1200 m or more north of the project area near the confluence of Thunder Creek and Moose Jaw Creek. The creek valley is approximately 20 m below prairie level in the project area. Prairie upland above the valley is flat and relatively featureless and native vegetation is shortgrasses. Near surface sediments on prairie level are mostly glaciolacustrine. The valley floor is also relatively flat, but available moisture allows more varied vegetation compared to the upland. Native vegetation in the creek valley includes medium and tall grasses, riparian gallery forests and often dense brush. The uppermost sediments in the valley are alluvial with some colluvium near the base of valley slopes. The project is located in Moist Mixed Grassland Ecoregion.

Figure 3 provides view shed locations for selected photos in this report and Figures 4 to 11, 15, 16, 22 and 36 show general views of the project area.

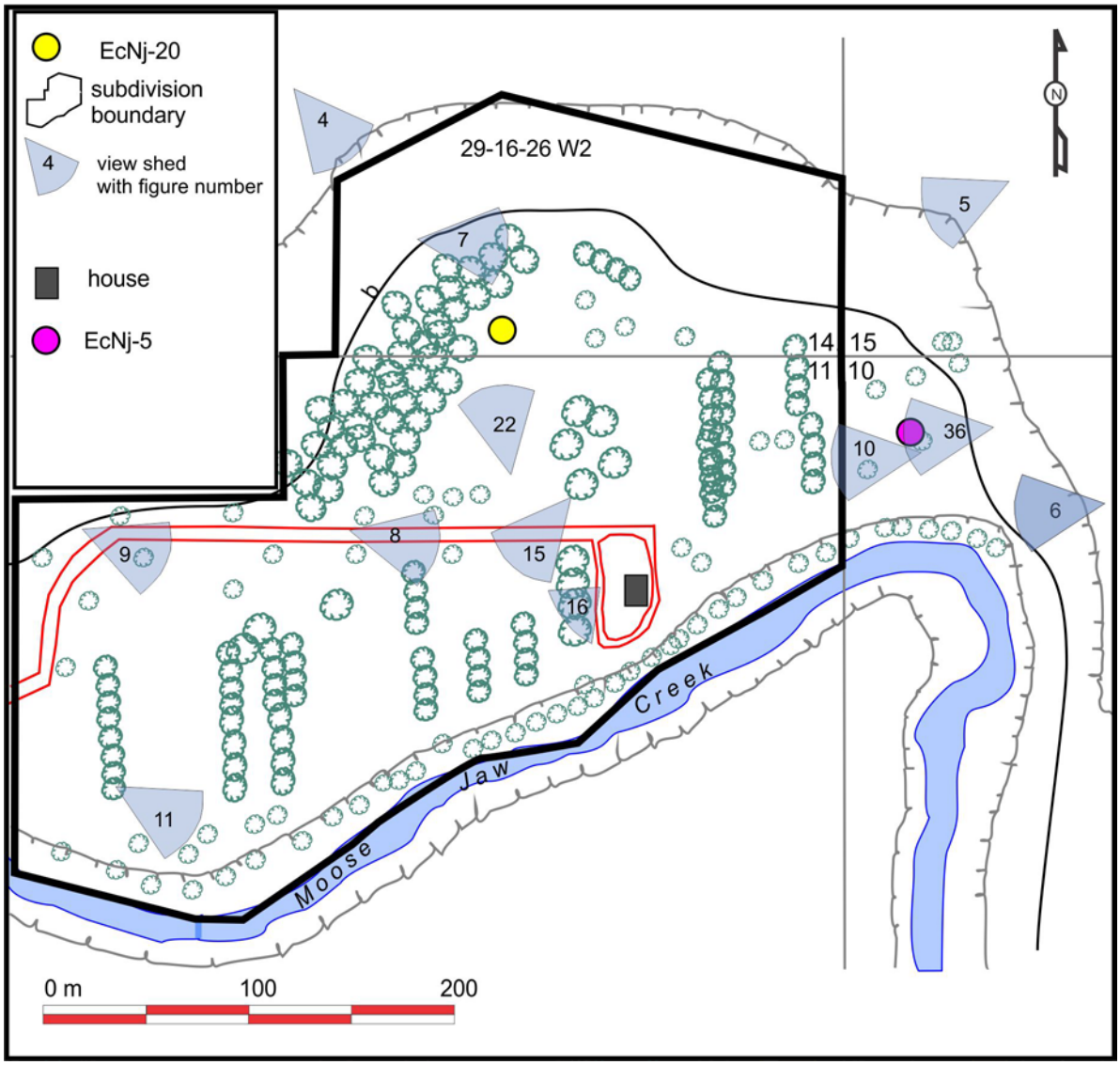


Figure 3. View shed map for selected photos in this report. Number in view shed symbol corresponds to the figure number of the photo in the report.

Figure 4. View southeast from prairie level of project area.

Figure 5. View west of northern part of subdivision area from prairie level.

Figure 6. View west of southern part of subdivision from prairie level, east of project. Arrow indicates the fence line at the eastern boundary of the project. A small berm is present just west of the fence and was reportedly constructed to prevent flooding in the project area several decades ago.

Figure 7. View east from northwest part of project area.

Figure 8. View east from access road, west-central area of subdivision. Existing residence is east of trees, partly visible, indicated by arrow.

Figure 9 View east from west boundary of property. Most if not all of the trees visible are planted in rows, probably part of former tree nursery.

Figure 10. View west from east boundary of property (at fence). Berm on the other side of fence reportedly dates to the time of the tree nursery and was built to prevent flooding.

Figure 11. View southeast in centre south part of project. Planted spruce trees are about 2 m north of the break of slope to Moose Jaw Creek. Grass foreground has been disturbed by tilling/cultivation and is not native.

Soils

Soils in the project area vary slightly, depending upon available moisture, clay fraction and slope position. All soils are composed of alluvially and/or slack-water deposited clays and silts, some with some pebbles. None of the soils or sediment profiles observed had any rocks larger than pebbles. No cobble or larger sized lithic clasts were noted on the surface. Small backwater areas in the area very dark grey, moist soil and sediments composed almost completely of clay. Soils in better drained areas had grey brown A horizons generally overlying red brown B horizons and light brown C horizons. Those areas that are all or almost all clay are from small areas of standing backwaters that often form alluvial terrace surfaces. Some crushed gravel was observed at or very near the surface in some shovel tests. The gravel was probably from trails/roads built when the area was a nursery. Several of the profiles examined in shovel tests showed what appears to be a plough zone, likely related tree nursery activity, or from earlier 20th century cultivation.

Soils were generally poorly developed and profiles in several tests showed evidence of prior disturbance as noted above (Figure 12). Figure 13 shows the exposed terrace rise along Moose Jaw Creek. The visible sediments are rock free silts and clays. No palaesols or buried stability surfaces were noted in erosional exposures along Moose Jaw Creek or in shovel tests.

Figure 12. Soil profile in the project area. Arrows show what appears to be bottom of plough zone. This photo from between rows of planted trees. The upper disturbance zone was probably caused from tilling between rows to reduce weeds. Similar profiles were noted in other areas of project.

Figure 13. This view of the north side erosional bank of the Moose Jaw Creek shows the fine-grained sediment observed in tests throughout the project area. The photo was taken from about 1 m above the modern creek level, no gravels, cobbles or other lithics were noted. Soils in the area generally have little horizon development, aside from a generally thin darker A horizon.

Previous Archaeological Research

There are 11 previously recorded sites in the general area, recorded between 1960 and 1985. One of these sites, EcNj-5, was thought to be in the project's footprint. This site, recorded as two Metis cabins and dating to about 1840, was not located in the field. Its approximate location was based on historical information and local informants. The site data form does not have a date, however the original EcNj-6 site data record dates to December, 1960, so designation of EcNj-5 preceded that. EcNj-5 is discussed in the results section below. Other sites in the general area are summarized in the table below. Figure 14 shows the recorded locations of EcNj-20 and 5, as well as other nearby sites.

Table 2. Data for nearby recorded sites, excluding EcNj-5.

Site No.	Type	Reported Location	Distance and Direction from Project	Comment
EcNj-1	Burial	7-30-16-26 W2	950 m WSW	Location as known/reported is now in cultivated land
EcNj-3	Artifact scatter	7-29-16-16 W2	580 m SE	UTM places site in cultivation, likely site area is 75 to 100 m south of its plotted location
EcNj-4	Burial	6-29-16-26 W2	360 m S	Site area as plotted is now in cultivation
EcNj-6	Campsite	12-29-16-26 W2	110 m W	Late PreContact site north of Garrett site
EcNj-7	Campsite	5-29-16-26 W2	375 m SW	Multicomponent Garrett site
EcNj-9	Campsite	16-29-16-26 W2	725m E	Destroyed by road construction
EcNj-10	Historic scatter	5-29-16-26 W2	160 m SW	Status unknown
EcNj-11	Campsite	4,5-29-16-26 W2	590 m SW	Status unknown, area where recorded is disturbed by roads and trails, but looks similar to when it was recorded
EcNj-12	Historic structure, scatter	4-29-16-26 W2	680 m S	Status unknown, but near modern air photos do not show any structures at recorded UTM for site
EcNj-14	Campsite	4-29-16-26 W2	760 m S	Based on recorded location, site has probably been destroyed by erosion of creek bank.

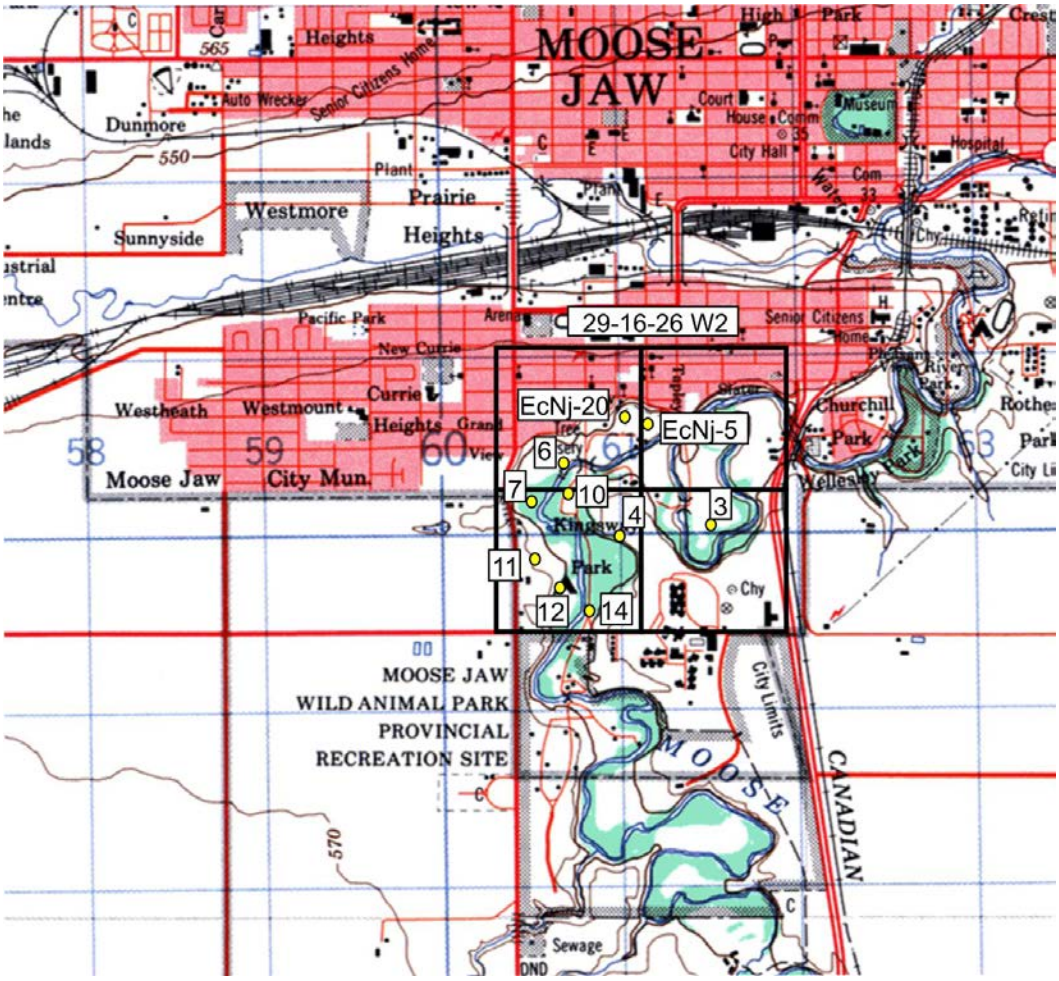


Figure 14. NTS 72 I/5 topographic map section with EcNj-5 and 20 locations, as well as other nearby sites. All are in EcNj, but only the site designation digits are shown in this map. Note NTS topographic map is shown larger than 1:50000 scale in this image.

There is a relatively high density of sites in the general area and the area does have an interesting, albeit largely anecdotal recent history. Most of the following information comes from Knight (1994). Knight was well known for her knowledge and work in researching and writing about the history of Moose Jaw and region. She noted that the “Plains Hunters” Trail crossed the Moose Jaw Creek at “The Turn”. The trail was reportedly used by Plains people heading west to hunt bison and was use by Euro-Canadians and Metis in the 1800s. The source of the term “Plains Hunters Trail” and is not referenced in her 1994 summary and probably much of her information was based on local stories and the memories of her informants. In the early part of the 19th century, The Turn was near the east boundary of Blackfoot territory and was, for a time, a stopping point for the Metis since, according to Knight, they did not want to enter Blackfoot country. Knight (1994) state that the first

buildings in what is now the Moose Jaw area were constructed by Metis people overwintering in the 1840s. That story is likely at least partly the reason that EcNj-5 was recorded as the site of the cabins. In the latter 1800s, the Canadian Pacific Railway chose to cross Moose Jaw Creek just north of The Turn and by 1882, shortly after the railway arrived, Lakota First Nations people established what Knight refers to as a semi-permanent settlement and, among other economic activities, sold goods and traded with Canadian Pacific Rail passengers. This settlement explains the possible presence of burials recorded under EcNj-1 and EcNj-4. The Turn was a frequently used ford area across Moose Jaw Creek that originates in the Precontact Period and may help explain the presence of other sites, for example EcNj-7, the well-known Garratt Site, in this general area.

RESEARCH STRATEGY AND METHODOLOGY

The methodology used in this impact assessment complied with the HRIA requirements for these projects as outlined in a letter from Saskatchewan Heritage Conservation Branch. The HRIA methodology was also designed to conform to the requirements and guidelines pursuant to S. 63 of *The Heritage Property Act.*

The HRIA consisted of a predevelopment systematic pedestrian surface survey and shovel testing were judgmentally placed throughout the project area. This methodology was designed to search for new heritage resources and provide recommendations for any site avoidance and/or mitigation. We also examined natural and human-caused exposures such as burrows, exposures along the Moose Jaw Creek band and trails through the area to search for heritage resources and buried stability horizons. An area within the proposed development had been fenced and tilled up prior to the survey, possibly for planting a garden. This exposed near surface sediments was therefore investigated thoroughly for any heritage resources. The fenced off area is visible in Figure 15.

Project coordinates were transferred to a handheld GPS for field reference. The development was covered at least twice via pedestrian surface survey. The survey was carried out in dry conditions, ground and surface visibility ranged from low in densely vegetated areas to very good in open areas. Our subsurface testing strategy consisted of judgmentally placed tests within that area of the subdivision slated for development.

Subsurface tests were a minimum of 40 cm by 40 cm. Shovel testing was less intensive in those areas where no building/development could occur due to flood risk zoning. The flood risk zone totals approximately 3.75 ha and is in the southeast part of the project area. (See Appendix A showing the conceptual plan, as well as areas where no development can occur). No tests were placed on the valley slope area that is within the subdivision where no development can occur. This part of the subdivision, 1.6 ha, is considered too steep to have been used for occupation by past cultural groups. We did conduct surface survey on the slope to search for any potential surface heritage resources. That portion of the subdivision that can be developed, about 5 ha, was most intensively tested. Initial tests were carried out to search for heritage resources and to attempt to identify buried soils/stability surfaces on the terrace tread. The location and extent of any buried stability surface would have helped us focus testing particularly in terms of depth below the modern surface.

Since EcNj-5 was thought to be in possible conflict with the project, fieldcrew searched the reported site location on the eastern side of the project area thoroughly and carried out more intensive shovel testing of that area, even though it is in a no-development (flood risk) area. We also briefly searched the small area of Creek valley bottomlands east of the project's eastern boundary, because we noted the presence of some surface debris in that area. Although this was out of the project area, the permit holder determined that it should be briefly examined to determine if the visible debris could be associated with the reported location of EcNj-5. This is discussed further in the results section below.


Figure 15. Tilled area surrounded by blue fence.

RESULTS

The HRIA resulted in the discovery of one previously unrecorded site, now designated EcNj-20. This site is a subsurface camp and/or processing site. It is in the buildable area of the project but the timing and plan of development has not been determined. The current developer has indicated that potential avoidance of this site will be factored into development plans when they occur. (See statement from the developer regarding site avoidance in Appendix C). As noted previously, this HRIA was carried out only to support a land rezoning application. EcNj-5, thought to be in conflict with the project footprint, appears to be just east of the eastern boundary of the project and will not be impacted.

The project footprint has been impacted by previous 20th century land uses, most of the native vegetation has been replaced by non-native tree species. The land was used as a single-family residential acreage until several years ago and the land has been unoccupied over the last several years. Figure 16 shows rows of planted trees, probably from the tree nursery. Figure 17 shows the remains of what appears to be surface patio from a 20th century occupation. Figure 18 shows natural vegetation along the south-facing creek bank. Some surface sediments have been moved within the project area to create a berm to

protect areas from flooding, probably during or before the land's use as a tree nursery (See Figure 6).

The configuration of the terrace and the valley in this area means that floods were probably relatively common in the past and the addition of new fine sediments were sufficient to prevent the formation of deep soils in the area and therefore the absence of buried soils on this terrace surface is not unexpected.

A total of 53 shovel tests were excavated in the project area, including those within the EcNj-20 site area. Six shovel tests in the EcNj-20 site area were positive and all others were negative. Shovel test locations outside of the EcNj-20 area shown on Figure 19. Shovel test locations in EcNj-20 are shown in Figure 21. All tests are described in Table 3.

The majority of shovel test back dirt was screened through 6 mm mesh. In some areas where shovel tests were in heavy, wet clay, including in the EcNj-20 site area, screening was not possible. We initially screened back dirt from EcNj-20 tests then troweled through the backdirt, left it to dry and troweled through material again.

Figure 16. View of planted trees west of former residence.

Figure 17. Small surface patio(?) composed of small blocks located in trees, south part of project area. This illustrates an example of extensive 20th century land use and surface disturbance in the area. At the time of survey, most of it was covered by pine needles and organic matter.

Figure 18. View due east of south-facing creek bank with native vegetation.

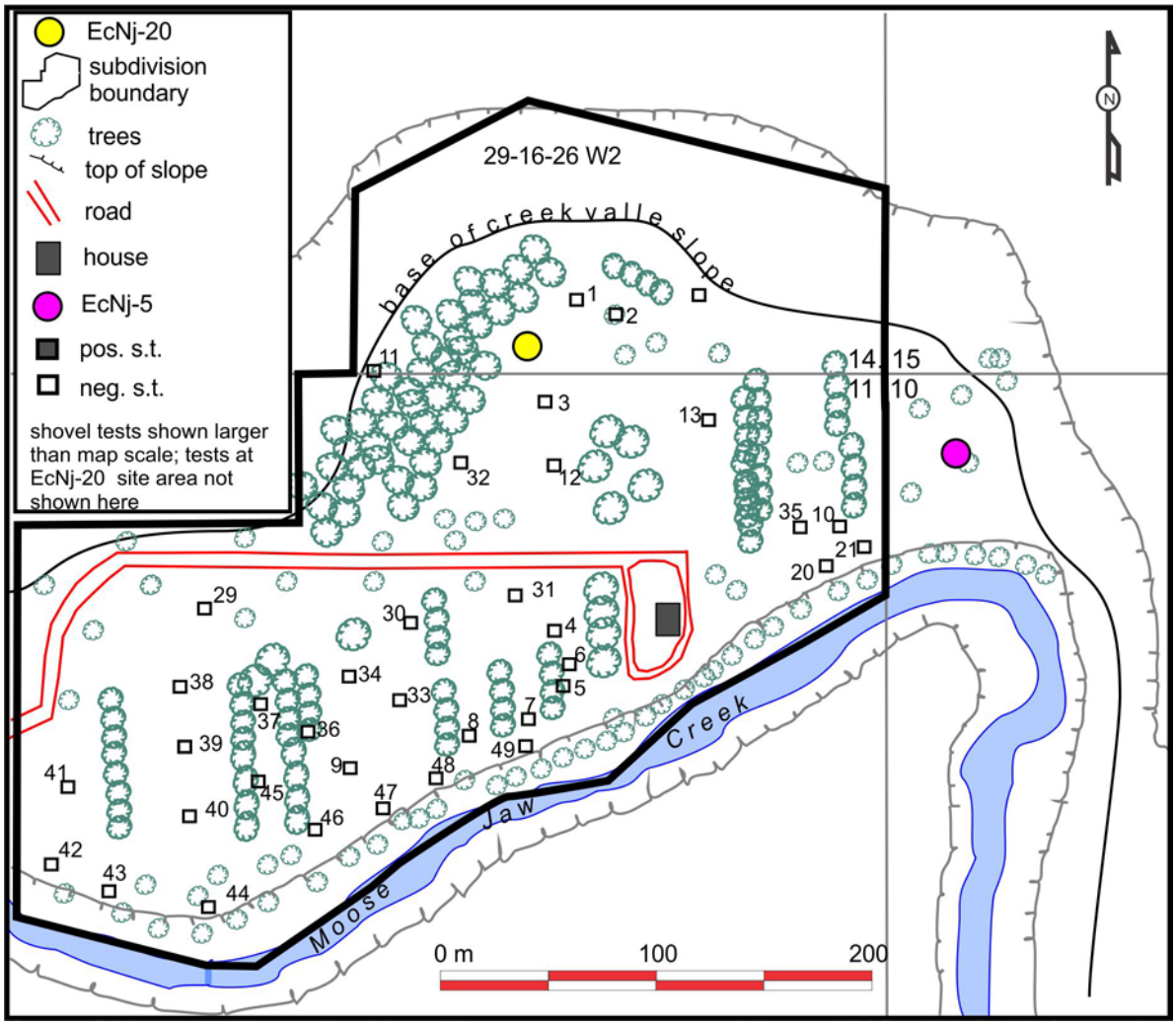


Figure 19. Negative shovel test location map.

Table 3. Subsurface test data

Test	UTM (NAD 83 Zone 12U)	Depth (cm)	Result	Comments:
1	461023 5580893	50	Neg.	Clay, silt dominated sediments. Grey-brown A horizon to 20 cm overlying reddish brown silty B. No stones, A-B abrupt break may indicate ploughing activity.
2	461033 5580888	50	Neg.	Same as test 1
3	461009 5580730	50	Neg.	Dark brown grey A horizon to 15 cm, clay fraction dominant, no horizon break between A and B, possibly an old backwater area.
4	460990 5580735	40	Neg.	Same as test 1
5	046989 5580727	30	Neg.	Same as test 1
6	046988 5580731	25	Neg.	Same as test 1
7	460938 5580676	30	Neg.	Uniform silty-clay to 30, no horizon break near tree row, shovel test placed due to presence of some small cobbles

				at surface, cobbles scattered from relatively recent disturbance.
8	460904 5580678	60	Neg.	Same as test 1
9	460868 5580648	50	Neg.	Same as test 1
10	460973 5580643	60	Neg.	Same as test 3
11	460937 5580869	60	Neg.	Silty-clay A brown A horizon with a few small pebbles and gravels, likely colluvially deposited material from slope to 20 cm, red brown silts to 40, light brown C horizon at 40 to 60
12	460973 5580845		Neg	Same as test 1
13	461065 5580882		Neg	Same as test 1
14	**461001 5580872**	**50**	**Pos**	**Test in EcNj-20 site area. All tests in site area are similar in terms of geomorphology and sediment composition. Tests are clay with minor amount of silt, no horizon breaks, no pebbles or larger rocks, very dark grey brown 50+cm. No discernible A horizon. Sediments are from slack water deposit. This test contained 4 unidentified large mammal long bone fragments, including 1 with a spiral fracture; an unidentified large mammal tooth fragment, possibly bison; a yellow chert tertiary stage flake; a grey flake fragment, probably secondary stage; and a quartzite expedient cutting tool fragment. All material recovered from 30 to 40 cm below modern surface.**
15	460999 550869	50	Neg	Test in EcNj-20 site area. Same sedimentary context as test 14.
16	**461001 5580874**	**50**	**Pos**	**Test in EcNj-20 site area. Same sedimentary context as test 14. This test contained 3 large unidentified large mammal fragments, including one with a spiral fracture;4 bison molar fragments;11 unidentified mammal bone fragments; and one granite FCR fragment, material recovered from 15-20 cm, 30-50 cm.**
17	461000 5580873	50	Neg	Test in EcNj-20 site area. Same sedimentary context as test 14.
18	461001 5580873	50	Neg	Test in EcNj-20 site area. Same sedimentary context as test 14.
19	461004 5580872	50	Neg	Test in EcNj-20 site area. Same sedimentary context as test 14.
20	461144 5580789	60	Neg	Same as test 3
21	461147 5580801	60	Neg	Same as test 3
22	461002 5580875	50	Neg	Test in EcNj-20 site area. Same sedimentary context as test 14.
23	461002 5580877	50	Neg	Test in EcNj-20 site area. Same sedimentary context as test 14.
24	461005 5580873	50	Neg	Test in EcNj-20 site area. Same sedimentary context as test 14.
25	461005 5580879	50	Neg	Test in EcNj-20 site area. Same sedimentary context as test 14.

26	461006 5580880	50	Neg	Test in EcNj-20 site area. Same sedimentary context as test 14.
27	**461006 5580879**	**50**	**Pos**	**Test in EcNj-20 site area. Same sedimentary context as test 14. This test contained 3 bone fragments, one from a large mammal, others unidentified mammal, one unidentified bone fragment was burned, material recovered from 30 to 40 cm**
27a	461006 5580878	50	Neg	Test in EcNj-20 site area. Same sedimentary context as test 14.
27b	**461005 5580878**	**50**	**Pos**	**Test in EcNj-20 site area. Same sedimentary context as test 14. This test contained 12 unidentified mammal bone fragments, two of which were burned, material recovered from 30-40 cm**
27c	**461005 5580879**	**50**	**Pos**	**Test in EcNj-20 site area. Same sedimentary context as test 14. This test contained 23 unidentified mammal bone fragments 3 of which had some sign of being burned; a bison molar; a granite FCR fragment; a grey quartzite shatter fragment; a grey chert tertiary stage flake; and a red chert tertiary flake, possibly Madison Formation chert, material recovered from 30 to 40+ cm**
27d	**461004 5580878**	**50**	**Pos**	**Test in EcNj-20 site area. Same sedimentary context as test 14. This test contained 26 unidentified mammal bone fragments, 23 of which were burned; 4 large mammal bone fragments, all unburned; 12 small FCR fragments 11 of which are granite, 1 quartzite; a Swan River Chert secondary stage flake fragment and a possible, but questionable expedient tool fragment, material recovered from 30 to 40+ cm. A portion of a small hearth feature was noted in the southwest corner of this test. The hearth is defined by a small agglomeration of bone and FCR and black staining. Only a portion of the hearth was observed. At least some of the feature remains intact and unexcavated beyond the limits of this test.**
28	460936 5580875	50	Neg	Test in EcNj-20 site area. Same sedimentary context as test 14.
29	460822 550777	40	Neg	Same as test 1
30	460906 5580742	40	Neg	Same as test 1
31	460974 5508773	40	Neg	Same as test 1
32	460654 5508832	50	Neg	Similar to test 14, clay dominated fines, no distinctive horizon, with a few pebbles below 20, possibly from colluvial material from slope to the west.
33	460921 5508715	35	Neg	Same as test 1
34	460897 5508713	30	Neg	Same as test 1
35	461126 5507930	60	Neg	Same as test 3
36	460880 5580701	30	Neg	Test in trees, 5 cm O horizon with distinct 20 cm A horizon composed of silt, sand, some pebbles overlying brown C. This test at base of large spruce and sands and

				pebbles probably from material deposited at the time of tree planting
37	460858 5580717	30	Neg	Same as test 36
38	460818 5580742	40	Neg	Same as test 1
39	460818 5580707	40	Neg	Same as test 1
40	460821 5580684	35	Neg	Same as test 1
41	460780 5580695	30	Neg	Same as test 1
42	460779 5580667	45	Neg	Shovel test near modern creek bank, profile silt-clay, dark grey brown grading gradually to lighter yellow brown silts, no distinct horizon breaks and no lithics. Sediments were wet at time of testing.
43	460796 5580635	35	Neg	Same as test 42
44	460523 5580642	40	Neg	Same as test 42
45	4608502 5580679	50	Neg	Same as test 36
46	460876 5580655	45	Neg	Same as test 36
47	460906 5580653	40	Neg	Same as test 42
48	460979 5580684	45	Neg	Same as test 42
49	461006 5580696	30	Neg	Same as test 42

Note: Although the last shovel test number is 49, 53 shovel tests were carried out, including tests 27a, b, c, d in EcNj-20. This shovel testing numbering was for convenience of reference during fieldwork.

Newly Recorded Site

EcNj-20

Location (NAD 83): 13U 461006E 5580879N

Site Size: 7 m x 7 m (provisional)

Legal Description: 14-29-16-26 W2M

Features/Site type: Campsite/processing site, single feature

Site Description: The site is a subsurface camp and/or processing site located on an alluvial terrace on the north side of Moose Jaw Creek in the Wakamow (Moose Jaw Creek) Valley. See project area photos and site location sketch map in Figures 20, 21 and 22. The site dimensions above as should be regarded as preliminary. The terrace surface is generally level and consists of sorted alluvial silts and clays deposited under slow flowing and slack water conditions. The site area is in low part of the terrace and near-surface sediments there are dominated by clays. We infer that the site location was either at the edge of a

terrace backwater pond and/or that a backwater pond developed there after the site was occupied. The majority of cultural material recovered from site was buried between about 30 and 45 cm below the modern surface. On the basis satellite imagery and a slight difference in vegetation, we infer that a now infilled pond or wetland may have existed just southeast of the site prior to the area being disturbed by 20th century activity.

We interpret EcNj-20 as a camp or processing site on the basis of the presence of a small hearth feature with associated bone fragments, artifacts and fire cracked rock (FCR). The hearth was located in the corner of a shovel test and consists of a black stained area that contained both burned and unburned stone and FCR. The top of the hearth as indicated in the shovel test is approximately 35 cm below the modern surface and is approximately 15 cm deep. Testing was stopped shortly after discovery of the hearth, since we did not want to disturb the site further in anticipation of possible avoidance of the site or a need for a controlled excavation. Complete measurements were therefore not acquired during this HRIA. Based on our observations at during shovel tests, at least three quarters of the hearth feature remains undisturbed by our shovel tests.

The test in which the hearth was found (test 27D) contained both burned and unburned bone fragments, FCR fragments. Thirty bone fragments (26 unidentified mammal, 4 large mammal possibly bison), 12 small FCR fragments, one Swan River Chert flake fragment, and a possible expedient tool fragment. Twenty-three of the bone fragments recovered in this test were burned. Several were in and near the hearth, but since almost all material was recovered during screening, their exact in situ position is unknown, but most of the bone and FRC in this test came from near, and possibly in, the hearth feature. Additional material, including bone, bison tooth fragments, another expedient tool fragment and other lithics were recovered from 5 other positive tests in the defined site area.

In addition to the material in the and near the hearth, an additional 56 bone fragments; six tooth fragments, at least some of which are bison; two FCR fragments; one expedient tool fragments; four secondary and tertiary flake fragments; one piece of shatter. The flake fragments/shatter includes one Swan River Chert fragment and a possible Madison Formation (Montana) flake. Other lithics include quartzite and unsourced chert.

Table 4. Material recovered in shovel tests from EcNj-20

Material	Number	From Tests	Comments
Large mammal bone	8	14, 16	All unburned
Unidentified mammal fragments	78	16, 27, 27B, 27C, 27D	41 fragments burned or with signs of heating
Bone subtotal	**86**		
Tooth fragments	6	14, 16, 27C	4 are from bison
FCR	14	16, 27D	
Tool fragments	2	14, 27D	1 granite, 1 quartzite
Lithics	6	14, 27C, 27D	1 Swan River Chert, 1 Madison Formations other unsourced.
Total	**114**		

A small fragment of glass was recovered from test 16 in the site area and at a depth of 30 cm, but it considered out of context and not part of cultural material that forms the site. The complete artifact catalogue is contained in Appendix B

The site is about 180 m north of the modern creek channel and about 70 m south the base of north valley slope of the valley. The material and hearth feature were discovered in wet clay that was uniformly very dark grey to black and in an area with no observable soil horizons (See Figures 23 and 24). A judgmentally placed test in the area resulted in the discovery of a single long bone fragment with a spiral fracture (Figure 25). As a result, we conducted additional tests in the area and the recovered the remaining material. The site, as currently recorded, occupies a small area and after confirming the site was archaeological and with site boundaries for the site preliminarily identified, we ceased testing in the immediate area in order to leave any intact material for controlled excavation rather than recovering material via shovel tests. Based on our observations at least three quarters of the hearth feature remains undisturbed by our shovel tests.

No artifacts were recovered that were time-diagnostic but the presence lithic flakes and tool fragments, it is likely this is a Precontact Period site. We are referring to it as a campsite based only on the presence of the small hearth, but it could be a processing site only. Figures 25 to 29 show examples of material recovered from the site and Figure 30 shows the exposed portion of the inferred hearth feature.

Figure 20. View southeast to EcNj-20 site area indicated by arrow.

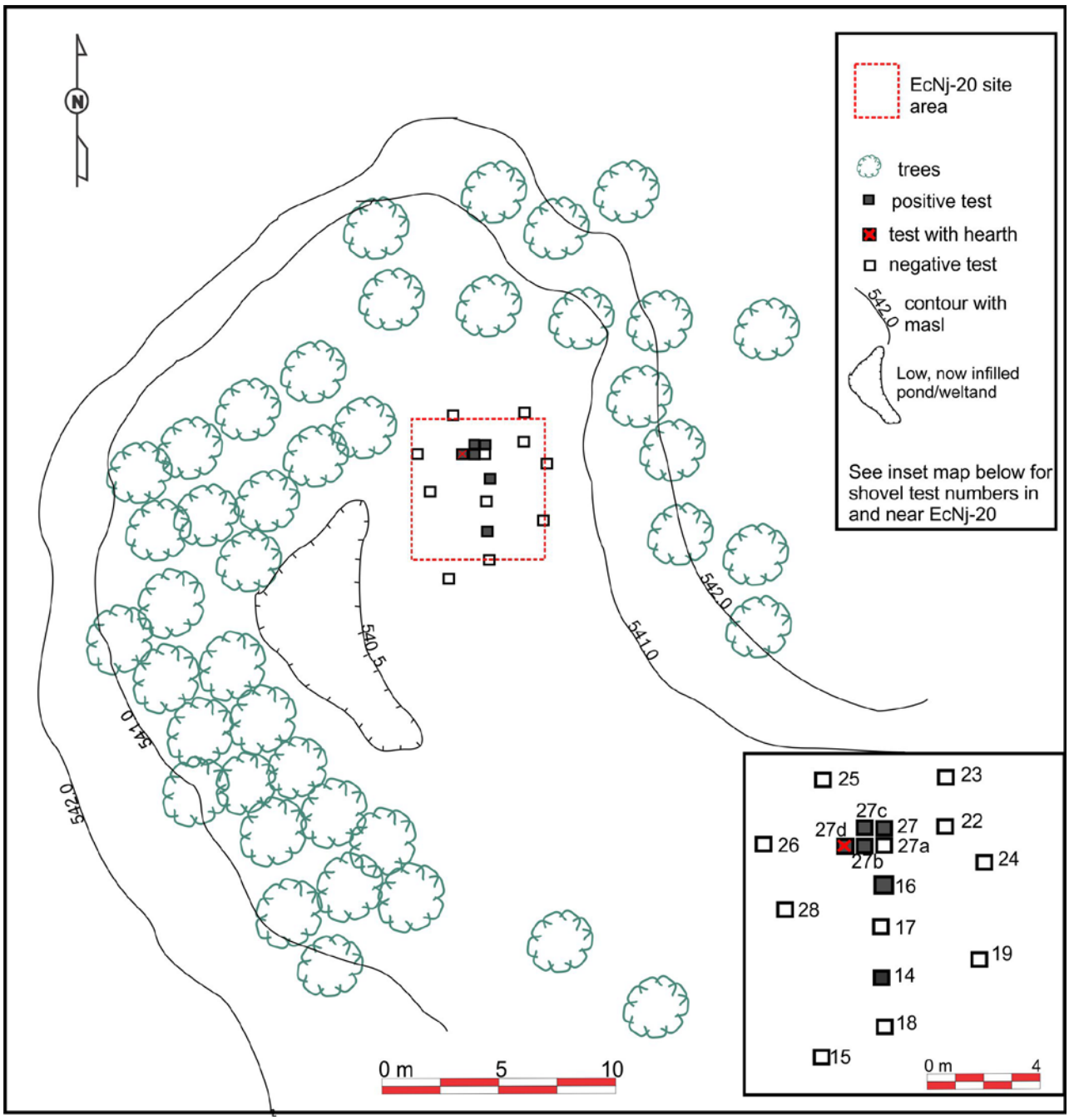


Figure 21. Sketch map EcNj-20 site location. See Figures 3 and 19 for location of site in project area. The base of the Wakamow (Moose Jaw Creek) Valley slope is approximately 70 m north of the site area, Moose Jaw Creek is approximately 180 m south of the site.

Figure 22. View south. EcNj-20 located behind truck in this image. Note the site location is lower in elevation than most of the landform in this photo.

Figure 23. View due south at EcNj-20 site area.

Figure 24. Profile at test 16 in site area, Note dense, wet clay and absence of horizons. All tests in the site area were the same in terms of sediment composition and horizonation.

Figure 25. Initial bone fragments found in test 14 that prompted further testing and site discovery. These fragments from left to right are catalogue numbers EcNj-20~1, 2, 3, and 4.

Figure 26. Left to right, EcNj-20~5-yellow tertiary chert flake; EcNj-20~6 light grey secondary flake fragment; EcNj-20~7 tooth fragment, unidentified.

Figure 27. Left to right EcNj-20~20 and 21, bison teeth from test 16, the second positive test in the site area.

Figure 28. EcNj-20~8. Expedient quartzite cutting tool, arrows indicate cutting edge.

Figure 29. Left to right top row EcNj-20~52 Swan River Chert secondary flake fragment; EcNj-20~46 high quality red chert, possible Madison Formation tertiary flake; EcNj-20~45 grey chert tertiary flake; EcNj-20~55 second row small FCR fragments; bottom row left to right EcNj-20~44 grey quartzite shatter; EcNj-20~57 burned bone fragments from near hearth.

Figure 30. Southwest corner of test 27D. Arrows indicate location of hearth, with evidence of heating of surrounding soil/sediment and from which FCR and burned bone fragments were recovered. Most of the hearth feature was left unexcavated.

Revisited Site

EcNj-5

Location (NAD 83): 13U 461200E 5580850N

Site Size: 100 m N-S x 75 m E-W or less (inferred based on surface material, should be considered an estimate only)

Legal Description: 10-29-16-26 W2M

Features/Site type: Multiple Feature Postcontact Period

Site Description: The site as observed consists of a mostly infilled depression, a scatter of historic period material, including metal, dimensioned lumber, the front part of a wood spoked-wheel wagon with a wood and metal yoke, metal leaf springs and a wood and metal axle and what appears to be a metal seat support. The wagon dates from the late 19th to early 20th century. The depression is located about 20 m north of the site UTM. It is about 4 m north to south by 3 m east to west and mostly filled in with debris including a portion of an old wrought iron bed headboard, wood and unidentified metal. The site is on the east end of an alluvial terrace remnant and extends from the base of the south and west facing

slope to the modern channel of the Moose Jaw Creek. There is an old, now unused road that runs along the south to northwest along the base of the slope. As stated above, since this debris is outside the project boundary, no shovel tests were excavated, and no material was collected. We cannot state that the remains are from what is recorded as a mid-19th century cabin and there is at least some evidence that it is not as noted below.

Note the 1950, 1965 and 1989 air photos in Figure 31 to 33. There was a large building south of the possible EcNj-5 material in 1950 and this building was still there in 1965. In the 1965 photo, there is a small building near where the above-noted debris are located. This small building was not there in 1950. It is therefore possible that the depression dates to the period between 1950 and 1965, however the material we observed, including the wagon and an iron bedframe predates 1950. No remains of the large building present between 1950 and 1965 were located during this HRIA. Figures 34 to 36 show the general location, wagon and depression discussed above.

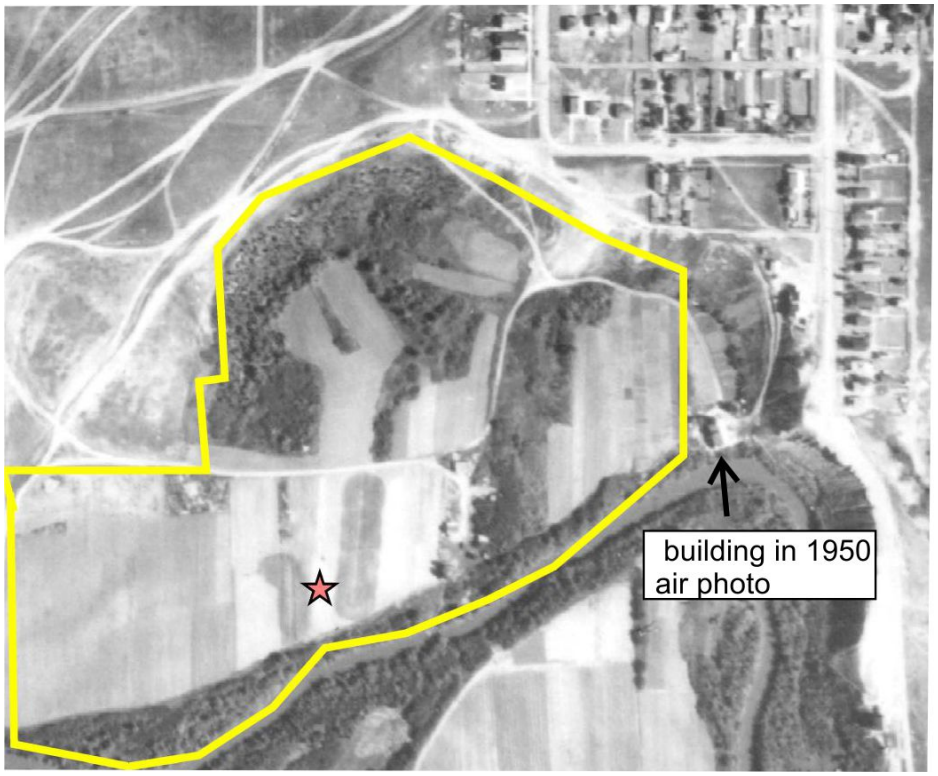


Figure 31. Development area and possible location of EcNj-5. Note location of remains recorded here as EcNj-5 are in what appears to be cultivation in this photo

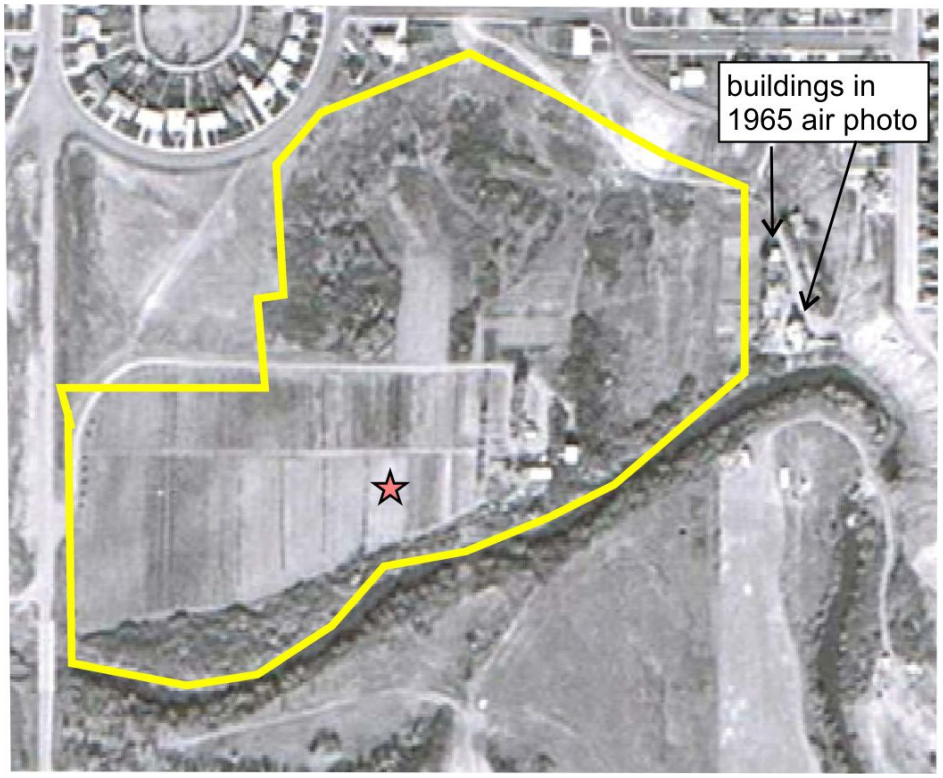


Figure 32. 1965 air photo. Note the building north of the building shown in both this photo and the 1950 air photo.

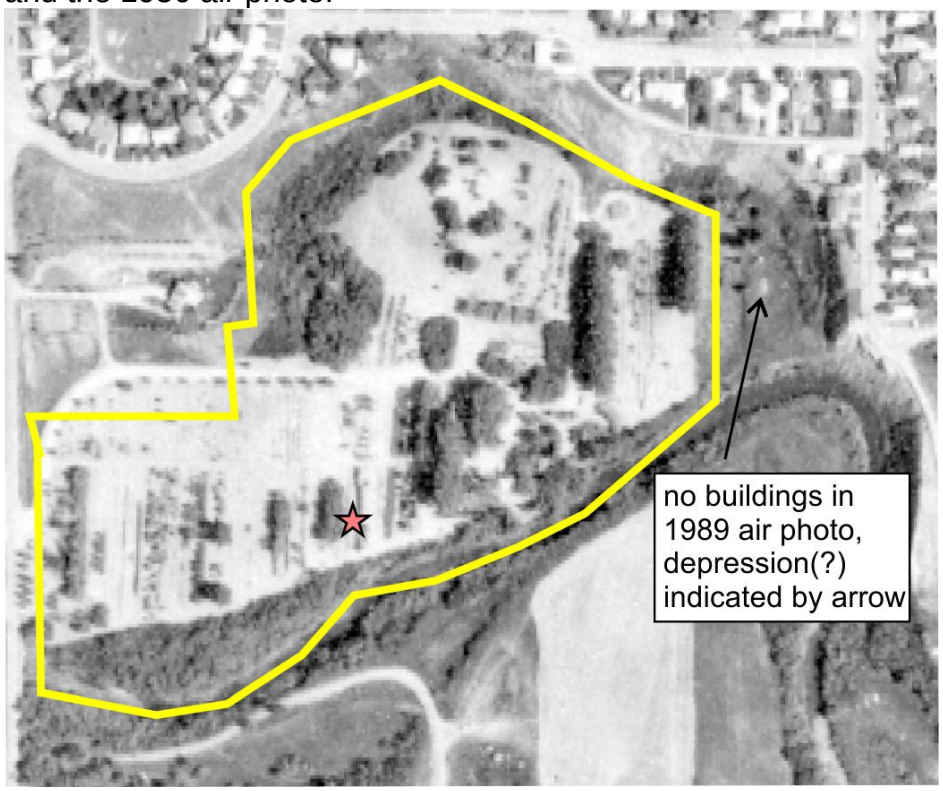


Figure 33. 1989 air photo. All buildings in EcNj-5 area are gone in this photo.

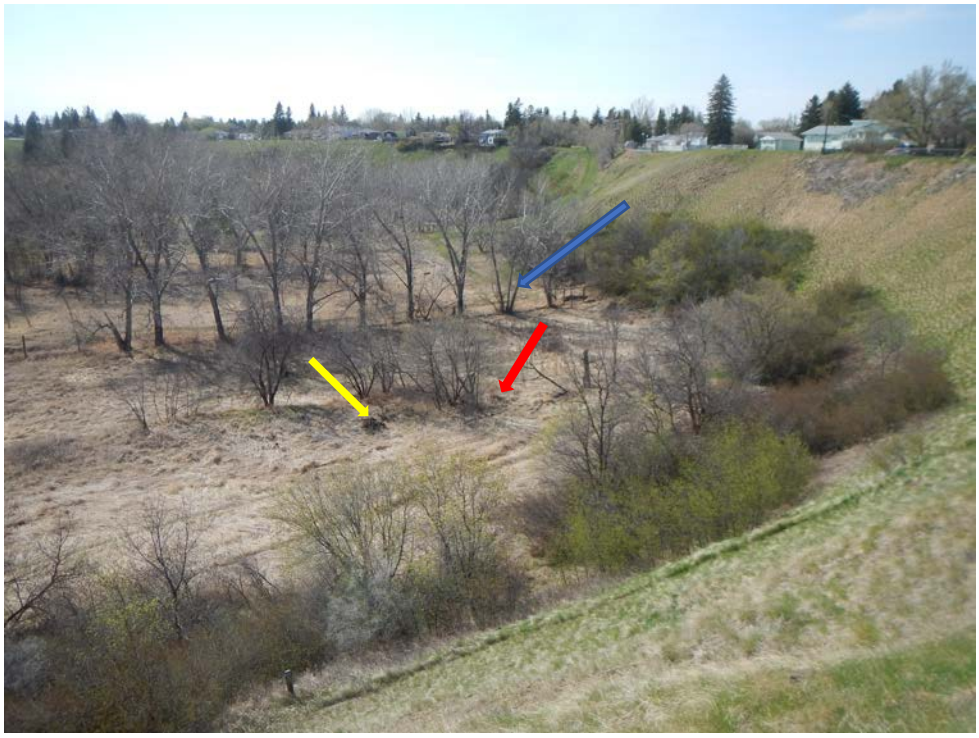


Figure 34. View northwest to EcNj-5 location. Yellow arrow is dimensioned lumber from former building, red arrow is location of debris, depression. East project boundary is just behind row of trees indicated by blue arrow.

Figure 35. Wagon at EcNj-5 site area.

Figure 36. View west at EcNj-5 depression and debris.

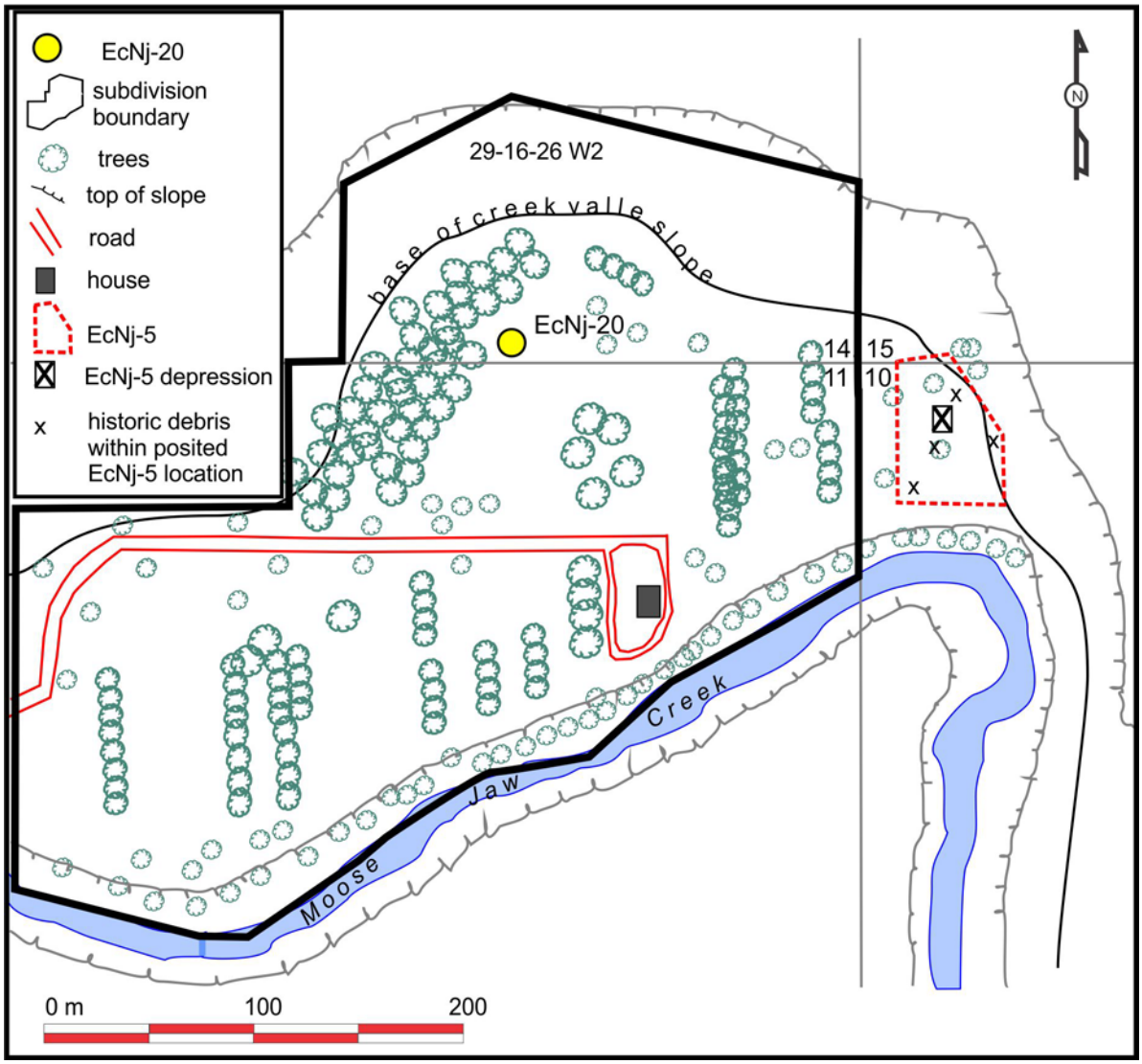


Figure 37. EcNj-5 site area as inferred here.

EcNj-5 is east of the project and will not impacted by the development and there are no avoidance or other recommendations with regard to this site. While we are not certain the remains recorded here are related to Metis cabins from the 19th century, we are confident that EcNj-5 does not exist within the development area.

RECOMMENDATION

We recommend conditional approval of this project subject to further investigation of EcNj-20 prior to any land disturbance activity in the area. There are no plans or anticipated timing for development of the area. (See developer statement in Appendix C). Any future development will consider the site and avoid it if possible and therefore a controlled excavation is not recommended at this time.

We recommend additional testing and assessment to determine the vertical and horizontal extent of EcNj-20. This work was not done during the current HRIA since avoidance was considered possible. Confirming the exact boundaries of the site will facilitate future avoidance planning.

We further recommend that when development plans for the project are available, they be submitted to SHCB to determine/assess additional requirements and/or site avoidance plans.

We are confident that EcNj-5 is not impacted by the development and therefore there are no avoidance or recommendations with regard to that site.

REFERENCES CITED

1994 Knight, L.

A History of the Moose Jaw River Valley, Prepared by Leith Knight for the Wakamow Education Committee, unpublished paper, www.wakamow.ca.

1979 Morgan G. R.

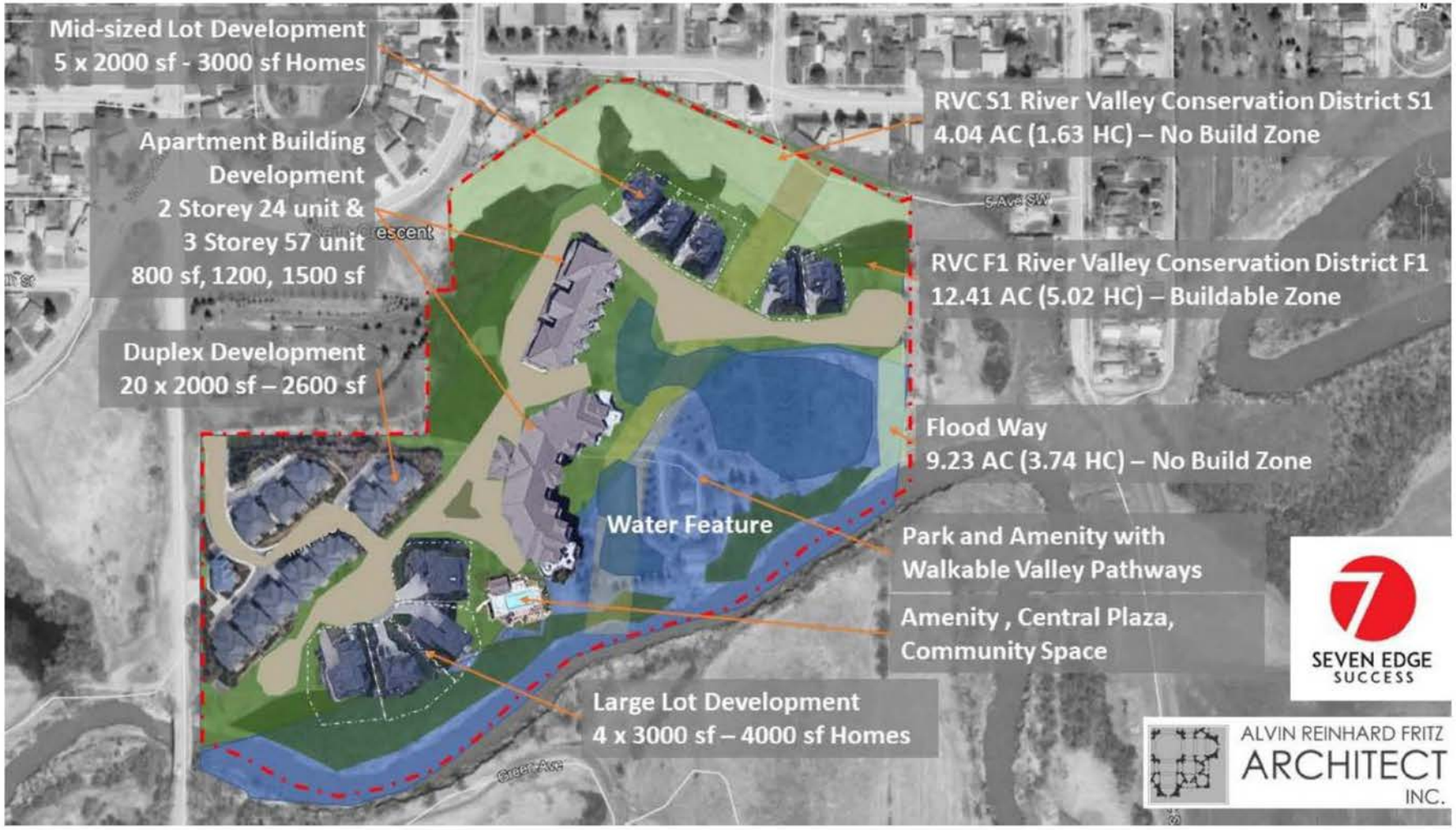
An Ecological Study of the Northern Plains as Seen Through the Garratt Site, Occasional Paper in Anthropology No. 1, Department of Anthropology, University of Saskatchewan, Regina.

2019 Tetra Tech Canada Inc.

Phase I Environmental Site Assessment Plan 101220152, Ext.8, Parcel 164077106 Moose Jaw Saskatchewan, unpubished report in the possession of Arrow Archaeology provided by Charles Vanden Broek.

APPENDIX A

Project Conceptual Plan


Mid-sized Lot Development
5 x 2000 sf - 3000 sf Homes
Apartment Building
Development
2 Storey 24 unit &
3 Storey 57 unit
800 sf, 1200, 1500 sf
Duplex Development
20 x 2000 sf – 2600 sf
RVC S1 River Valley Conservation District S1
4.04 AC (1.63 HC) – No Build Zone
RVC F1 River Valley Conservation District F1
12.41 AC (5.02 HC) – Buildable Zone
Flood Way
9.23 AC (3.74 HC) – No Build Zone
Water Feature
Park and Amenity with
Walkable Valley Pathways
Amenity , Central Plaza,
Community Space
Large Lot Development
4 x 3000 sf – 4000 sf Homes
SEVEN EDGE
SUCCESS
ALVIN REINHARD FRITZ
ARCHITECT
INC.

APPENDIX B

Artifact Catalogue

EcNj-20 Artifact Catalogue

Length (L), Width (W), Thickness (T) in mm; Weight in gms

Cat #	Depth of burial In cm	Item	Test	Material	Stge	L	W	T	Wgt	Description
EcNj-20~1	30-40	Long bone frag	14	bone	N/A	99	34		87.9	Unid, large mammal, with spiral fracture
EcNj-20~2	30-40	Long bone frag	14	bone	N/A	60	29		16.8	Unid, large mammal
EcNj-20~3	30-40	Long bone frag	14	bone	N/A	34	43		14.5	Unid, large mammal
EcNj-20~4	30-40	Long bone frag	14	bone	N/A	53	32		6.8	Unid, large mammal, bone spall, possibly from impact
EcNj-20~5	30-40	Flake	14	Yellow chert	3rd	16	5	3	0.3	Fine grained, unsourced, complete tertiary flake
EcNj-20~6	30-40	Flake frag	14	Light grey chert	2nd	14	18	6.5	1.6	Low quality chert, unsourced, fragment
EcNj-20~7	30-40	Tooth frag	14	tooth		35	21		9.1	Unid tooth fragment, mammal, possibly bison
EcNj-20~8	30-40	Tool frag	14	quartzite		75	54	29	54.1	Fragment of an expedient cutting tool, some microchipping of edge may indicate use wear
EcNj-20~9	15-20	Bone frag	16	bone		28	18		4.7	Unid bone frag
EcNj-20~10	15-20	Bone frag	16	bone		20	11		1.6	Unid bone frag
EcNj-20~11	30-40	Long bone frag	16	bone		72	49		40.8	Unid, large mammal, with spiral fracture
EcNj-20~12	30-40	Long bone frag	16	bone		46	29		14.8	Unid, large mammal
EcNj-20~13	30-40	Long bone frag	16	bone		35	28		9.3	Unid, large mammal
EcNj-20~14	15-20	Bone frag	16	bone		38	27		4.2	Unid bone frag
EcNj-20~15	15-20	Bone frag	16	bone		33	21		2.3	Unid bone frag
EcNj-20~16	15-20	Bone frag	16	bone		27	21		2.8	Unid bone frag
EcNj-2017	25	Bone frag	16	bone		61	37		15.6	Unid bone frag
EcNj-20~18	40-50	Tooth frag	16	tooth		49	31		27.3	Bison tooth frag, molar

EcNj-20~19	40-50	FCR	16	granite					324	Large FCR fragment with some blackening
EcNj-20~20	40-50	Tooth frag	16	tooth		55	30		28.6	Bison tooth frag, molar
EcNj-20~21	40-50	Tooth frag	16	tooth		57	30		26.9	Bison tooth frag, molar
EcNj-20~22	40-50	Tooth frag	16	tooth		57	15		4.7	Bison tooth frag, molar
EcNj-20~23	40-50	Bone frag	16	bone		35	29		4.7	Unid bone frag
EcNj-20~24	40-50	Bone frag	16	bone		20	17		1.4	Unid bone frag burned
EcNj-20~25	40-50	Bone frag	16	bone		17	10		0.7	Unid bone frag burned
EcNj-20~26	40-50	Bone frag	16	bone		10	7		.2	Unid bone frag
EcNj-20~27	40-50	Bone frag	16	bone		7	6		.<1	Unid bone frag
EcNj-20~28	30-40	Long bone frag	27	bone		52	40		20.0	Unid, large mammal
EcNj-20~29	30-40	Bone frag	27	bone		60	36		15.3	Unid bone frag
EcNj-20~30	30-40	Bone frag	27	bone		28	24		3	Unid bone frag burned
EcNj-20~31	30-40	Bone frag	27B	bone		40	25		537	Unid bone frag
EcNj-20~32	30-40	Bone frag	27B	bone		34	26		3.3	Unid bone frag
EcNj-20~33	30-40	Bone frag	27B	bone		18	15		2.8	Unid bone frag burned
EcNj-20~34	30-40	Bone frag	27B	bone		35	14		1.7	Unid bone frag
EcNj-20~35	30-40	Bone frag	27B	bone		28	20		1.4	Unid bone frag
EcNj-20~36	30-40	Bone frag	27B	bone		15	12		1.2	Unid bone frag burned
EcNj-20~37	30-40	Bone frag	27B	bone		17	15		1.2	Unid bone frag
EcNj-20~38	30-40	Bone frag	27B	bone		18	17		1.0	Unid bone frag
EcNj-20~39	30-40	Bone frag	27B	bone		20	14		0.5	Unid bone frag
EcNj-20~40	30-40	Bone frag	27B	bone		16	13		.9	Unid bone frag
EcNj-20~41	30-40	Bone frag	27B	bone		15	12		.3	Unid bone frag
EcNj-20~42	30-40	Bone frag	27B	bone		19	10		.2	Unid bone frag
EcNj-20~43	40+	FCR	27C	granite		90	66		147	FCR potlid fractured fragment;
EcNj-20~44	35-40	shatter	27C	quartzite		41	16	9	5.9	Fine grained, possibly a flake fragment, more likely shatter
EcNj-20~45	37	flake	27C	grey chert	3rd	8	7	1	<.1	Unsourced good quality chert

EcNj-20~46	37	flake	27C	red chert	3rd	10	8	1	<.1	Possible Madison Formation (Montana) chert, high quality
EcNj-20~47	30-40	Bone frags	27C	bone					4.0	6 small unid bone frags, all less than 20 mm x 20 mm , none burned
EcNj-20~48	35-40	Bone frags	27C	Bone						6 very small unid bone frags, less than 20 mm x 20 mm, none burned
EcNj-20~49	35-40	tooth	27C	tooth		56	25		23.3	Bison molar
EcNj-20~50	35-40	Bone frags	27C	Bone					30..	11 unidentified bone frags, 3 frags have some surface burning
EcNj-20~51	30-40	Tool frag	27D	granite		68	39	35	65	Initially inferred to be a tool fragment, but after lab exam, that is uncertain, it has a usable cutting edge, but granite is not a good quality material. Based on lack of stone in area, it was carried in and could have been used as an expedient tool, but uncertain
EcNj-20~52	30-40	Flake frag	27D	Swan River Chert	2nd	22	17	2	0.9	Good quality, SWC secondary flake frag, distal end missing
EcNj-20~53	35-40	Bone frags	27D	bone					5.8	2 unid bone frags mammal, one has surface burn
EcNj-20~54	35-40	FCR	27D	granite, quartzite					73.3	5 small FCR frags, 4 granite, 1 quartzite
EcNj-20~55	35-40	FCR	27D	granite					299	7 FCR frags all granite, found near hearth feature
EcNj-20~56	35-40	Bone frags	27D	bone					51.7	15 small unid bone frags, mammal, 14 burned recovered from in and near hearth feature
EcNj-20~57	40+	Bone frags	27D	bone					24.3	9 small unid bone frags, mammal, 8 burned recovered from in and near hearth feature
EcNj-20~58	30-40	Long bone frags	27D	bone					56.8	4 unid long bone fragments, possibly bison

Material	Number	From Tests	Comments
Large mammal bone	8	14, 16	All unburned
Unidentified mammal fragments	78	16, 27, 27B, 27C, 27D	41 fragments burned or with signs of heating
Bone subtotal	**86**		
Tooth fragments	6	14, 16, 27C	4 are from bison
FCR	14	16, 27D	
Tool fragments	2	14, 27D	1 granite, 1 quartzite
Lithics	6	14, 27C, 27D	1 Swan River Chert, 1 Madison Formation, other unsourced.
Total	**114**		

APPENDIX C

Developer Statement

MURRAY Cadillac

15 Chester Road, Moose Jaw, SK S6J 1N3
Business: 306.693.4605
Fax: 306.693.5887
Toll Free: 1.888.544.2438
Email: sales@murraygm.com
Website: murraygm.com

July 20, 2020

Saskatchewan Heritage Conservation Branch
3211 Albert Street
Regina, Saskatchewan
S4S 5W6

Re: 7th Avenue Land Subdivision, Plan 101220152 Ext. 8, Parcel 164077106 Moose Jaw, HRIA permit 20-038, SCHB file 20-584

Arrow Archaeology has informed us that they have discovered a previously unknown archaeological site during a HRIA conducted under permit 20-038 at Plan 101220152, Ext. 8, Parcel 164077106, (part of 11, 14-29-16-26 W3M) within the City of Moose Jaw. The HRIA and a now completed Environmental Site Assessment are intended to facilitate the City's rezoning/land subdivision process. The eventual plan for the property is as a residential subdivision. The archaeological site is located within lands that are considered developable and while there is a general concept plan for the property that has been provided to you by Arrow Archaeology, at present there is no firm plan for a development layout or timing of any development.

Until such time as a development plan is formulated, we cannot determine any impacts to the project, however, any such plan can consider the site area and attempt to avoid it by setting it aside as a green space or using other techniques to protect and preserve it.

We understand site avoidance is always a preferred strategy. In the meantime, we can firmly delineate and physically mark the site for avoidance. The land parcel is private and fenced and since the site is not visible at the surface it is under no current risk. The site boundaries can and will be marked digitally to ensure the site area is considered during future development planning.

Sincerely,

Charles Vanden Broek
Dealer Principal
Murray GM