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THE 1971 EXCAVATIONS AT FORT ST. JAMES

by

Donald A. Harris

ENVIRONMENTAL STUDY OF FORT ST. JAMES

by

Donald J. Norris

March 1972

NATIONAL AND HISTORIC PARKS BRANCH

DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

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A Preliminary Report on the 1971 Archaeological Excavations of Fort St. James, British Columbia.

by Donald A. Harris

ABSTRACT

The excavations conducted on the site of Fort St. James, British Columbia during the summer of 1971 consisted of the uncovering of the foundations of the warehouse, the fish cache and the clerk's quarters. Also uncovered were the locations of several fence lines and boardwalks as well as sixteen feet of the small tramway that led from the west end of the warehouse out into the lake. The major excavations of the summer were those concerned with the uncovering of the interpreter's house and the trade store that burned in 1919. The structures all dated from the period 1884-95.

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Illustrations

PREFACE

During the field season in Fort St. James and later during the compilation of this report a number of people have extended their time and abilities and for this I am grateful. In the town of Fort St. James I would like to thank Mayor Ernie Robin, Chief Robert Antoine and Mr. Neil Sutherland for helping us to establish this project in their community. I would also like to thank the many local informants who came forth with information concerning the past history of the post and for the insights that they were able to provide concerning the quality of life led by its inhabitants. Included in this group I would especially like to thank Mr. and Mrs. L.R. Dickinson, Mrs. Annie Rodicker, Mrs. Amelia Prince, Mr. Alex Leggett, Mr. J.B. Patrick, Mr. Don Vinnedge, Mrs. Lizette Hall and Mr. Richard Walker.

In Ottawa I would like to thank the personnel of the National Historic Sites Serivce who helped in the compilation of this report. I would like to thank Mr. Steve Epps for the work he did on the illustrations, Miss Jeanne Alyluhia for her analysis of the glass artifacts, Mr. Mike Shaughnessey for his analysis of the metal artifacts and Miss Lynn Sussman for her work on the ceramic artifacts.

Finally, I would like to thank Mr. George Ingram for the

historical research he is doing on Fort St. James. His research is as yet incomplete, and, consequently, his work has not been cited in the body of the text. However, a fully documented account of the history of Fort St. James will be forthcoming. The historical material cited in this report derives from Ingram's research. Thanks are due also to the Hudson's Bay Company for the use of their material.

INTRODUCTION

During the months of June through September, 1971, archaeological excavations were conducted at the National Historic Site of Fort St. James, British Columbia. This Hudson's Bay Company post is being researched for development as a National Historic Park and structural evidence concerning its buildings and features both extant and missing is being sought. This report is a preliminary discussion of the work which was done in 1971 and an outline of the activities projected for 1972.

The archaeological excavations during 1971 included the excavation of the tramway which led from the fur warehouse down the lake shore to the wharf, the foundations of the fur warehouse, the foundations of the fish cache, intermediate fences and boardwalks, the interpreter's house, partial excavation of the trade store, and partial excavation of the parade area of the compound. Related activities included soil testing of the general vicinity of the site, a botanical study of the same vicinity, a dendrochronological sampling of Douglas fir around the mouth of Stuart Lake and a site survey of other North West and Hudson's Bay Company posts in the New Caledonia district. The purpose of the excavations was primarily for site development. The other

activities were conducted so that the site might be interpreted on a broad base, placing it within the social, economic and cultural context of New Caledonia and the fur trade.

THE SITE

Physical Description

The site of Fort St. James is located within the town limits of the town of Fort St. James, British Columbia, on what were the city lots 8, 9, 10, 11, 12 and lots A, B, C, D, and E. The approximate position of the site is 56° 26' N, and 124° 15' W; and the approximate distance of the post from the mouth of Stuart Lake is one mile (Fig. 1). The elevation of site above mean sea level is 2274.0 ft. and its elevation above mean water level of Stuart Lake is 37 ft.

The climate of this area is characterized by mild summers and severe winters. During the summer months the temperature may reach a maximum of 90-100°F on individual days and as low as 60°F below zero during the winter. Summer frosts are not uncommon and the average precipitation is 15.61 in., one-third to one-half of which falls as rain. The driest part of the year is in the months of August and September and at this time the lake level is at its lowest before freeze up.

The fort St. James area belongs to the Interior Physiologic System of the Canadian Cordillera which is typified by dissected plateaus and scattered mountain ranges. The region was heavily glaciated during the

Pleistocene era and the sites of the post and the town are located on deep lacustrine deposits of a glacial lake bed of alternating layers of silty clays and fine to coarse sands. These deposits extend to a depth of 100 feet or more (Farstad and Laird, 1954). The hills to the north and east of the site are composed of limestone with minor amounts of shale, gneiss and argillite.

The soil on which the site was constructed belongs to the Grey Wooded group, Fort St. James series (Farstad and Laird 1954:35). These soils are characterized by clays ranging in color and texture from dark grey fine to grey heavy coarse. They are very plastic when wet and become extremely hard when dry. Because of the alterations by man to natural drainage systems, the surficial pH of the soil has increased from 5.6 which is typical of the Grey Wooded group to 7.0-8.0. This pH increase has also been affected by the area's source of ground water which is mostly run-off from the massive limestone hills behind the site.

At present the vegetational coverage of the site is mostly grasses and open field crops with a predominance of foxtail barley (Hordeum jubatum), quack grass (Agropyron repens), Shortawn foxtail (Alopecurus aequalis) and thistle (Cirsium brevistylum). Before the site was cleared, which has been for a considerable time, it is postulated that the vegetational coverage was white spruce (Picea glauca).

The results of the above factors in terms of agricultural

potential are that the growing season is long enough and the soil is rich and wet enough for crops, but that due to summer frosts only the hardier plants such as potatoes and turnips can be grown with any sort of assurance.

For detailed discussions of these factors and the agricultural potential of the site and its significance to the fur trade post see Norris, 1972.

Post Occupation of the Site

The key date regarding the functioning of the post as an active trading center was 1947. At about this time the retail operations were removed from the trade store to a new site on the highway coming into Fort St. James. The Hudson's Bay Company continued to use the warehouse for storage until 1953 when that building was put in the care of the local Fort St. James Historical Society. Later in 1964 the fish cache and men's house were also turned over to that group. Up until that time the men's house had been rented out to various private parties by the Hudson's Bay Company. Also in 1947 the main dwelling place was leased to Mr. Don Vinnedge who later bought the house in 1953. He in turn sold the house to Mr. Walter Wraight who was the resident at the time to purchase by the Provincial Government of British Columbia.

During the 1940s and 50s the Hudson's Bay Company had its property subdivided and began to sell lots for housing.

One such house was constructed to the southeast of the trade store site and the occupant at least once had the ground around the house and buildings plowed in order to remove the fire hazard presented by the dried grass on the site. Other residents in the area removed foundation stones from the site of the interpreter's house and the trade store. In the 1960s the federal government of Canada acquired the land on which the warehouse, fish cache and men's house stand along with a section of land that extended from Fort Avenue to the water line of Stuart Lake.

History

The New Caledonia fur district as it was later defined, encompassed a vast area of almost 90,000 square miles bounded on the east by the Rocky Mountains through which there was access at only two points, Pine Pass and Tête Jaune Cache Pass. To the west lay the Coast Mountains through which access was restricted to the valley of the Skeena River which was un-navigable during many parts of the year. Entrance into the district from the north was impractical and from the south was limited to the Fraser River which presented formidable obstacles in the form of impassable rapids, forcing much of the journey into difficult overland routes. For the same reasons the area was relatively isolated during the pre-contact period, although prior to the coming of the white traders, the Indians of the Bulkley and

Skeena River valleys and the Bear Lake region did have contact with Tsimshian traders from the Coast. (Jenness 1943: 478-82), and the Chilcotin Indians and Lower Carrier conducted an active trade with Salish speaking Indians to the south and west (Goldman 1941: 396).

Simon Fraser first moved into that what would become New Caledonia in 1805 after establishing a post on McLeod Lake as part of the North West Company's expansion west of the Rockies and its search for an outlet on the Pacific Coast. Posts followed at Stuart Lake in 1806 (Fort St. James), and later, at Fraser Lake (Fort Fraser) and at the confluence of the Nechako and Fraser Rivers (Fort George); stepping stones on Fraser's journey to the Pacific. Fraser returned from his journey a disappointed man, having failed to find a suitable route to the Pacific, but the posts he had established continued to conduct a successful trade supervised by John Stuart and for a short time, Daniel Harmon. Under their direction, Stuart Lake post, later called Fort St. James, was established as the headquarters for the surrounding district and the foundations were laid for the conduct of trade throughout the 19th century.

The remoteness of the district and the small size of the contingent of traders rendered necessary a tight control of the outlying posts by the centrally located administrative centre, Fort St. James. And the local authority maintained a great deal of autonomy in relation to the outside world for

outside contact was restricted to the annual brigade. When the district was first opened, furs were carried each year to Fort William and exchanged for trading goods. One of the most significant developments during the North West Company's period was the linking in 1813 of the district for the purposes of supply with the Columbia River. With the exception of a short period after 1821, when Simpson ordered the use of York Factory as the depot, this southerly direction would be the orientation of New Caledonia throughout the century. Each spring the brigade left Fort St. James with furs, travelled by canoe (later boats) to Alexandria where a change was made to horses to travel to Lake Okanagan where boats could again be used for navigation. This continued until 1848 when the brigade terminus was changed to the lower Fraser River.

Within the district an internal system of communications was developed whereby all goods coming into the district or leaving it were channelled through Fort St. James. It was at this location that the brigades heading south originated and to which they returned. The bulk of the annual food supply in the form of salmon was caught at Stuart, Fraser and Babine Lakes, smoked, and taken to the Stuart Lake post where it was then redistributed to the other posts in the district according to their needs. Rations of dried salmon for the men and dogs at Fort St. James alone consisted of 30,000 to 40,000 fish annually and the needs of the district as a whole were

considerable. The fish were caught by the Indians and traded to the company for goods. As the severity of the winter increased and food began to run short these same fish were sometimes traded back to the native population against their annual trappings, further stimulating the trade.

The years under the North West Company formed the basis for the period of expansion and consolidation which followed the merger of the North West Company with the Hudson's Bay Company. From 1821 the company enjoyed a period of monopolistic trading which remained uncontested until after 1860. An additional post was established in the northern part of the district at Bear Lake (Fort Connelly) and in the south a post was established at Alexandria and another on the Chilcotin River in an attempt to forestall Indian traders who were siphoning off trade to the coast. The trade settled into a fixed pattern interrupted only briefly, if tragically, by the breakdowns in trader-Indian relationships such as the murder of the company servants at Fort George in 1823; by the occasional failure of the annual salmon run which threw both Indian and trader into desperate straits; or by the measles epidemic which swept through the Indian tribes in 1848-9. In normal years the district could be counted on for well over 100 packs of furs (beaver and marten primarily) allowing a rest for the trapped out areas of competition east of the mountains.

This pattern was disrupted after 1860 when settlement and

mining on the lower Fraser brought improved lines of communication and broke down the wilderness buffer which had previously kept New Caledonia in relative isolation. Miners passing through Fort St. James on their way to Omineca (1868-71) and Cassier (1870s) gold fields to the north and traders operating out of Quesnel, the new commercial centre of the Cariboo district, offered an alternative to the Hudson's Bay Company and increased the trend towards a cash economy. The introduction of new consumers and improved lines of communication also brought an increased importation of outside foodstuffs, hastening the breakdown of traditional subsistence patterns. In conjunction with the opening of the country came the missionaries. Father Modeste Demers had first visited Stuart Lake in 1842 when he travelled to New Caledonia with the fur trade brigade under Peter Skene Ogden. After a short mission of three days among the Stuart Lake Indians he returned to Alexandria where he establsihed a permanent mission. After two brief visits by Father John Nobili S.J. in 1845 and 1846-7, Fort St. James languished for 20 years until a visit by Bishop D'Herbomez marked a new interest in New Caledonia. Finally in 1873, after a series of annual visits, a permanent mission was established among the northern Carriers and for the first time the Hudson's Bay Company was faced at Stuart Lake with a permanently entrenched rival for the loyalties of these Indians.

In spite of these changing circumstances the Hudson's Bay

Company continued to operate from the same posts as it had done previously: Fort St. James, Fort Fraser, Fort Babine, Fort George, Fort McLeod and Fort Connelly. The post at Alexandria, however, was moved to Quesnel and became a part of the district formed to take advantage of the retail trade in the Cariboo mining area, and the fort at the forks of the Chilcotin River had been closed because of the hostility of the local Indians.

The detachment of Quesnel from New Caledonia was the opening move in a trend on the part of the Hudson's Bay Company to withdraw in the face of new concerns advancing up the Fraser River valley. Competition continued throughout the period after 1870, although perhaps not with the same intensity as it had during the 1860s. It penetrated throughout New Caledonia and even beyond into the Hudson's Bay Company's perserves east of the mountains. The posts of New Caledonia were looked upon by the Company as a buffer to protect these areas and temporary posts and trading parties were dispatched to thwart the efforts of the free traders who were infiltrating the district. Small posts were established at Stony Creek, Fort Grahame, and Giscome Portage for just this purpose, but the pressure proved to be too great and caused a further withdrawal in the 1890s. In the face of competition and declining returns drastic cutbacks in personnel and posts were effected. A foretaste came in the early 1880s when a number of the posts were temporarily closed. In the

1890s Babine Lake post was transferred to the jurisdiction of the Hazelton-Port Simpson district, a reflection also of a gradual earlier shift in the line of supply from the Fraser River to the Skeena River. Fort George was placed in the Cariboo district and Fort Connelly on Bear Lake was permanently closed.

This trend continued into the 20th century when the settlement in the southern part of the district, the survey and building of the Grand Trunk Pacific Railway and the general development of the country brought further retreat. Fort Fraser was closed as was Fort George, and in the years after 1918 the Company's operations at Fort St. James began to emphasize retail sales over fur trading. Its present-day outlet is indistinguishable from the other retail stores that repidly moved into Fort St. James after the coming of the Pacific Great Eastern Railroad. This railroad has opened up the northern country to exploitation by mining and lumber concerns and currently, the town is undergoing a considerable boom.

METHODOLOGY

Rationale

It has been the intention of the National Historic Sites Services to interpret Fort St. James as it existed in the 1890s, because the buildings currently standing on the site date from 1884-1890. To satisfy any structural questions which might arise from this course of action the following excavations were planned for the 1971 field season.

Strategy

1. Search for the fences that surrounded the post and divided up its work areas and gardens; location of the false palisade that was erected in 1928 for the centennial celebration so that it will not be confused with the earlier fences; and location, if possible, of the boardwalks that connected the various buildings of the post.
2. Location of the tramline that ran from wareshouse out into the lake and was used for hauling supplies brought in by sloop up the steep lake shore.
3. Location of the two trade stores that stood in the center of the post. The first of these was built in

1884 and was destroyed by fire in 1919. On approximately the same location, but with a different orientation another store was built. This one was altered on several occasions and finally removed in the late 1940s.

4. Excavation of the small interpreter's house which was destroyed by fire in 1935.

5. Location and excavation of the forge and carpenter's workshop that was located to the north of the fort. The bellows for the forge are still in the fur warehouse.

6. Location and excavation of the several privies and barns that were scattered about the periphery of the fort. Because of the high phosphorus content of deposits of this type, phosphate soil testing should provide their locations. These tests will not only lessen exploratory trenching, but will provide data on the phosphorus content of the soil.

7. Location and excavation of the harness and sled shed, or, as it was later called, the Grahame garage. This structure was believed to have originally been built in the late 1840s by Donald Manson and might provide a definite orientation for that earlier post. It has also been reported to have held large quantities of HBC trade tokens and tickets that were destroyed or disposed of in the 1920s.

8. Location of the site of the flagstaff erected in 1889.

The location of this feature will also provide data on the entrance to the fort, because it was erected in the centre of the road up from the lake.

9. Location and excavation of the small storage building and ice house erected by W.D. Fraser in the 1920s. This building stood between the warehouse and the fish cache and was not believed to have had a cellar.

10. During the progress of the above-mentioned excavations attention would also be directed toward detecting evidence of the earlier HBC posts that may or may not have been on the same site.

During the course of the 1971 field season not all of these objectives were satisfied, giving rise to the need for a second field season.

To implement these excavations the following excavational techniques were employed:

Technique

An imaginary point of origin was established and at a point 1100 ft. north, 1300 ft. east of that station a secondary station was established (Fig. 2). This station consisted of a steel pin with a cross in the top and set in concrete. From this point a grid system was laid down over the entire area to be excavated based on 10 ft. intervals. The base line of this grid system was oriented 14° 30' west of magnetic north or 41° 24' west of true north. This line approximated

the north-south orientation of the post.

Grid System

One in. by two in. by 18 in. wooden grade stakes, whose longitudinal axes were oriented paralled to the east-west line of the grid system, were used to delineate the 10 ft. grid intervals. All measurements in any 10 ft. square were made from the southeast corner of that square.....and from the southeast corner of the particular stake that located that point in the grid system.

Vertical Control

Vertical control in the site was maintained by the use of a transit whose station was centrally located and permanently established. The height of the instrument was constant at 4.8 ft. above the ground surface or 2280.0 ± 0.15 ft. above sea level. The error of ± 0.15 ft. was constant. In circumstances where direct line of sight was obstructed, temporary stations were established for obtaining particular elevations.

Units

All elevations were taken with a leveling rod and were read to the nearest 0.05 ft. All distances were taped with either a cloth or steel tape and units for horizontal distances were

noted in feet, tenths of feet and hundredths of feet.

Maps and Sketches

All maps and sketches drawn on the site were oriented to the grid system and north arrows on these drawings refer to a northerly direction 14^{o} 30' west of magnetic north. The scale employed for sketches and drawings was generally 1 in. = 2 ft. unless indicated otherwise. The drawing of trench floors and features, etc, was aided by the use of steel 5 ft. by 5 ft. frame which was cross-sectioned by steel wires placed at 1.0 ft. intervals. This frame was leveled with two line levels attached to the frame and placed on perpendicular axes.

Photography

Black-and-white photography was accomplished with the use of a 35 mm. Pentax camera body using 28 mm. or 35 mm. Takumar lenses. Color photography was accomplished with a 35 mm. Mamiya Sekor 528 TL camera with a telephoto and wide angle lens kit. The scale used in the 35 mm. black and white photographs was either a standard leveling rod or a 1.0 ft. arrow which was divided into inches.

Artifact Collection

Artifacts from all areas excavated were kept, but on a differential basis. Sub-operations entailing explorations

for fences and broadwalks were not screened systematically for artifacts, but any artifacts found were kept according to the specific provenience. This "rule" also applied to the excavations of the sod layer in all other areas as well. During the excavation of the interpreter's house and the trade store the soils beneath the sod layer were screened through 1/4 inch hardware cloth screens for artifacts.

Implementation

The digging techniques employed during the summer varied from exploratory trenching to extensive excavations of specific localities. In all cases the first lot in any sub-operation which consisted of the sod layer was stripped away before that particular area was approached archaeologically. In the case of sod removal the sod was cut into squares with an axe and removed. Subsequent excavations were conducted with shovel and trowel.

Stratigraphy

The stratigraphy of the site of Fort St. James which will be discussed in more detail under the separate operational headings is presented here in a general form so that an overall impression of the stratigraphic sequences of the soil might be obtained.

As stated elsewhere the site is located on a relatively

flat expanse of glacial lake bed on the eastern shore of Stuart Lake. The underlying soils consist of heavy grey clays overlying alternate layers of sand and silt. Drainage for the reasons mentioned is poor and mostly surficial.

Generally, the stratigraphy on the site consisted of three layers: a sod layer, a sub-soil humus layer and sterile, sandy clay.

The sod layer which usually constituted lot 1 was composed of the roots of hay type grasses of which the predominant types were foxtail barley (Hordeum jubatum) and quack grass (Agropyron repens). The root systems of these grasses were very dense and interwoven, and removal of the layer could only be accomplished in sections. No attempt was made to sort through these sections in search of artifacts. This layer varied in depth from 0.1 ft. to 0.4 ft. and its phosphorus content varied from 8.0 _ 0.1 ppm. at the surface to 2.5 _ 0.1 ppm. in the rooting zone.

The humus layer below the sod was a consistent dark brown in color and contained the remnants of the roots systems of the sod grasses. Features were not really discernable in this layer except in the case of stones and timbers which projected into it from below. This layer was formed by the decomposition of the overlying sod and other organic materials. Generally it was described as lot 2 during the excavations and it had an approximate thickness of 0.3 ft. to 0.5 ft. Its phosphorus content ranged from 1.8 _ 0.1 ppm.

to 2.5 — 0.1 ppm.

The third predominant layer was the sterile clays and sands which underlay the entire area. This layer, which was later determined as a lacustrine deposit of a Pleistocene lake, was termed beach sand throughout the field record. Its consistency varied from dense clays to gravelly sands and it was estimated to have a depth of over 100 ft. (Farstad and Laird 1954) with a phosphorus content of 1.0 ppm. The significance of this layer to the excavations was that its upper side acted as a matrix into which cultural deposits intruded. Its color varied from grey-white to grey to dark grey. It also contained some beige and light buff coloured sandy clays. The upper foot or so of this layer contained traces of decomposed roots, but there were no indications of the past presence of a deeply rooted forest cover. This gave rise to the conclusion that if the area had at one time been covered by forest it was composed mainly of white spruce (Picea glauca) (For complete explanation of vegetational progression, see Norris 1972).

This stratigraphic pattern varied in some areas, but for the most part it was the pervasive sequence throughout the site.

Figure 1. 1907 map of North-Central British Columbia by A.G. Morice (Provincial Archives of British Columbia).

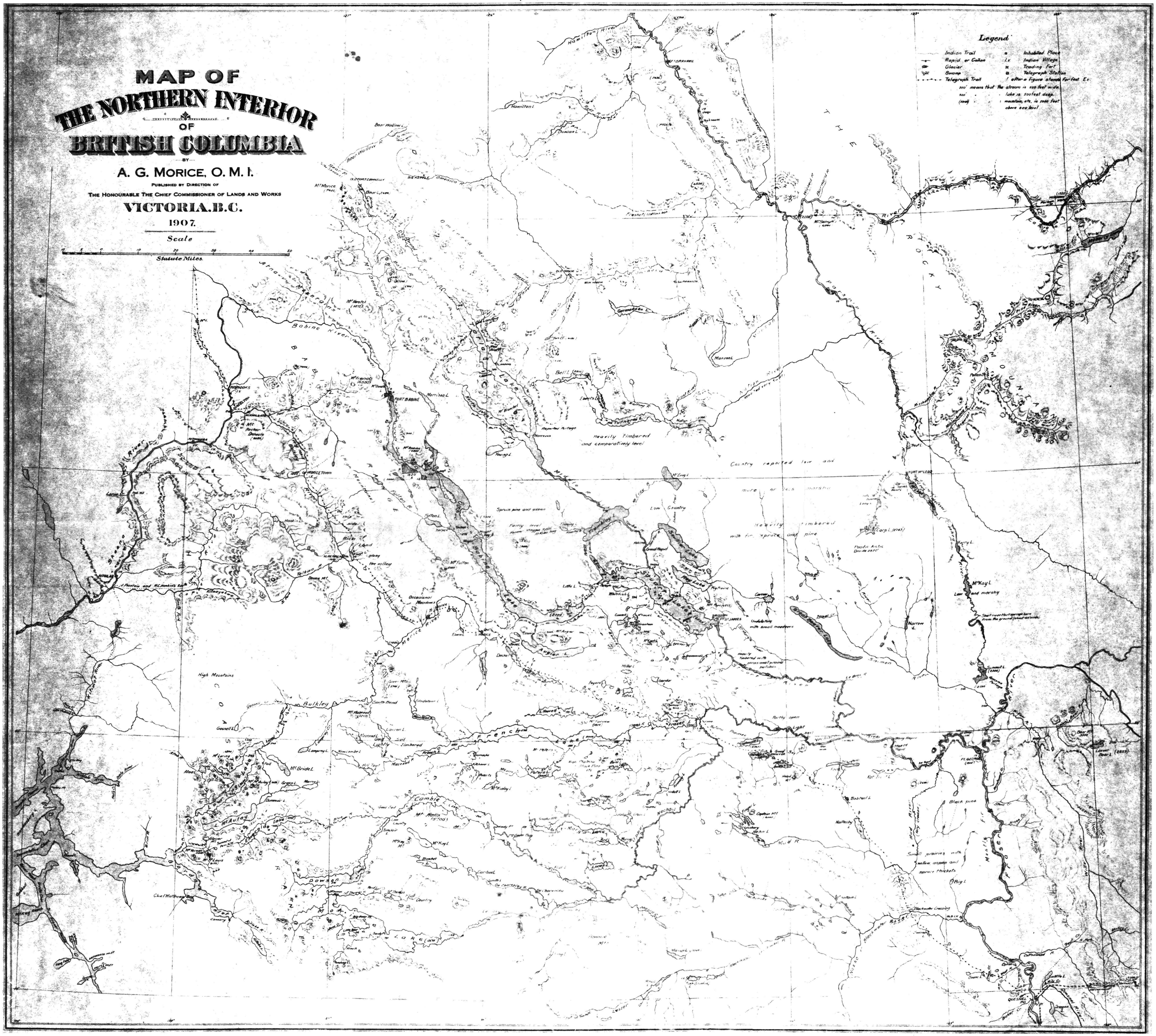

MAP OF
THE NORTHERN INTERIOR
OF
BRITISH COLUMBIA
BY
A. G. MORICE, O. M. I.
PUBLISHED BY DIRECTION OF
THE HONOURABLE THE CHIEF COMMISSIONER OF LANDS AND WORKS
VICTORIA. B.C.
1907.
Scale
Statute Miles
Legend
Indian Trail
Rapid or Cañon
Glacier
Swamp
Telegraph Trail
Inhabited Place
Indian Village
Trading Fort
Telegraph Station
' after a figure stands for feet. Ex:
500' means that the stream is 500 feet wide.
500' . . . lake is 500 feet deep.
(500) . . . mountain, etc. is 5000 feet above sea level
THE ROCKY MOUNTAINS
Peace River
Parsnip River
Finlay River
Omineca Mountains
Omineca R.
Hamilton River
Babine River
Babine Lake
Takla Lake
Stuart Lake
Stuart River
Fraser Lake
French Lake
Nechako River
Fraser River
Skeena River
Bulkley River
Morice River
Blackwater River
Pine River
Heavily timbered and comparatively level
Country reported low and more or less marshy
Heavily timbered with fir, spruce and pine
Low Country
High Mountains
FORT BABINE
FORT McLEOD
FT. GEORGE
QUESNEL P.O.
Blackwater Crossing
Pacific Arctic Divide 2320'
Small prairies with willow, aspen and spruce thickets
Mostly Fir

Figure 2. Fort St. James. 1971 excavation plan (3T-72-101-1).

1300

1250

1200

1150

N1100

E1250

1300

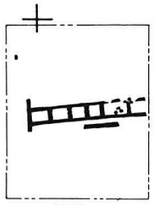
1350

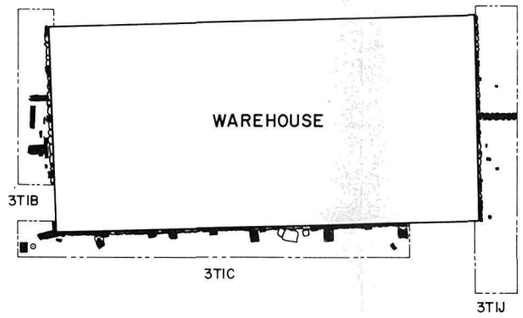
1400

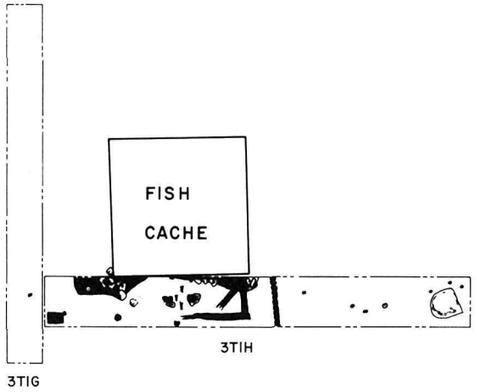
1450

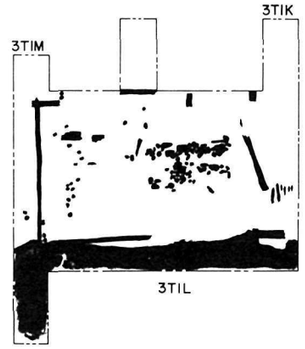
1500

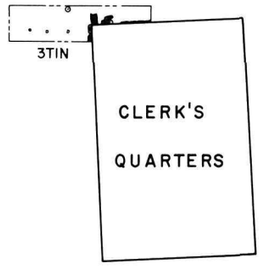
1550

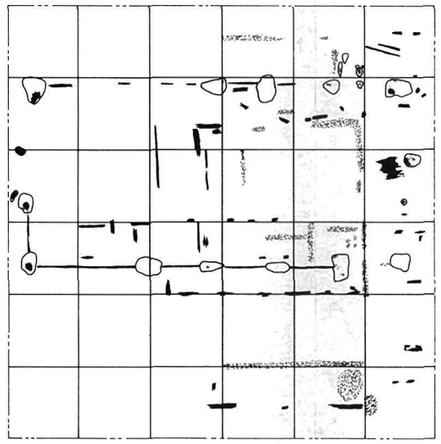




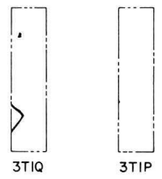








TRADE STORE
(3T2,4-16)



INTERPRETER'S' HOUSE
3T3

TRUE
NORTH

CONCRETE
MONUMENT

LEGEND:
- WOOD
- ROCK
- CHARCOAL
- SOIL STAINS

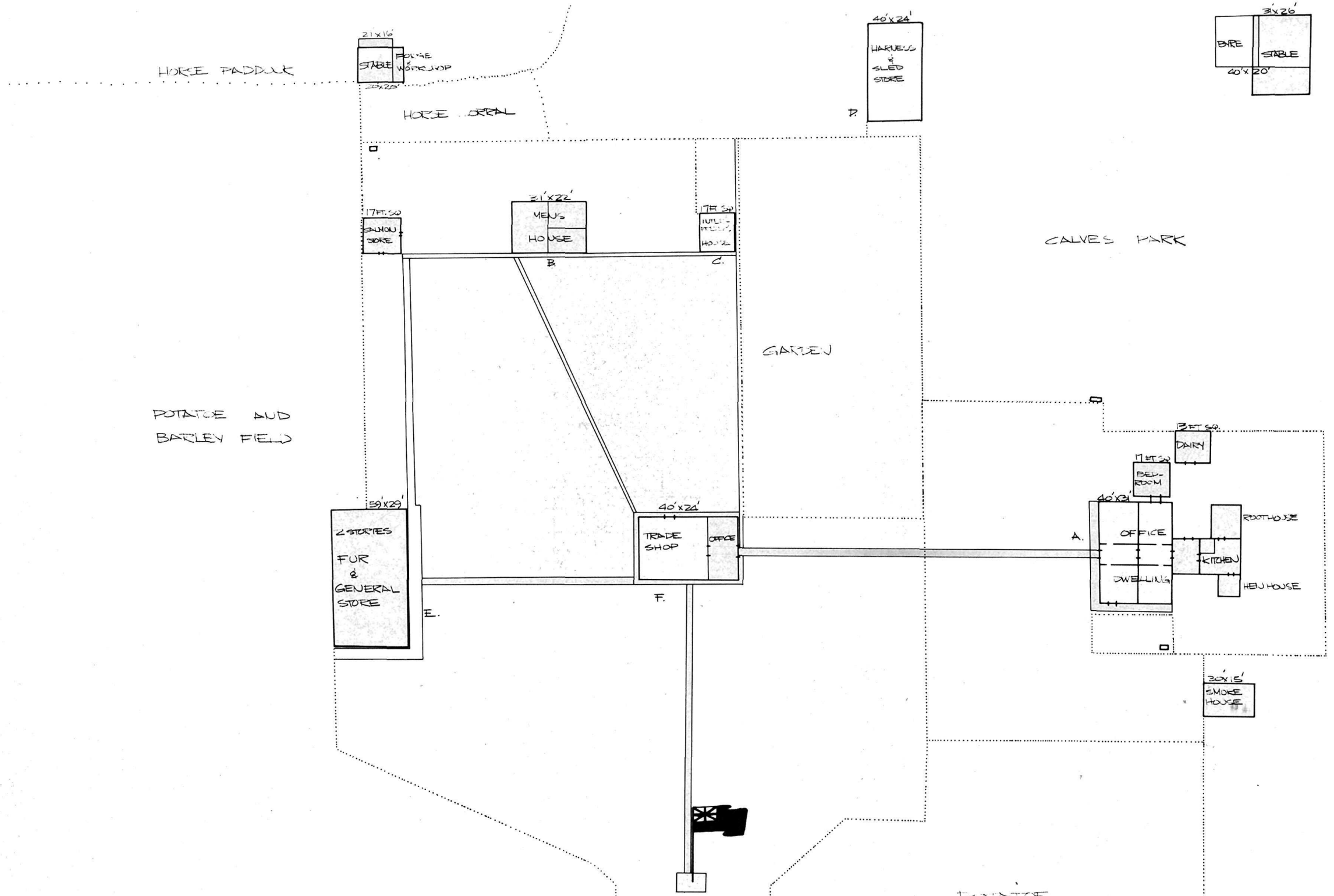
FORT ST. JAMES – SITE 3T
1971 EXCAVATION PLAN

0 10 20 30 40 50 FT.

Figure 3. 1888-89 map of the Hudson's Bay Company post of Fort St. James by Roderick MacFarlane (Provincial Archives of British Columbia).

FIGURE 3

Drawing No. 3T-72-102-14



GROUND PLAN OF FORT ST. JAMES 1888/9

Figure 4. Towing the cart up from the lake to the warehouse. (Provincial Archives of British Columbia).

Figure 5. Track and wharf prior to 1904, but exact date uncertain (Provinial Archives of British Columbia).

Figure 6. Track and wharf after 1904, but exact date uncertain (Provincial Archives of British Columbia).

the 1870s the line of transportation through which the New Caledonia district was supplied was gradually shifted from the mouth of the Fraser River to the mouth of the Skeena River and Port Essington. From there the goods were shipped up the Skeena River to Hazelton. They were then portaged overland to the mouth of Babine Lake where they were loaded onto freight boats and sailed up the lake to its top where they were portaged over to Stuart Lake and sailed down to Fort St. James on boats. In 1891 the first steamer was put into use on the Skeena and in 1892-93 schooners were added on Stuart and Babine Lakes to carry the increased amount of goods that could be shipped by the Skeena route. At Fort St. James lighters working from a landing on the beach were used to unload the schooner but this was a cumbersome and costly system and to do away with it, a wharf and track were constructed during the winter 1894-95. When first built the wharf had only three piers or sets of cribwork which actually extended into the lake, but because of the low water level in the late summer and fall months, it was extended in 1905 by two more piers. This transition can be seen in Figures 5 and 6. This system of supply was maintained until about the time of the First World War when the Grand Trunk Pacific railroad was completed to Prince George, and Wanderhoof, and goods could therefore be shipped overland from that point.

Excavations

The excavation 3T1A, for the track was located to the west of the warehouse in a trough-like depression that led down to the beach. The size of the excavation shown in Figure 7 was 20 ft. by 25 ft. and its co-ordinates were 1275N-1300N, 1245E-1265E. Within this excavated area the railway, oriented east and west, was located between 1285N-1290N, 1245E-1265E.

Stratigraphy

The track was excavated in three lots two of which correspond to the stratigraphic sequence of the soil. The third lot was more closely related to the cultural context of the railway. Figures 8a and 8b present profile drawings of the eastern and western ends of the excavation.

Lot 3T1A1 corresponds to the sod layer which was relatively thin, being only 0.15 ft. thick. This layer was removed by sectioning, but, because of the thinness of the lot, it was difficult to remove in such a manner. Directly below grey clay was encountered and was termed 3T1A2. There was very little humus development, as noted in the other areas of the excavation, and the grey clay designated 3T1A2 was almost devoid of artifacts.

Lot 3T1A3 consisted of the organic or humus development below the sod layer, but directly associated with the area of the track. This lot, depicted in both Figures 8a and 8b

was probably the result of the decaying sub-structure of the railway or material that had slumped down into the low point of the trough from the side walls. At the very bottom of the ditch were the rotted timber remains of the track.

One significant item shown in 8a was the indentation at 1248.6N, 1265E in the ditch wall. This step may have resulted from the original excavation of the ditch prior to the laying of the rails.

Features

Figures 9 and 10 are detailed views of the excavation of the track. From these it is possible to see the composition and orientation of the wooden rails. The centre line of the rails runs from 1287.9N, 1265E at the eastern end of the excavation to 1287N, 1244E. The wood used in the feature including the rails and cross-ties was identified as Douglas fir as was the plank that lay to the south of the track. The wooden rails measured approximately 0.3 ft. in width and were separated by a distance of 1.5 ft. There was only one cross-tie remaining and it measured approximately 0.4 ft. in width. There were stains of several other cross-ties and these measure approximately 0.6 ft. in width. These cross-ties, if measured centre to centre, averaged an approximate separation of 2.9 ft. The total length of the section uncovered was 16.3 ft. and the presence of gravel indicated that the entire structure, up to the point where it became elevated by the crib work was

bedded in gravel.

At the western terminus of the uncovered railway section, the first beam of the supportive cribwork was encountered. This beam, a peeled log of Douglas fir, had a diameter of 0.55 ft. It lay perpendicular to the path of the railway and at two points along its length it showed wear marks. (Fig. 10) These spots were approximately 1.7 ft. apart, centre to centre and aligned with the direction of the rails. To the west of this log toward the lake definite evidence of the railway was missing, although the dark organic stain persisted.

The only other feature in this sub-operation was a post hole whose centre was located at 1298N, 1248E and whose diameter was 0.75 ft. The fill of this intrusion was a dark brown organic soil.

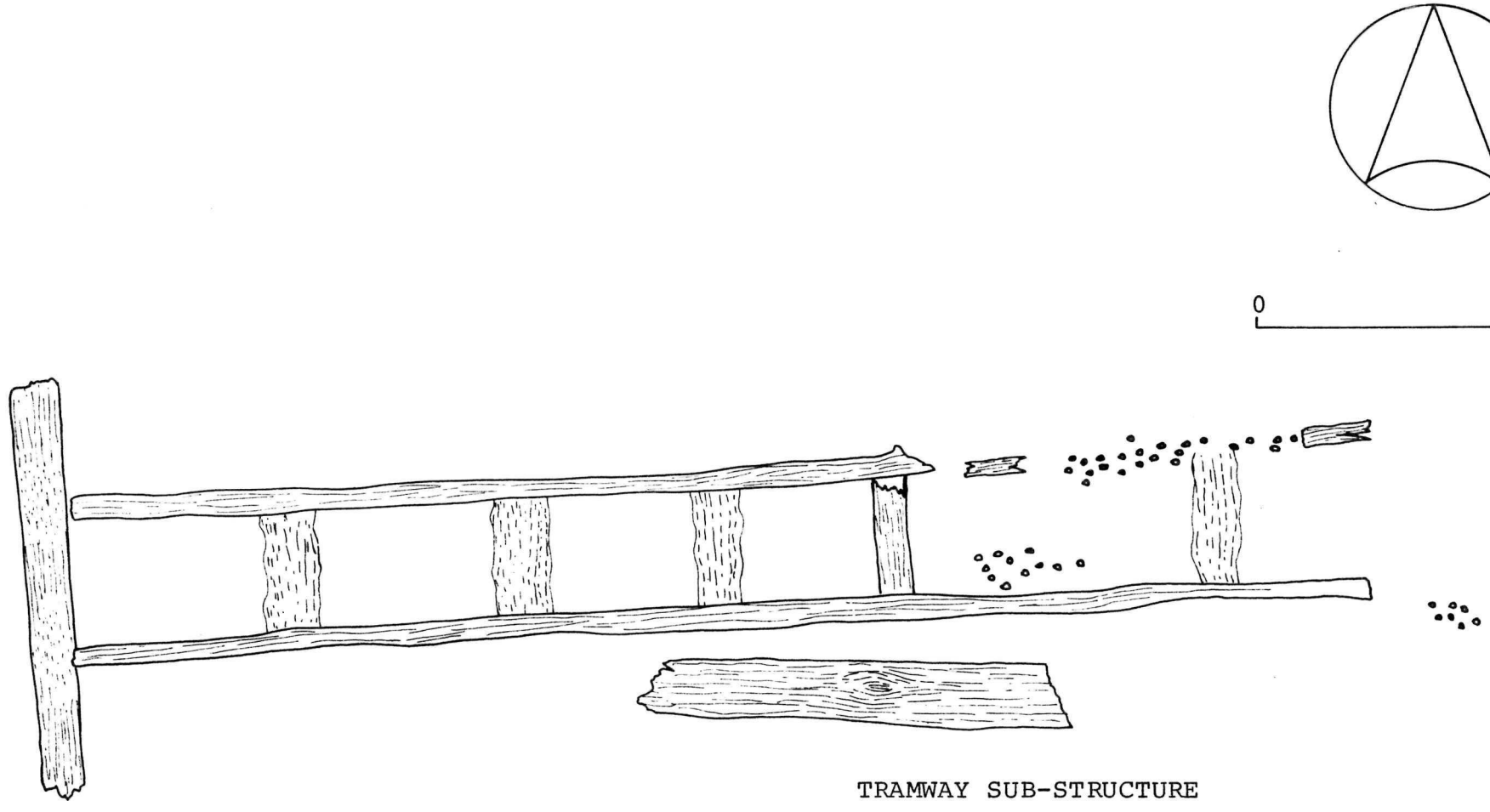
Synopsis

The wharf and the track that extended from the warehouse out into Stuart Lake was constructed in 1894-95, they were extended again in 1904 and discontinued in 1916. This structure ran from the west end of the warehouse along the ground for 126 ft. where the first evidence of crib work appears. This crib work decreased the grade of the shore and from Figures 5 and 6 it was possible to determine that there were six or seven sets of cribbing. This figure does not include the last two piers which were added in 1904. By extrapolating from the

historic photographs of the wharf and its relation to the water level, it was estimated that the wharf and track probably did not extend more than 395 ft. west of the warehouse.

It is postulated that the principal construction material was Douglas fir and that the logs used were probably unpeeled. The rails as depicted in the historic photographs appear to have been wooden with a metal rod running down their length to accept the load of the cart. This hand-towed cart was stolen early in the 20th century and was reported to have been taken to the Indian village at the mouth of Pinchi Creek where it was reported burned. The iron wheels of the cart were supposedly at the location for some time and may yet be there, although no search was made for them during the 1971 season.

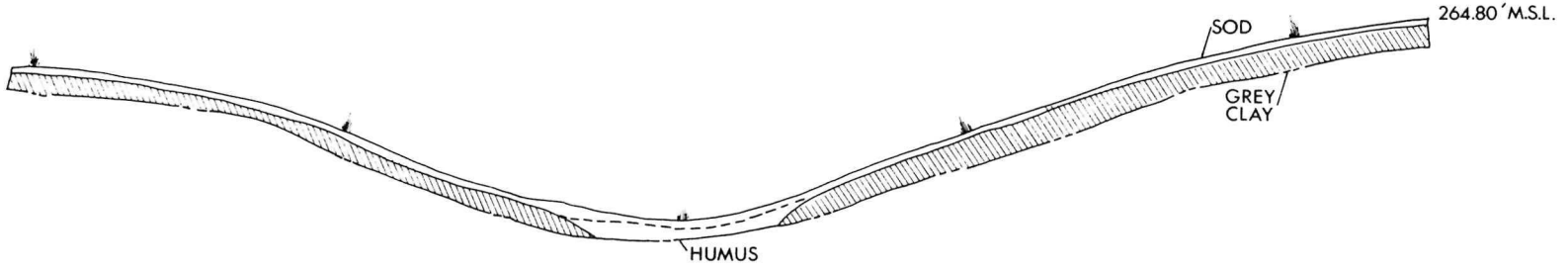
Figure 7. Plan of the 1971 tram excavation (3T-72-102-9).



TRAMWAY SUB-STRUCTURE

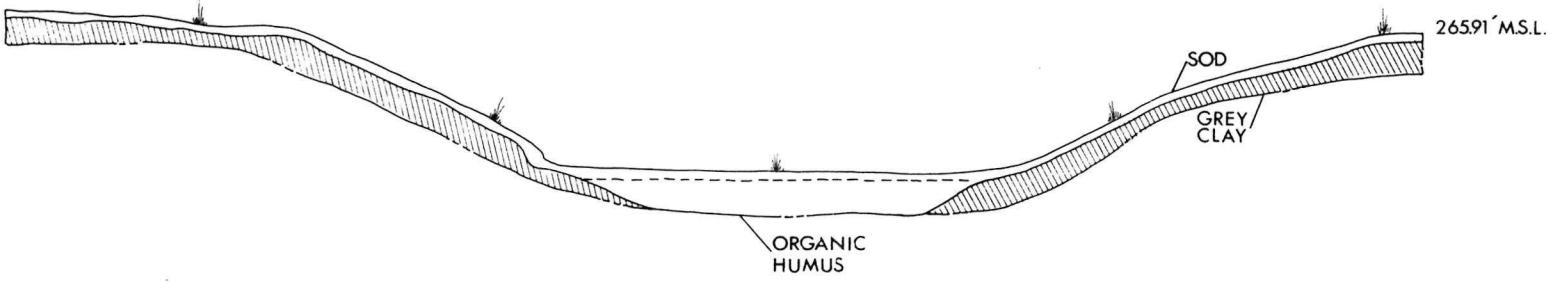
Sub-Operation 3T1A

Figure 8. Profiles of east and west faces of sub-operation 3T1A (3T-72-102-2).



PROFILE 3T1A
LOOKING EAST

0 2 FT.



PROFILE 3T1A
LOOKING WEST

0 2 FT.

Figure 9. Sub-structure of the track in 3T1A after Excavation, looking north. 3T-100M.

Figure 10. Support beam of the tram sub-structure. Note wear marks on beam. 3T-103M.


3T1A3
TRAMWAY
9 6 71

Figure 11. Pack train readying for departure in front of warehouse, 1891 (Hudson's Bay Company, Winnipeg).

The General Warehouse and Fur Store

This large standing Red River frame structure measuring 59 ft by 29 ft. was used as a general warehouse for the post wherein were stored furs and trade goods not only for Fort St. James, but for the other posts in the New Caledonia district as well. Currently it is in good repair although the ground floor has suffered considerably from frost heaval. No excavations were conducted within the structure, however, the exterior sides of the foundations and other associated features to the west, south and east of this building were uncovered.

History

The warehouse was proposed, along with several other buildings, which constituted a major renovation of the post, by Roderick MacFarlane in 1888. This factor apparently had it built without authorization from the head office of the Hudson's Bay Company and it is now one of the largest surviving Red River frame buildings known.

James McDougall described the building in 1891 as being a general warehouse and fur store of log, lined with matched lumber and having a shingle roof. As such it was used throughout its history, which, operationally, lasted probably into the 1940s.

Very few alterations have occurred to the exterior of the building and these consisted of only minor details such as the appearance or disappearance of eaves troughing, etc. In 1928 the roof was re-shingled with western red cedar, but the Douglas fir logs which constituted the walls were unaltered. The interior of the warehouse has been altered during the past but to what extend is uncertain.

Excavations

There were three excavations (Figure 2) made around the vicinity of the warehouse, sub-operations 3T1B, 3T1C and 3T1J. All were begun as 5 ft. wide trenches that paralled the west, south and east walls of the warehouse, respectively, but 3T1J was later widened to 6 ft. The sub-operations have the following co-ordinates, and each will be discussed in the order given:

3T1B: 5 ft. by 25 ft., 1285N-1310N, 1370E-1375E.

3T1C: 5 ft. by 55 ft., 1275N-1280N, 1370E-1425E.

3T1J: 6 ft. by 40 ft., 1270N-1310N, 1434E-1440E.

3T1B

This sub-operation was the excavation of the western wall foundation of the warehouse and its principal purpose was three-fold. The first objective was to establish the nature of the western wall foundation; the second objective was to locate any evidence of the tramway and its connection with the western door of the warehouse; and the final objective was

to determine the location of any other features associated with the western wall, i.e., boardwalks or fences.

The stratigraphy of this sub-operation resembled that of the general area of the site in that the soil was composed, basically, of three natural strata; the sod layer, the humus accumulation below that layer, and the sterile sandy clay below that. There was a slight variation to this arrangement in that these was a layer of wood chips, probably white spruce, interposed between the humus accumulation and the sandy clay. The lot numbers for the sod layer, humus accumulation, wood chips and clay were 3T1B1, B2, B3, and B4 respectively.

3T1B1. The sod layer was removed and the material was not screened, but the artifacts that did come out of the excavation were kept. Nothing else distinctive was apparent in this lot.

3T1B2. This lot was composed of the humus layer and within it were found several rotted timbers. These timbers were western red cedar and either formed the substructure of a boardwalk or part of the tramway connection to the warehouse. The layout of these timbers may indicate a loading platform 9 ft. by 3 ft. (Fig. 2), and their upper sides had an elevation of 2274 ft. MSL.

3T1B3. This lot was constituted by a layer of composed wood chips that also appeared in 3T1C and 3T1D. These were identified as being white spruce and their thickness as a lot varied from 0.1 ft. to 0.4 ft. The origin of these chips was

uncertain, but they may have represented the original forest cover which was cleared to make the land usable, or they may have been the remains of the old roof that was replaced in 1928. This last suggestion seems unlikely, because none of the woodchips had a slab-like appearance which would be the case, if they had been the remnants of a shake or shingle roof.

3T1B4. This lot was the sterile lacustrine deposit which underlines the general Fort St, James area and it contained no significant intrusions. The base of the excavation had an elevation of 2272.8 ft. MSL., or a depth of 1.1 ft. below ground surface. The clay had a buff to grey color.

Features. The features exposed by this excavation were the warehouse foundation and the rotted timbers in front of the western door.

The foundation for the warehouse (Figure 13) was composed of relatively flat limestone laid in double or triple courses depending on the sizes of the individual stones. These stones averaged about 1.0 ft. in width, but were undressed and showed very little regularity in size. They are unmortared and at intervals of 5 ft. or 6 ft. wooden sleepers projected through the foundation. These beams measured approximately 8 in. by 8 in. and were spaced at intervals that ranged from 5 ft to 7 ft. These beams ran beneath the wooden sill or base plate of the wall which rested on the stone foundation and their relationships with the floor joists of the warehouse and their length were unknown. They had an elevation of 2273.8 ft. MSL., and probably served to bind the stones of

the foundation in place and may only be short beams 3 ft. or 4 ft. in length.

In front of the western door of the warehouse were six partially rotted timbers. These were believed to have been western red cedar which is rare to non-existent in the Fort St. James bio-geo-climatic zone. The timbers were at a shallow depth beneath the surface within the matrix of the humus accumulation and above the layer of wood chips, lot 3T1B3. The locations of these timbers in relation to each other and in relation to the door of the warehouse would indicate the existence of either a boardwalk or a low leading platform.

The northwest corner of warehouse was exposed and Figure 14 is a representation of that construction detail. The end of the west wall base plate was cut in a half dovetail joint as was the end of the northern wall base plate. The stone foundation extended to the corner of the base plate, although it had slumped slightly outward.

3T1C

This sub-operation was the excavation of the front or southern wall of the warehouse and its objectives were to:
(a) determine the dimensions and the extent of the boardwalk along the southern exterior of the warehouse; (b) provide information concerning the southern entrance to the warehouse; and (c) to locate any other features that might be associated with the warehouse foundation.

The stratigraphy of this sub-operation closely paralleded that of 3T1B in that there was a sod layer, 3T1C1, a humus accumulation, 3T1C2, a layer of wood chips, 3T1C3 and sterile buff to grey sandy colored clay, 3T1C14. The intervening lot numbers, 3T1C4-3T1C13 were post holes and other intrusions. There were excavated separately and note was made only of those which proved significant.

Features. The features in this sub-operation consisted of the foundations of the southern wall, the door step in front of the south door and various post holes and intrusions.

The foundations of the building shown in Figure 15 along the south wall were quite similar to those found along the west wall of the building. Again it was composed of limestone laid in double or triple courses and the various sized stones were undressed. This stone foundation was topped with a wooden base plate and it was broken in several places with wooden sleepers placed at intervals of 5 ft. to 7 ft.

The foundation terminated at 0.8 ft. east of the south-west corner of the building and that corner was supported by an overlapping system of beams as shown in Figures 16 and 17. It was not bound by a half dovetailed joint which was the case with the northwest corner of the building. The stone foundation had also slumped downward about 0.4 ft., a circumstance due probably to the rotting of the lower support beam. An elevation taken on the top, or what was assumed to be the top of that beam, was 2273.5 ft. MSL. The top of the stone

foundation had an elevation of 2274.0 ft. MSL., but it was estimated that the foundation had slumped 0.3 ft. to 0.4 ft.

This foundation presented a fairly regular appearance the length of the south wall of the warehouse. In front of the doorway in that wall several large flattish limestones had been placed to form a door step. The largest of these measured 2.3 ft. by 1.5 ft. and the elevation on its upper surface was 2274.6 MSL. This stone rested on several others and at the beginning of the excavation was covered only by the sod layer. This stone was not mortared in place and its center point lay at approximately 1278.2N, 1408E.

Aside from the foundation and the doorstep the other significant features in 3T1C consisted of a series of post holes that paralleled the southern side of the structure. In some cases the foundation appeared to overlap the post pits or holes in which the posts had been placed. The lot numbers for these post were 3T1C4, C6, C8, C11, C12, and C13 (Fig. 2). Lot numbers 3T1C5, C7, C9, C10 were also intrustions, but did not fit into the linear pattern described by the previously mentioned post holes. 3T1C5 may have been within this linear pattern, but 3T1C7 was only a depression filled with mottled brown coloured sand. 3T1C9 was a hole dug for the placement of a copper ground wire and 3T1C10 through a post hole failed to conform to the line described by 3T1C4, C6, C8, C11, C12, and C13. A continuation of this line of posts appeared in 3T1J, 3T1F and 3T1H, but further investigation will be needed to determine its course exactly.

The posts found in 3T1C were all erected in a similar fashion in that a posthole approximately 2 ft. by 1.5 ft. was dug and the post, place near one side, was propped upright and the hole was backfilled. Attempts were made to excavate to the bottom of these holes, but heavy rains during the excavation caused them to slump inwardly. Approximate elevations indicate a depth of 2.4 ft. below ground surface. These posts may have indicated the existance of a fence, but there was no photographic or documentary record of one in this area. Also the location of the post and the relationship of their pits to the foundation of the warehouse indicated that they predated this structure. However, the wood from which the posts were cut was identified as western red cedar which was and is not common in this region. That this material was imported to Fort St. James for fence posts during the early part of the 19th century seems highly unlikely, presenting an enigma which can only be solved with further study.

3T1J

This sub-operation constituted the excavation of the east wall of the warehouse and its purposes were to expose the foundation of that structure, locate any associated features, e.g., the fence that ran from the warehouse to the fish cache.

Again the stratigraphy of this sub-operation resembled that of the general area in that the upper layer, 3T1J1, was sod and the humus beneath it was termed 3T1J2. 3T1J3 was the designation

used for the ditch which ran east and west across the trench between 1295N and 1300N. The relationship of this ditch to the warehouse foundation is illustrated in Figures 18 and 19. It can be seen in this profile that the ditch ran beneath the warehouse foundation, but it is uncertain as to whether or not the ditch pre-dates the warehouse. The ditch was slighly over 1.0 ft. in width and, again, rain prevented determining its exact depth, which was estimated to have been 2.7 ft. below ground surface. This ditch in places still retained fragments of wood and gave the impression that it might have been wood-lined. The evidence, however, was too fragmentary to be certain. A continuation of this ditch was found in 3T1F.

Features. The eastern foundation was similar to that of the other two sides already described. It was composed of two to three courses of unmortared, undressed limestone upon which rested a wooden base plate. At intervals of 5 ft. to 7 ft. were decayed sleeper beams approximately 0.6 ft. square. There were several post holes and intrusions in the clay matrix which formed a trench floor, but these did not describe any definite patterns. One post hole located at 1294.6N, 1436.1E still had rotted wood at its centre and may have been the terminus point for the fence that ran between the fish cache and the warehouse. This post which measured 1.1 ft. by 0.7 ft. was directly aligned with a small rectangular piece of wood nailed to the warehouse wall at an elevation of

4.5 ft. above ground surface or 2278.8 MSL. This position was not exactly in line with the supposed position of the fence in the available historic photographs. The photographs indicate that the fence that ran between the fish cache and the warehouse began somewhere toward the middle of the warehouse wall and extended to the northwest corner of the fish cache. If the post hole and wood block were the western terminus point for the fence and it met the wall at right angles then it would meet the west wall of the fish cache at a spot 5 ft. south of the corner. Another post hole (3T1J5) located at 1299.8N, 1435.6E lay closer to this required position, and was also aligned with a linear stain found in 3T1F, indicating that this was the probable location of the fence.

Synopsis

The warehouse as a standing structure is in fairly good condition except for the frost heaval that the floor has suffered. Constructed in 1888 it now stands as one of the largest Red River frame buildings surviving from the 19th century. The excavations around its foundations, 3T1B, 3T1C and 3T1J have provided good evidence of the type of foundation it did have and they have presented the features that are immediately associated with it. These excavations have also posed some other problems in that it is now necessary to determine the nature of the row of post holes that were uncovered in 3T1C and the nature of the ditch in 3T1J.

On the western side of the structure evidence of the loading platform or boardwalk on that side were revealed. On the southern side of the structure this was not the case. Along this wall no evidence that could definitely be ascribed to represent the boardwalk was found, but this information can be extrapolated from other data.

The fence that stretched from the warehouse to the fish cache was located with a fair degree of accuracy. The evidence of this fence consisted of the post holes located at 1299.8 N, 1435.6E and the dark stain located at the same co-ordinates in 3T1F, discussed later in the report.

Figure 12. Topographical map of site drawn by Physical Planning Division, Technical Services Branch, Department of Indian Affairs and Northern Development, 1972.

1. Warehouse
2. Fish cache
3. Men's quarters
4. Dwelling House

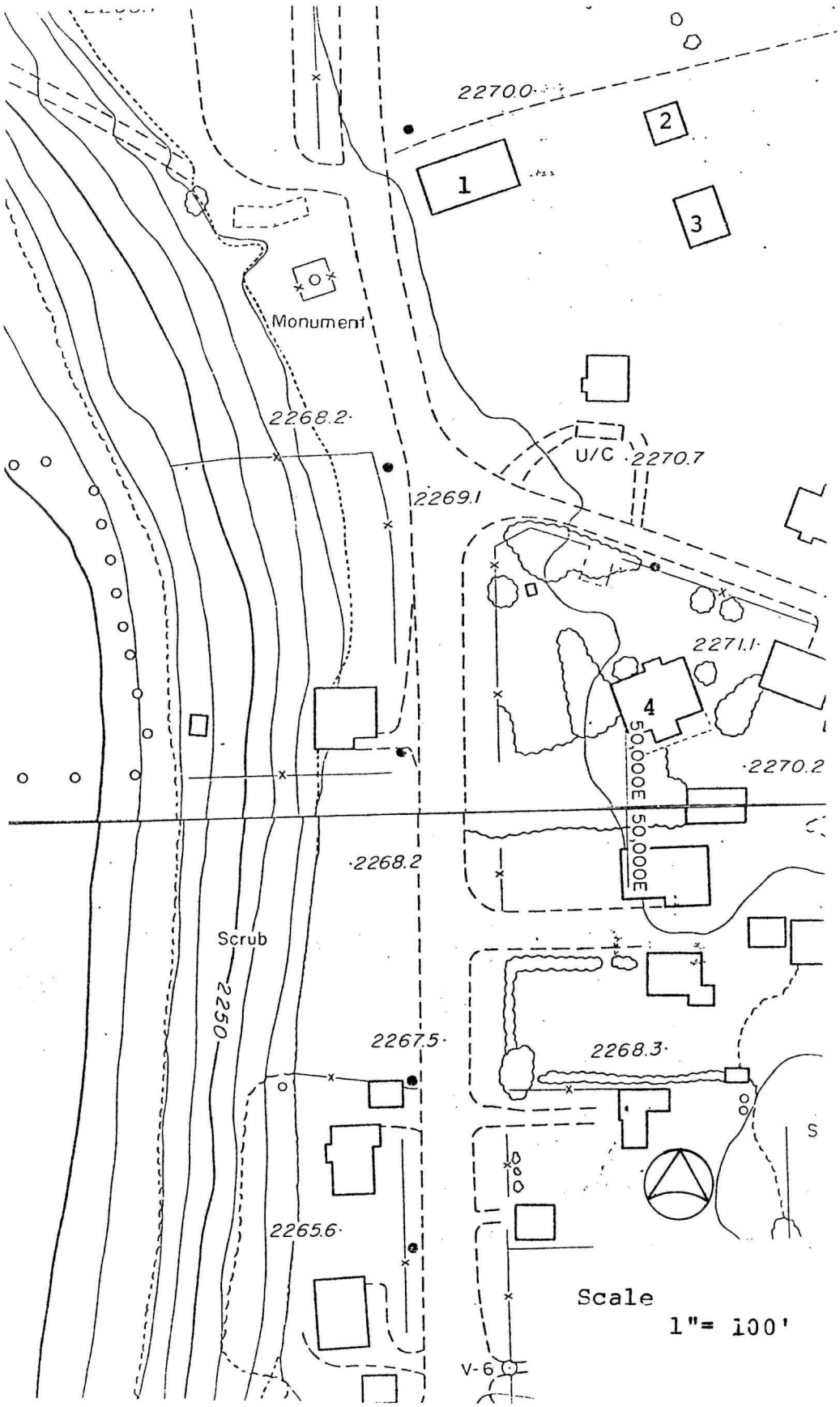
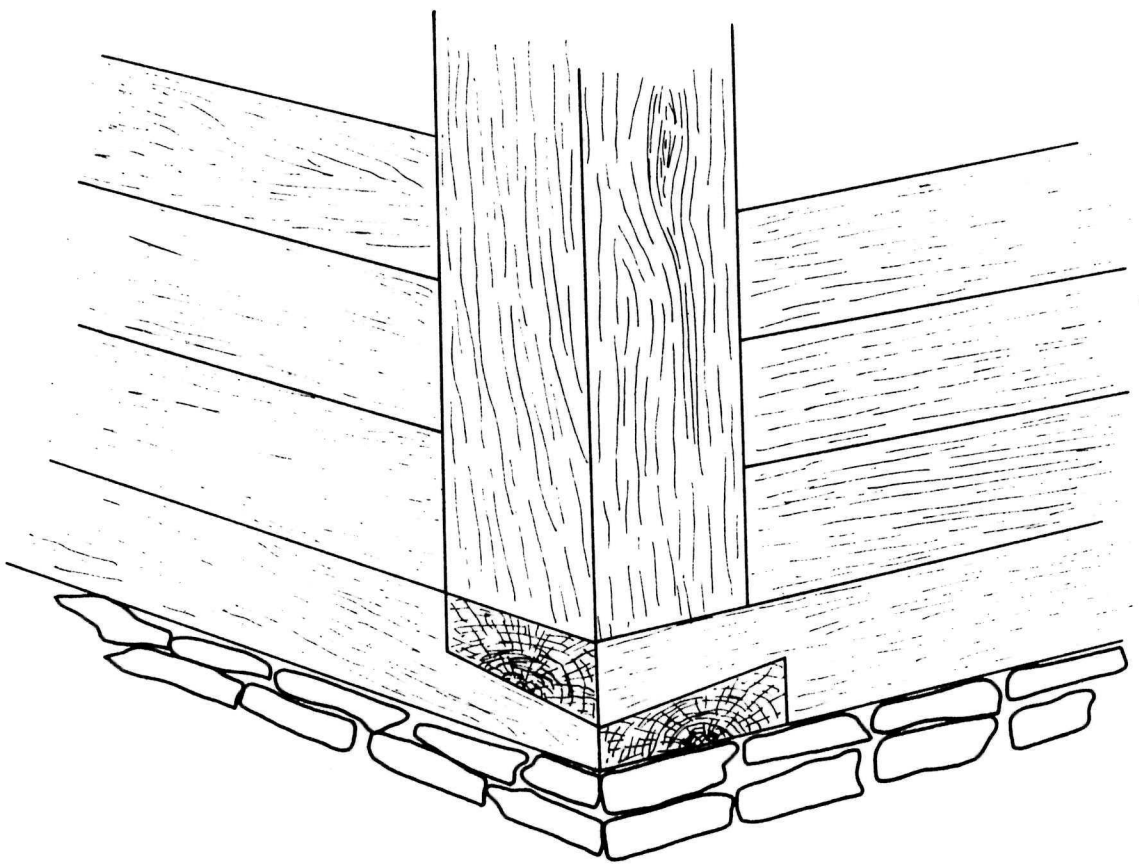

2270.0
1
2
3
Monument
2268.2
2269.1
U/C
2270.7
2271.1
4
50,000E
50,000E
2270.2
2268.2
Scrub
2250
2267.5
2268.3
2265.6
V-6
Scale
1"= 100'

Figure 13a. Northwest corner of warehouse in sub-operation 3T1B. Western basal log is joined to northern basal log with a half dovetailed joint. Both logs have suffered considerably from decay. 3T-76 M.

Figure 13b. Stone foundation beneath the western entrance to the warehouse in sub-operation 3T1B. Note the decayed sleeper beam below the left corner of the door frame. 3T-73 M.

Figure 14. Stylized view of northwest corner of the warehouse (3T-72-102-8).



STYLIZED VIEW

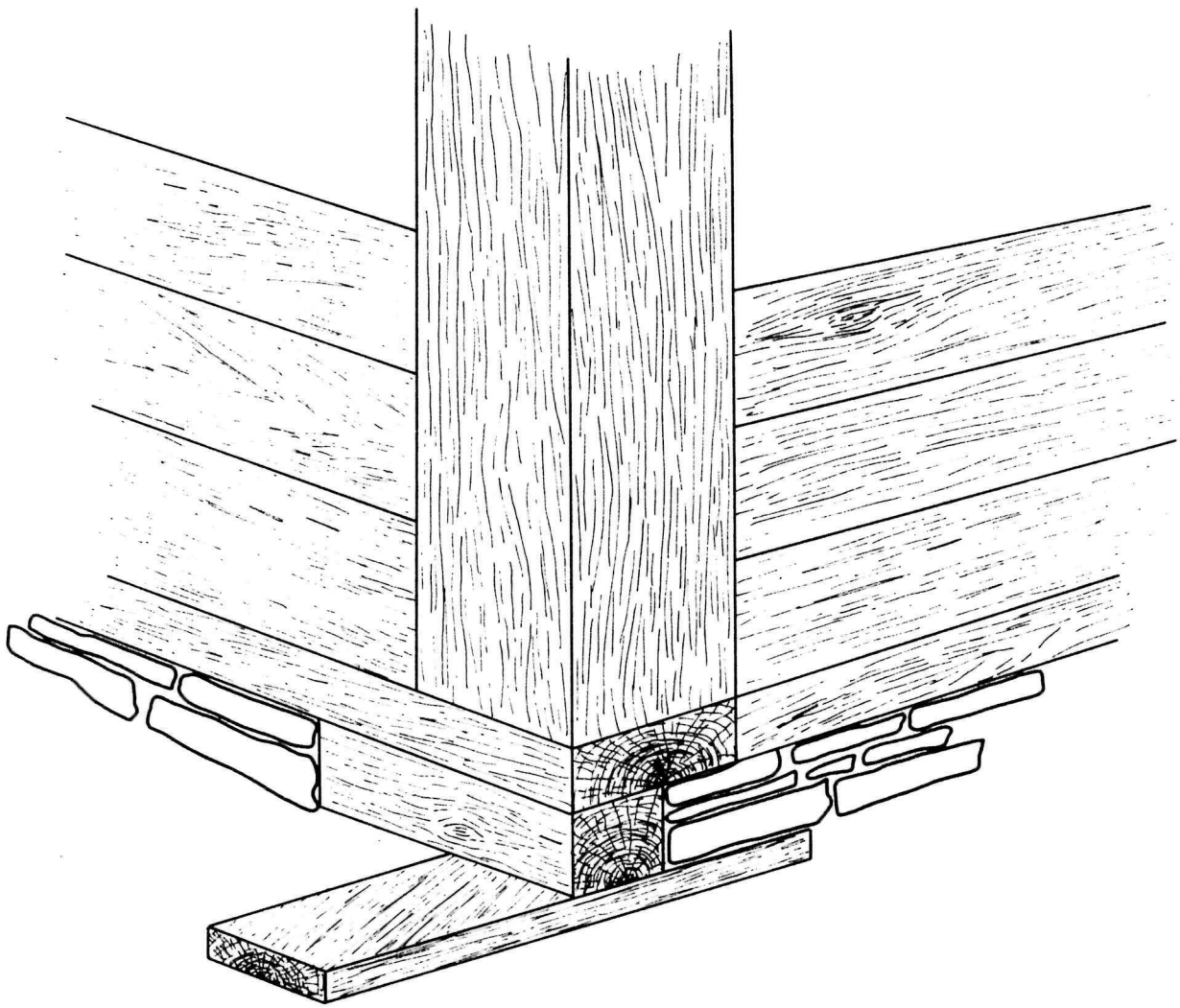
North West Corner of
Warehouse

Not to Scale

Figure 15. Double coursed limestone foundation of warehouse in 3T1C. Note the gap left by decaying sleeper beam and the rotted state of the bottommost log. 3T-88 M.

Figure 16. Southwest corner of the warehouse in 3T1C. Note the wooden member that extends out from the foundation and how the stone has slumped away from the foundation. 3T-85 M.

Figure 17. Stylized view of the southwest corner of the warehouse (3T-72-102-7).



STYLIZED VIEW

South West Corner of
Warehouse

Not to Scale

Figure 18. Filled ditch, 3T1J3, as seen in the profile of 3T1J. 3T-112 M.

Figure 19. Ditch 3T1J3 and its relationship to the eastern wall foundation of the warehouse between 1295N-1300N. 3T-111 M.

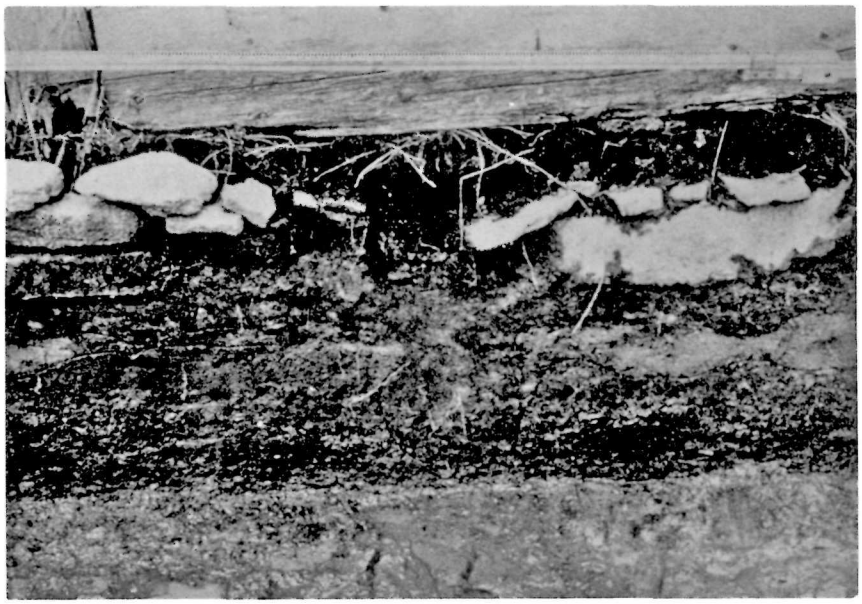


Figure 20. Pack train preparing for departure for Fort McLeod with fish cache in background (Provincial Archives of British Columbia).


Leaving Fort St. James for McLeod
May 15/14

Fish Cache (Salmon and Bacon Store)

The fish cache was a unique building. It was patterned after the traditional Indian structure used for the storage of fish and other meats in that it was elevated above the ground. This structure, however, was of Red River frame construction, but the vertical studs were elongated, raising the building 7 ft. above the ground. These studs were tenoned into a base plate which rested on a thin stone foundation. The roof was hipped and capped off with a wooden ball-type finial. The roofing material was cedar shingles and these were denticulated along the eaves. The entrance to the structure was on the south side and was attained by a short flight of stairs. The logs used in construction showed previous use and in all probability were used in the fort of the 1848-54 period, which immediately preceded this post.

History

The fish cache was proposed by Roderick MacFarlane as part of his extensive alterations to the post and it was completed before September, 1889. It was first used for the storage of bacon and dried salmon, but later in the 20th century it was used for oil storage. In this case the drums were probably stored below the cache itself, because the stairs leading up to the door had disappeared by 1925. In 1928 it too

received a new roof.

Excavations

The excavations made around the fish cache consisted of two trenches, one 5 ft. by 50 ft. and the other 7 ft. by 60 ft. The first, 3T1G, was dug in three horizontal lots, and the second, 3T1H, contained six lots. The co-ordinates for these two sub-operations are given below and they will be discussed in that order:

3T1G: 5 ft. by 50 ft.; 1270N-1320N, 1510E-1515E.

3T1H: 7 ft. by 60 ft.; 1270N-1282N, 1515E-1575E

This second sub-operation was later extended 8 ft. north between 1540E-1560E.

3T1G

The purpose of this sub-operation was to ascertain the location of the fence that ran between the warehouse and the fish cache. It actually was not close enough to the fish cache to provide much information about that structure.

The stratigraphy of this trench was quite similar to that of the other areas of the site already discussed in that it consisted of a sod layer, sub-surface humus accumulation and sterile grey clay. In the southern end of the trench a layer of burnt wood chips was interposed between the clay and the humus, but this latter covered only a small area.

3T1G1. Sod layer - there was nothing distinctive about this layer and it was not screened for artifacts. Its

approximate thickness was 0.3 ft. to 0.4 ft.

3T1G2. This was the layer of humus build-up between the sod and the underlying clay. The same overall horizontal dimensions exist for this lot as for 3T1G and its approximate thickness was 0.2 ft.

3T1G3. This was a layer of partially burned wood chips which may have been evidence of an earlier grass fire or the burnt remains of the old roof. This burn was confined to a small area between 1270N-1280N, 1510E-1515E.

3T1G4. Sterile lacustrine clay. There was nothing significant about this stratum.

Features. Only one feature of note was uncovered in this trench and it consisted of a post hole or possible post hole whose centre was located at 1279.5N, 1513.5E. This location placed it directly in line with the post holes found in 3T1C. There was no evidence of the fence between the warehouse and the fish cache.

3T1H

This sub-operation was located along the southern wall of the fish cache foundation and its purpose was four-fold. It attempted to: (a) establisb the location of the boardwalk between the fish cache and the clerk's quarters; (b) establish the location of the false palisade that was erected for the 1928 centennial celebration (Figure 21); and (d) determine the nature of the fish cache foundation.

These objectives were only partially fulfilled in that the boardwalk was not located and it seemed unlikely that any subterranean evidence of this construction would exist, because of its very nature. The piers of the stairs were located and recorded, as were the probable location of the false palisade and structural data concerning the foundation of the building. During the excavation evidence of another structure was uncovered and this will also be discussed.

3T1H1 and 3T1H2. These two lots corresponded to the sod layer and the accompanying humus accumulation and had a combined thickness of 0.9 ft. Their artifacts were kept, but the fill was not screened.

3T1H3. This was the designation given to the fill from the ditch which was believed to have been dug for the false palisade or fence erected for the centennial celebration honoring the passage of Sir George Simpson through Fort St. James in 1828 (Figure 21). This palisade only extended across the eastern side of the post and had a gate between the clerk's quarters and the interpreter's house. It was believed that the fence construction consisted of upright posts erected in a shallow ditch after which the ditch was backfilled. From existing photographs this was all that supported the fence.

The ditch had a depth of at least 1.5 ft., but this was an approximation, because the ditch fill blended into the underlying sandy clay making absolute measurement

difficult. The centre line of the ditch ran approximately parallel to the grid system from 1270N-1290N, 1547.8E. and its width was 0.9 ft.

This fence or false palisade should not be confused with the fence that appeared in the 1912 Dominion Day celebration photographs (Figure 22). Although they were of similar construction this earlier fence was further to the east than the one described above and its exact location will be determined in the coming field season.

3T1H4. This is the designation given to the footing ditch of what was apparently a log structure that predated the fish cache. The evidence of this structure consisted of two logs overlapping at right angles (Figure 23). They were 0.8 ft. to 1.0 ft. in width and there was some evidence of an angle brace. The logs were joined at 1276N-1277N, 1544E and the log running east and west appeared to rest on the log which ran north and south. This second log continued beneath the fish cache and further excavation will be necessary to determine the nature of this structure.

3T1H5. A rectangular pit was located at the eastern end of 3T1H, within the co-ordinates 1275N-1282N, 1570E-1575E, (Figure 2). This pit was angled slightly toward the clerk's quarters which was used as a family dwelling during the mid-20th century, and was believed to have been the latrine which appeared in photographs taken in 1963. There was also another earlier privy in this general area, but it was

believed to have been more to the north and in line with the fish cache. Upon excavation this pit yielded only modern artifacts and it was backfilled. There were several post holes associated with it and these were thought to have been used to support the super-structure of the outhouse.

3T1H6. This was the designation given to the post hole located at 1276.5N, 1525.5E. This post hole was believed to have held the post which supported the base of the stairs as illustrated in Figure 24. Its diameter was approximately 1.0 ft. and its location correlated well with the stone work found further to the east.

Features. Aside from the features described above, several others of a pertinent nature were uncovered during the course of this excavation. These include several post holes, some stone piers and the foundations of the fish cache.

In the southwestern corner of 3T1H a post hole with a greatly deteriorated post was uncovered whose centre was located at 1276.N, 1517E. This post hole was rectangular in shape and measured 1.5 ft. by 2.0 ft. It was similar in form to those found in front of the warehouse and was only slightly out of line with those post holes. Another post hole of comparable dimensions was located at 1278.5N, 1538.4E, and may also fit into this pattern. There were several other post holes found in this trench, but their role for the most part was uncertain. From viewing Figure 2 they may be construed as forming a line that might represent a fence.

Offset from the fish cache by 3 ft. on the south side were two groups of stones which were in alignment with the entrance of the building (Fig. 23). These stones acted as a base for the supports of the small landing in front of the doorway. The evevation of these stones was approximately 2274.8 MSL and were of limestone.

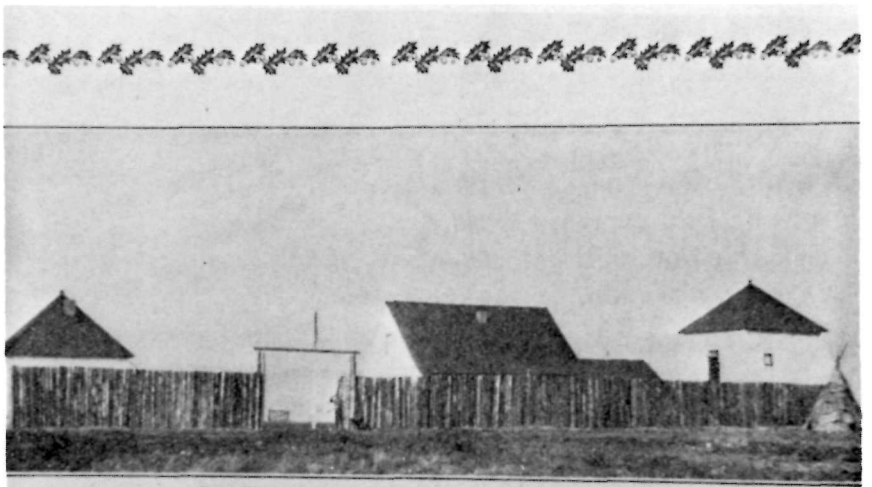
The foundation of the fish cache consisted of a squared log base plate that rested on stone supports placed at the corners of the building and at irregular intervals along the sides. These stones, which were also limestone, had slumped from their original positions as the fish cache had settled. This slumpage had been severe enough under the southwest corner that that corner had to be blocked up with a timber support.

Synopsis

The foundations of the fish cache required little in the way of excavation, but there were several features that were associated with this structure that bear further investigation. These include the fence north of the building and the structure which was uncovered beneath the cache.

Figure 21. False palisade as seen in 1928 Centennial Celebration of the journey of Sir George Simpson (Beaver, 1928).

Figure 22. Rear fence of post as seen in 1912 during the Dominion Day celebration (Provincial Archives of British Columbia).



Fort St. James, with Stockade as Built for 1928 Pageant.

Figure 23a. Stone piers for support of staircase posts. Photograph taken from the doorway of the fish cache. 3T-103 M.

Figure 23b. Remnants of log structure that pre-dated the fish cache as seen from the doorway of the fish cache. 3T-105 M.

Figure 24. Fish cache in November, 1912, showing details of staircase construction. Note how steps terminate above ground and are supported by a wooden post. Also note how the fish cache is supported by its corner posts and the "sill" is above ground and acts as a tie-beam. (Provincial Archives of British Columbia).

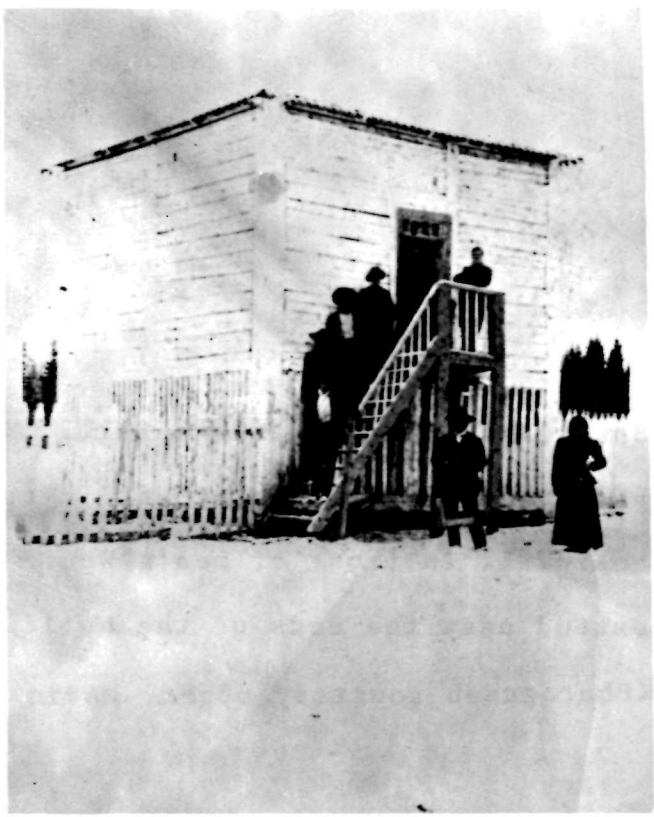


Figure 25. Stuart Lake Salmon, circa 1912. Men's house and fish cache in background. Note that the boardwalk in front of men's house does not extend past the ends of the building (Photograph courtesy of Mr. David Bunting).

The Men's House

The clerk's quarters or, as it later was called, the men's house, was a dovetailed log construction built of Douglas fir. The roof with gables at each end was shingled. The main entrance was on the west side. At the present time the house is in a deteriorated state, having suffered a fire in the attic during the winter of 1969-70. Like the warehouse, the floor inside has suffered from frost heavel and, again, as in the case of the other building no excavations were conducted within the structure.

History

The clerk's quarters were first built in 1884 and oriented to the post that immediately preceded the standing post of Fort St. James. In the notes that accompany the map of alterations proposed by Roderick MacFarlane was a statement that this building was moved to its current location in 1888. At that time it became a servants' dwelling or a house for the men working at the post. In 1891 it was described by McDougall as being a log building lined with matched lumber. During the 1890s it was occupied by Donald Todd and at times used as quarters for the summer packers moving through the district. Later it was again described as being of log

construction with a 2 in. spruce floor and a foundation raised on blocks. The floor plan on the ground floor was described as being divided into three rooms.

In 1904-5 the building was temporarily converted into a schoolhouse while the new, proposed school was being built. Afterwards, the building was again used as a guest house.

Excavations

Only one test trench was opened in the area of the clerk's quarters, 3T1N. This was a trench dug at the northwest corner of the structure and its dimensions were 5 ft. by 20ft. the co-ordinates being 1240N-1245N, 1515E-1535E.

3T1N

This sub-operation was the excavation of the northwest corner of the clerk's quarters. Its purpose was twofold:
(a) to secure information concerning the foundation to the building and the corner detail of that foundation; and
(b) to locate, if possible, any evidence of the boardwalk that connected the clerk's quarters with the fish cache.

The stratigraphy of this sub-operation consisted of a sod layer, humus accumulation and sterile clay, 3T1N1, 3T1N2, and 3T1N3, respectively. The fill from the trench was not screened.

Features. Only three features were uncovered during this excavation, the foundation and two post holes of small size.

The foundation depicted in Figures 26, 27 and 28 was

of notched log construction placed on a single coursed limestone foundation. These stones varied in length from 0.6 ft. to 1.0 ft. As can be seen in Figure 29 the foundation did not have a base plate as did the warehouse, but the log along the bottom of the west wall extended 1.3 ft. west of the structure's corner, and was unsupported by the stone work. This situation was similar to that of the warehouse in that the bottom log projects out from beneath the corner of the building, but in the case of the warehouse this lower log supported a base plate. Further excavation will determine whether or not this construction occurs at the other corners of the building.

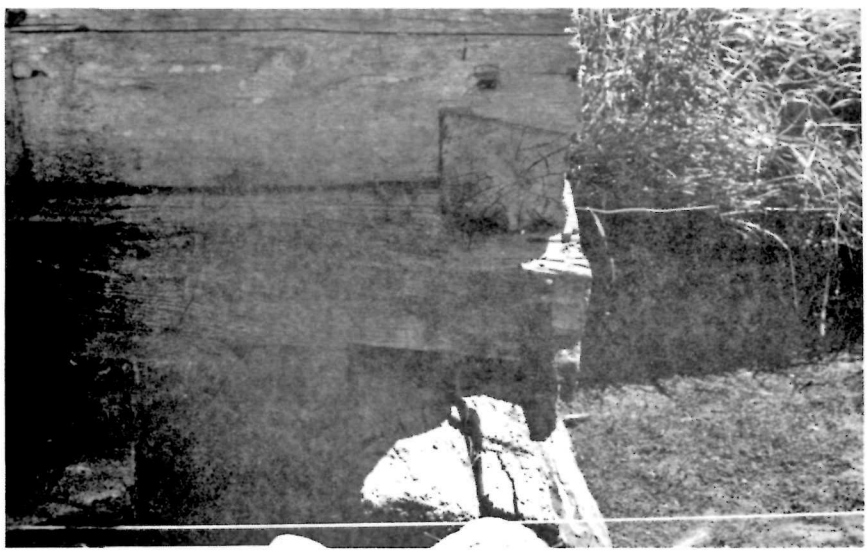
Synopsis

The work done around the clerk's quarters during this past season was very minor and aside from an idea of what the foundation of the building was like, little can be said about the important features associated with it. In 1972 the entire area around the building will be excavated to show its relationship to the various fences to the east of it, and to the compound to the west.

Figure 26. Northwest corner of men's house as seen from the west. Note how basal log extends past the foundation as was the case in the southwest corner of the warehouse. 3T-92 M.

Figure 27. Northwest corner of Men's house as seen from the north. Note how sill is joined with a dovetailed lap joint. 3T-90 M.

Figure 28. Foundation of Men's house as seen from the north. Note single row of limestones in foundation. 3T-91 M.



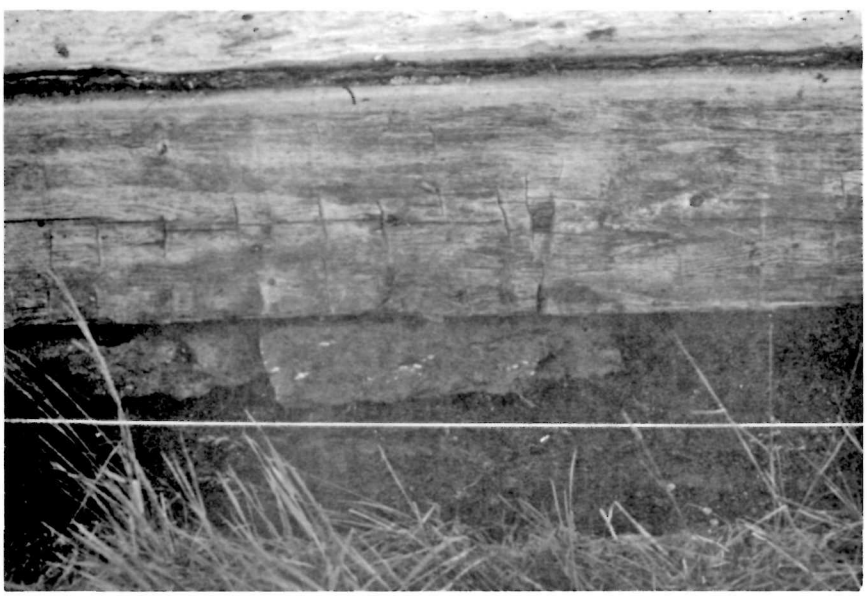
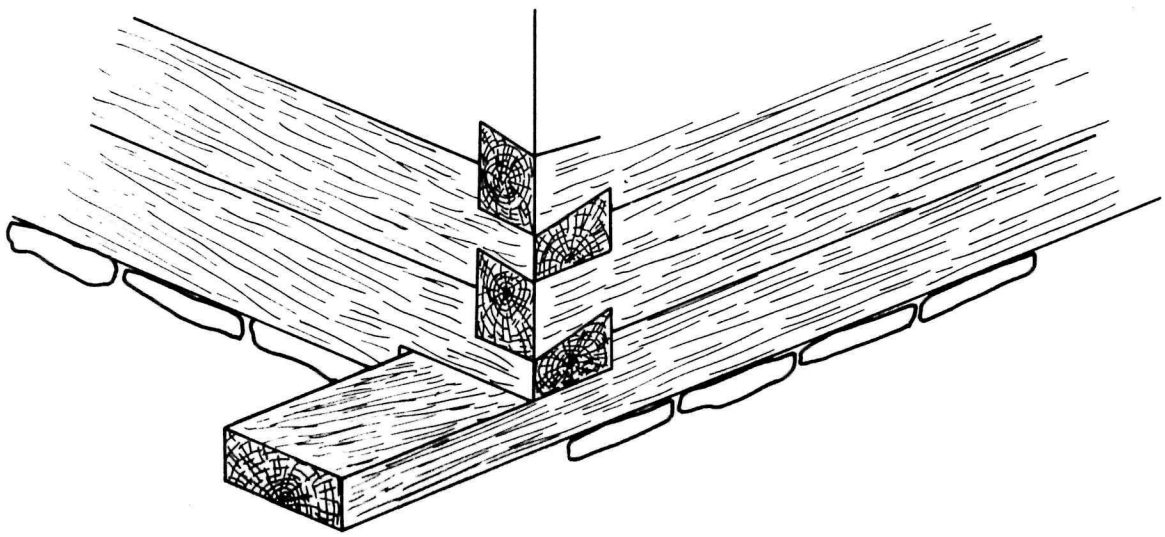


Figure 29. Stylized view of the northwest corner of the clerk's quarters (3T-72-102-10).



STYLIZED VIEW

North West Corner of
Clerk's Quarters

Not to Scale

Figure 30. The interpreter's house in 1928. Large building to the rear of the automobiles is the Grahame Garage (Courtesy of W.D. Fraser, private collection).

The Interpreter's House

The interpreter's house was located within the limits of operation 3T3 which extended from 1140N-1180N, 1515E-1555E and constituted a square 40 ft. by 40 ft. All that remained of the structure were some flatish foundation stones, some charcoal ash and lime plaster. The bulk of this material rested in and around a shallow footing ditch.

History

This building, described by James McDougall as being a log dwelling house, 17 ft. square lined with matched lumber and shingle roof, was first indicated on the plan of 1888-89. It was a new house built for the interpreter, James Bouché (son or grandson of Waccan) and probably completed in 1888. It was to accommodate the interpreter and his family until he left the service and after that, served as a guest house for itinerants passing through the area. Early in the 20th century it was whitewashed along with the other buildings at the post and in 1928 it too received a new roof. In 1935 it burned to the ground and was not re-built.

Excavations

The excavations of the site of the interpreter's house were considered as one operation with the emphasis placed on the

entire structure (Fig. 2). Operation 3T3 was subdivided into 17 sub-operations and each, with the exception of 3T3S, consisted of a 10 ft. by 10 ft. square. Sub-operation 3T3S was a narrow trench 3 ft. by 30 ft. dug along a north and south axis across the foundation of the dwelling. It provided stratigraphic data about these features as well as the interior of the house.

The other 16 sub-operations were excavated in a simultaneous manner so that the entire structure was revealed at once. In doing so the sod layer was stripped away completely without screening and the artifacts recovered from this lot (3T3A1) were not differentiated by sub-operation. The structure itself can be more coherently discussed in terms of the features involved, which consisted of the foundations of the building, its footing ditches and an oval ash filled pit located in 3T3G. Other features included several fragments of timber outside of the perimeter of the interpreter's house, probably representing fences and boardwalks which connected this house with the other buildings in the post.

Stratigraphy

Generally the stratigraphy for this operation was similar to that found in other parts of the site in that the cultural layer of the fort in question was covered by a sod layer and its accompanying humus accumulation. These layers were all disturbed when the site was roto-tilled in 1968-69, to a

depth of 4 inches. Marks from this disturbance were still evident (Fig. 31). /Appendix A provides a summary of the lots, their co-ordinates, elevations, and notable features./

Features

The major features encountered in this excavation were the interpreter's house foundation and accompanying footing ditch and the fence along the southern side of the house. There were two modern refuse pits unearthed in 3T3N and 3T3R, but these were definitely recent in origin and bore no relation to the interpreter's house. One other feature, a large oval pit within the confines of the house foundation, was also excavated, but its relationship to the house was uncertain.

Foundation. It can be concluded that the foundation of the interpreter's house was quite like the foundations of the other buildings of the post. Although it had been disturbed by recent plowing activities, it can be described as having been composed of flattish limestones about 0.6 ft. by 0.6 ft. in size. These were disturbed to such an extent that no coursing was apparent, but they had been laid in a shallow footing ditch 0.3 ft. to 0.4 ft. in depth (Figs. 31, 32, 33).

The evidence found would confirm the dimensions as being 17 ft. by 17 ft. square and that the footing ditches were 2.5 ft. to 3.0 ft. wide. There was little evidence to indicate in which direction the floor joists lay or that there was even a floor. The only clue in this instance was the shallow,

filled pit running east and west through the central area of the house, extending from the front door to the east wall. This may have been evidence of a sleeper beam to which floor joists were keyed. To the south of this area a burnt wooden beam, 1.0 ft. by 7.0 ft. was found which may have represented the remaining evidence of this beam.

The footing ditch was covered by a layer of charcoal ash, plaster and mortar chinking, but this ash layer was not prevalent over the entire area the house had occupied. It seemed to have been restricted to the vicinity of the foundations, and only the charred beam mentioned above was present in the floor area.

3T3G4. This pit was designated 3T3G4 although it overlapped into 3T3F and 3T3K. /As described in Appendix A/ It was 5.0 ft. by 8.0 ft. in size and had an approximate depth of 3.5 ft. It contained some ash and charcoal on its surface but the bulk of the fill was sandy clay lensed with a dark brown humic soil, giving the appearance of having been shovel loaded. Its relation to the foundation of the building would indicate that it was dug after the building had been erected, because the sides of the pit cut into the footing ditches slightly. The charcoal and ash on the surface indicated that it had been backfilled before the fire.

Fences. Along the southern wall of the house in 3T3Q and 3T3R the evidence of a collapsed fence was found. This consisted of two paralled timbers, a cross member and a

post hole. This fence was comparable to the collapsed fences that were found at Fort McLeod, which consisted of two stringer beams along the top and bottom of the fence with upright supports placed at regular intervals. The gaps between these intervals were filled with pickets.

The paralleled stringers of the fence alongside the interpreter's house, were placed on 3.0 ft. centres and the cross members as represented by two timber fragments were placed on 5.0 ft. centres (Fig. 31). The 0.6 ft. by 0.8 ft. post hole at 1147.6N, 1549.6E was probably the remains of one of the support posts for the fence. In sub-operation 3T3N there was another timber fragment which may have been associated with this fence.

In regards to this fence two other sub-operations were excavated, 3T1P and 3T1Q. These two 5 ft. by 20 ft. trenches were dug in two lots and had the following co-ordinates:

3T1P: 1140N-1160N, 1495E-1500E.

3T1Q: 1140N-1160N, 1480E-1485E.

3T1P and 3T1Q. Both of these sub-operations had the same sod, humus and clay stratigraphy which prevailed over the rest of the site and the only noticeable difference was a band of white clay that stretched across both (Fig. 2). Trench 3T1Q had one 0.9 ft. by 0.6 ft. post hole at 1156.3N, 1481.1E which may have been part of a fence, but it was too far north to have been part of the fence that ran from the interpreter's house to the southeast corner of the trade store.

The only other feature encountered in 3T1Q was the corner of a septic tank or latrine pit. This pit was only partially uncovered and it was filled with water and other debris. It appeared to be modern and was not excavated.

Figure 31. Interpreter's house excavation as seen from the south at the base of sub-operations 3T3A2 through 3T3R2. Note the wooden fence that has collapsed in the foreground. 3T-97 M.

Figure 32. Interpreter's house excavation as seen from the east at the base of sub-operations 3TA3 through 3TR3. Note the plow furrows running from east to west across the excavation. 3T-96 M.

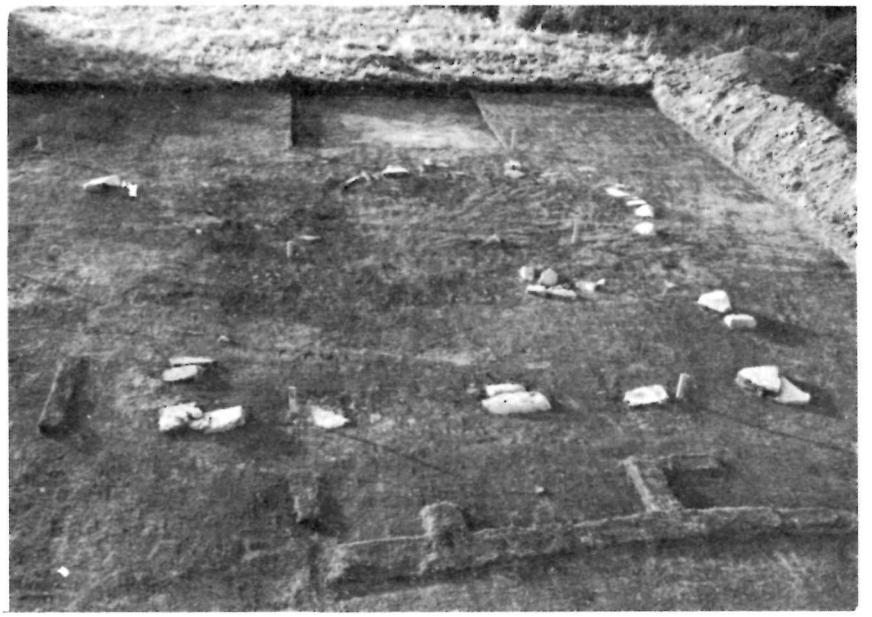
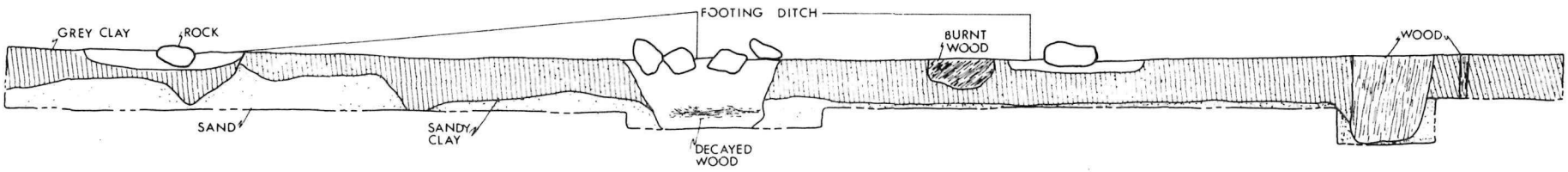


Figure 33. Cross-section of interpreter's house foundation (3T-72-102-11).



PROFILE 3T3S
LOOKING EAST

0 2 FT.

Figure 34. The trade store and office circa 1905. View is from the south toward main entrance of store. (Provincial Archives of British Columbia).

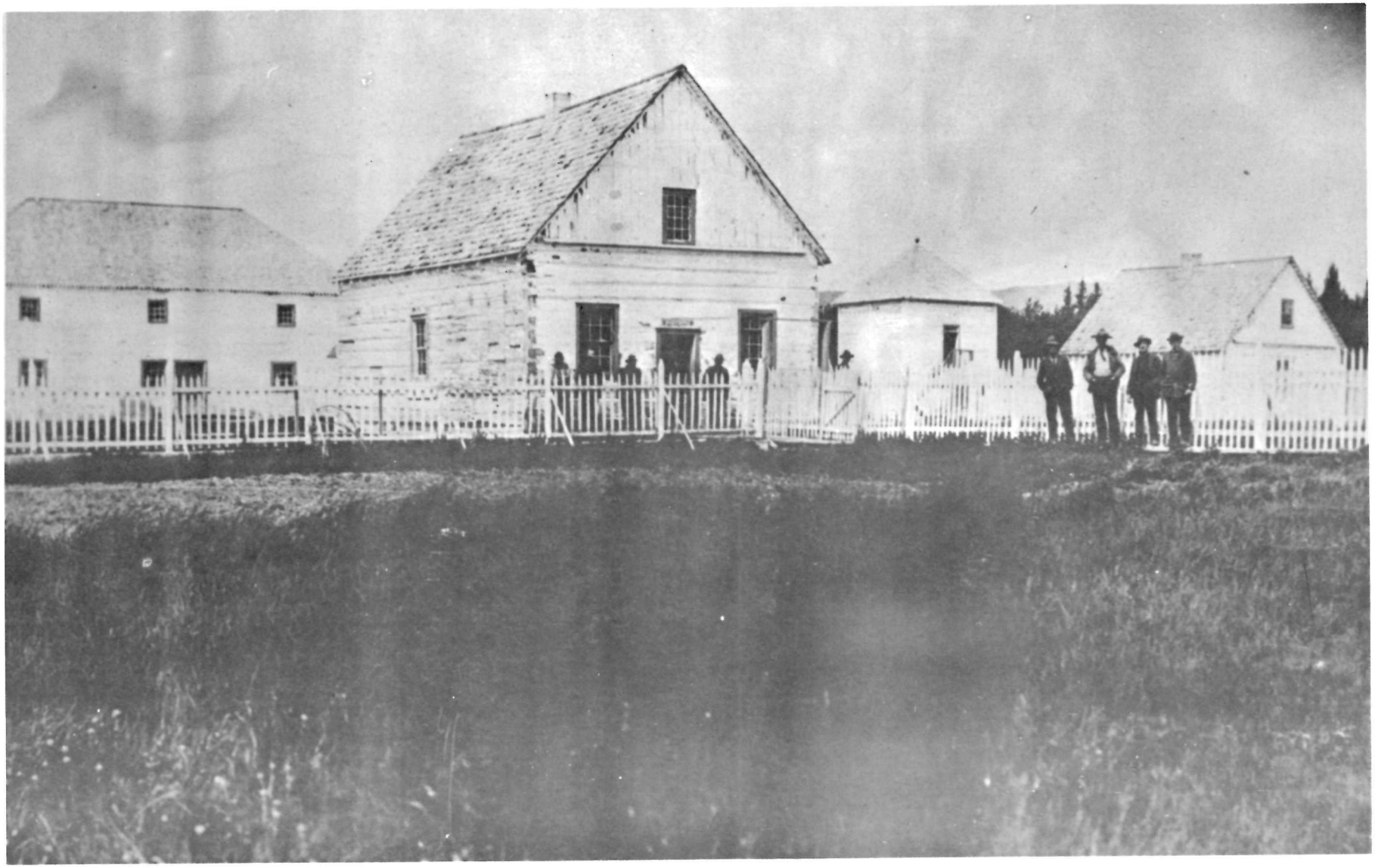
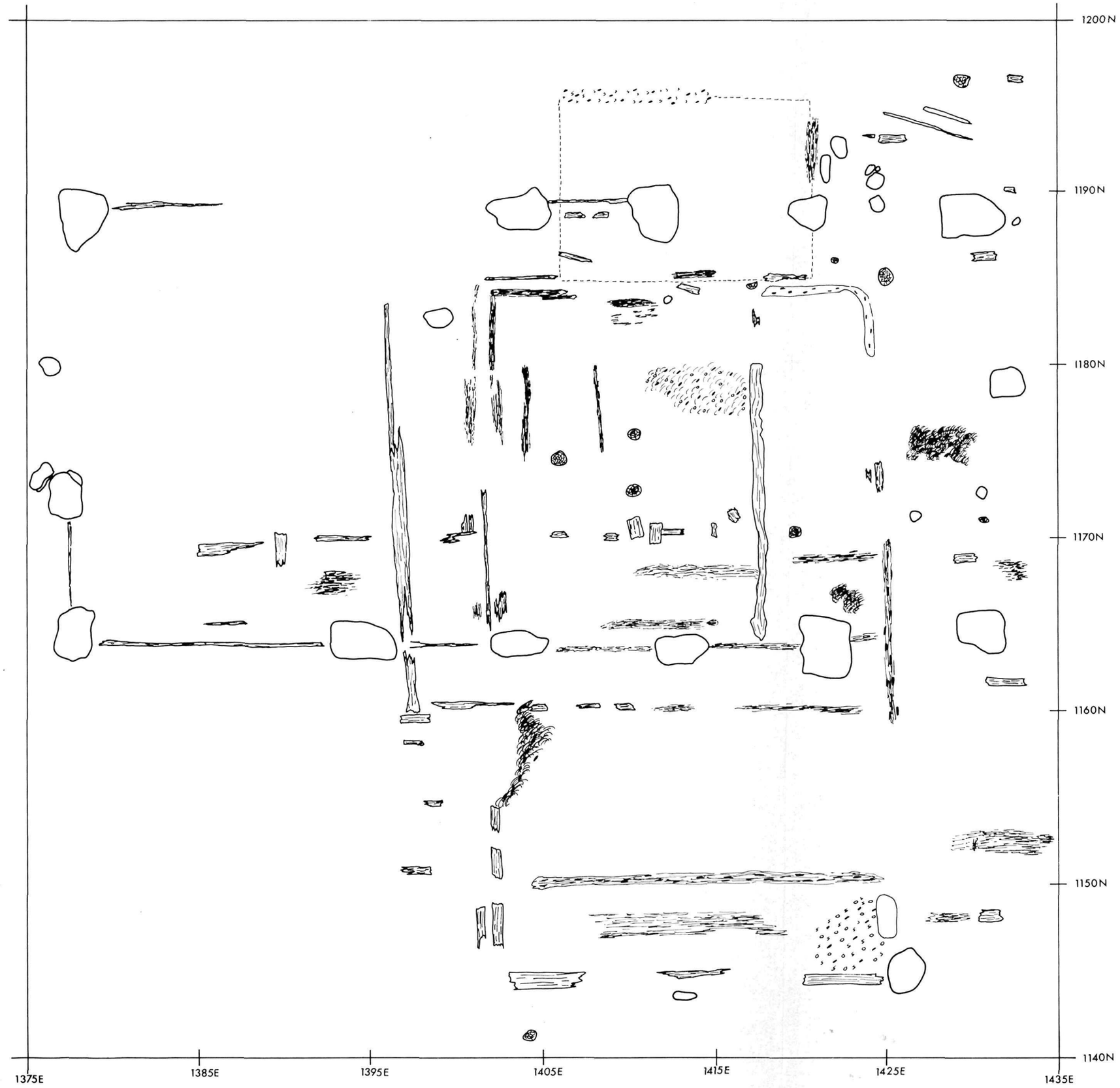


Figure 35. Plan of the 1971 excavations of the trade store.

FIGURE 35

Drawing No. 3T-72-102-6



3T5 – TRADE STORE
FORT ST. JAMES

0 10′

The Trading Shop and Office

The trade store was a 40 ft. by 24 ft. structure which housed the trading operations of Fort St. James and the office wherein the accounting for the entire district was kept. It was of dovetailed log construction placed in the centre of the post and its long axis was approximately N16° 38'W. At the time of excavation nothing of the building remained above ground.

History

The trade shop was probably built around 1884 at the time of the construction of the manager's house. It was described by R. MacFarlane in February, 1888, as "the recently put up new log building having a Trading Shop and Office therein," and he apparently made some interior alterations to the building. In 1891 James McDougall described the building as Trading Shop and Office 40 ft. by 24 ft.; log; lined with matched lumber and shingled roof; good building and in thorough repair; badly planned for display of goods. It was altered again in 1895 which may refer to the closing of the western window and, again, sometime during the first years of the 20th century when a lean-to was attached to the northern side of the building. In 1919 it burned to the ground and during the years 1920-21 a new store was erected

on the same site. In 1942 there was talk of building an addition to the rear of this store for the storage of perishables and furnace, but this building program was cancelled. This store was torn down and salvaged for its building materials which were used for the construction of the Fort Cafe. Toward the end of the 1940s the Hudson's Bay Company had moved to a new store on a new site.

Excavations

The excavations of the trade store were the last extensive excavations to be begun during the 1971 field season and these were only partially completed. They consisted of a two part operational arrangement, the first being the sod removal 3T2 and 3T4, and the second being the actual excavation of the underlying soil, 3T5-3T16. All of these operations and their sub-operations have been described in Appendix B and are illustrated in Figure 35.

This excavation was begun as a 50 ft. by 50 ft. square ranging from 1150N-1200N, 1375 -1425E. This was later enlarged by extending the grid lines 10 ft. to the east and south, resulting in the ultimate dimensions for the 1971 excavation of 1140N-1200N, 1375E-1435E.

The excavation was begun by stripping the sod away from the entire area. Artifacts were kept from this layer, but no systematic attempt was made to thoroughly search the sod for such items. This stripping action was the extent of 3T2 and 3T4. After the sod had been removed the cleared space

was divided into 20 ft. squares and each of these was then sub-divided into four 10 ft. squares which were assigned sub-operation letters from A to D. As these sub-operations were excavated all the fill obtained was screened through 1/2 in. mesh hardware cloth. These sub-operations were mostly excavated by trowel with an emphasis on those areas that were directly related to the foundations of the two stores. Excavations were discontinued in those operations or sub-operations where it was apparent that the areas they encompassed would provide little or no information regarding the store. These included 3T5B, 3T6A, 3T11B, 3T11C, and 3T12D. Sub-operations 3T11B and 3T11C had undergone considerable disturbance in the past from machinery working on the sewer of Fort Avenue.

Stratigraphy

The general stratigraphy of this area corresponded so closely with that of the rest of the site that it will require very little explanation. The stratigraphic order was the prevailing sod layer, its humus accumulation and the underlying lacustrine deposits. In the area of the trade store the wood chip layer found in 3T1C was not present.

At the close of the 1971 season this stratigraphic arrangement had not been completely verified for the immediate vicinity of the trade store, because of partial excavation. When work was terminated for the season the possibility of

encountering a root cellar at a lower level still existed.

Features

Three sets of related features were uncovered during these excavations were the foundations of the 1920-40s store (Figs. 36-37), the 1884-1919 foundations (Figs. 38-39), and the boardwalks associated with that store. No further evidence was recovered to indicate that any earlier occupation of this particular location had occured.

1920-40s Trade Store Foundation. The evidence for this foundation was composed of two main elements: large slab-like limestones; and a wooden base plate that had rested on the tops of these stones.

The stones had been quarried locally and were not dressed. They were flattish in form and had an average size of 2.1 ft. by 3.2 ft., the largest measuring 3.0 ft. by 3.9 ft. and the smallest measuring 1.9 ft. by 2.1 ft. As can be seen in Figures 36 and 37 they formed a rectangle 26.5 ft. by 54.5 ft. and their average elevation was 2273.9 MSL. After this foundation was recorded it was removed and the 1884-1919 trade store foundation was more fully exposed.

1884-1919 Trade Store Foundation. The evidence of this feature consisted of charred timbers, ash and brunt clay, but little stone that could be definitely ascribed to the foundation (Figs. 40-41). Figures 38 and 39 illustrate the foundaiton as it was at the close of the 1971 field season. It described a rectangle whose dimensions conformed to those

proposed by Roderick MacFarlane and confirmed by James McDougall, 24 ft. by 40 ft. To the rear of this rectangle evidence of the lean-to addition was found and its dimensions measured 11 ft. by 15 ft. The structural evidence of this segment of the trade store complex was very scanty, being mostly remnants of charcoal and lime mortar mixed with bits of charred wood. That this structure was not integral to the main shop, is demonstrated by the presence of a double line of charred beams at the rear of the main building.

McFarlane's original arrangement of the trade shop placed the office in the southern portion of the building while the store occupied the northern portion (Fig. 3). The building was so arranged out of consideration to the residing factor who could walk directly from the front door of the residence to the office without having to pass through the commercial area of the store whose main entrance was on the eastern side. This proved to be inconvenient, because the Indians persisted in using the southern entrance to the building, making it difficult to keep them out of the office and the rear of the trade store. In 1896 the interior was altered and the trade shop was moved to the southern end of the building while the office was moved to the northern end. An arrangement of this nature was borne out by a brief investigation of the artifacts recovered, e.g., large quantities of ammunition and other trade items were found in the southern end of the building while various types of office furnishings were found in the

northern end of the store. As a more systematic analysis of the artifacts is forthcoming, it should be possible to present more conclusive statements regarding space utilization, detailing for example which areas were used for display, business transactions, bookkeeping and storage.

Closer investigation of the foundation remains will also bring forth a more concise impression of room ordering and partition placement. In Figure 33 in the area defined by 1165N-1180N, 1415E-1420E there was evidence of a 15 ft. wooden beam oriented on a north-south axis and in the area defined by 1167N-1170N, 1415E-1425E there was evidence of two shorter beams which apparently tied into this longer beam. These may have been floor joists or they may have been partition supports.

Finally a note must be included concerning the lack of any stone foundation upon which the base plate was placed. To date no conclusive evidence has been uncovered that would support the presence of a foundation such as was found beneath the warehouse or the clerk's quarters. If there was such a foundation, as would be expected, the stones may have been robbed or removed for some reason after the building burned. This, however, does not appear to be the case, because the charcoal and wood fragments that have been interpreted as having been in base plate did not appear to have been disturbed. Further excavation should resolve this dilemma.

Boardwalks. Boardwalks were historically described as having surrounded the trade store and evidence of these were found on the southern, eastern and western sides of the building. There was no evidence of their presence on the northern side, which was logical in view of the fact that the addition had been constructed on that side. Evidence of the boardwalk that extended from the trade store to the flagstaff was also uncovered. The boardwalk on the western side of the building and the one which extended out to the flagstaff were 6 ft. in width and were composed of two paralled beams running in the direction of the boardwalk. These were placed on rectangular wooden blocks which acted either to level the walk or to raise it above the ground to prevent rotting or both. The evidence of the walk on the eastern side of the building was more spotty, consisting only of the decayed wooden blocks scattered at irregular intervals (Fig. 42). The walk on the southern side of the building was not completely revealed and it will be necessary to expand the excavation further to the south. The timber which did remain of these walks was in a very deteriorated state, but not burned, though exact measurement of their dimensions was difficult. The beams were estimated as having been 1.0 ft. square and the support block were approximately 1.5 ft. by 0.75 ft. by 0.75 ft.

Synopsis

At the current stage in the research of the trade store little more than these tentative statements and drawings can be presented. During the coming field season and the following year the excavation of this structure will be completed and a systematic analysis of all of its artifacts will have been made. This coupled with an historically supported structural evolution of the building will provide many of the answers to questions concerning construction details, alterations, both of an interior and exterior nature, furnishings, trade goods, space utilization and social significance of the trade store complex.

Figure 36. Eastern end of the 1920s-40s trade store site as represented by the large flat limestones. These stones bear no relation to the earlier store. 3T-106 M.

Figure 37. Western end of the 1920s-40s trade store as represented by the large flat limestone. Camera is facing south. 3T-105 M.

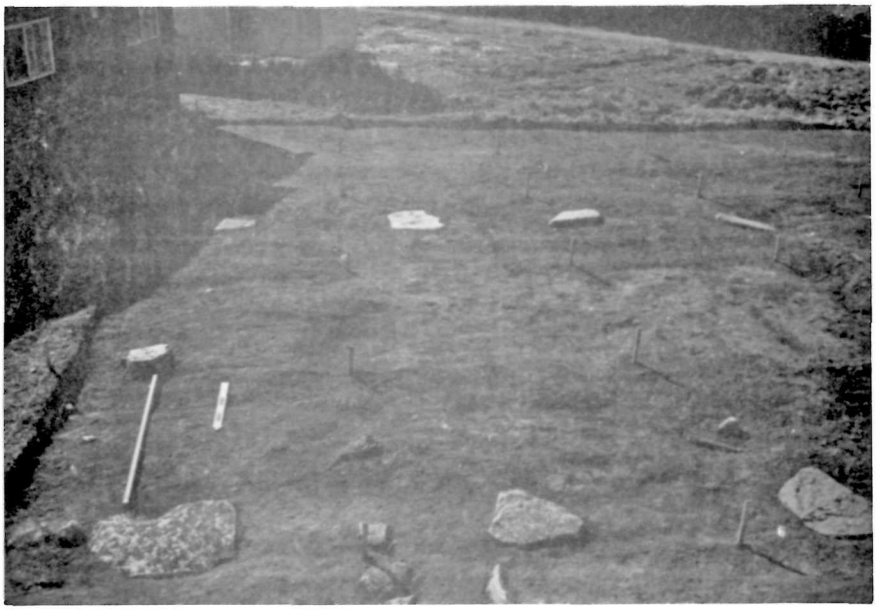


Figure 38. 1884-1919 trade store foundations seen from the east as represented by faint lines of charcoal and ash in the soil. 3T-123 M.

Figure 39. 1884-1919 trade store as seen from the southwest. Pits in excavation are sites of the foundation stones of the post-1920s store. 3T-115 M.

Figure 40. Charred timbers of the base plate of the 1884-1919 trade store from the southwest.
3T-109 M.

Figure 41. Charred timbers from the base plate of the 1884-1919 trade store with fragments of the boardwalk to the flafstaff in the foreground.
3T-120 M.

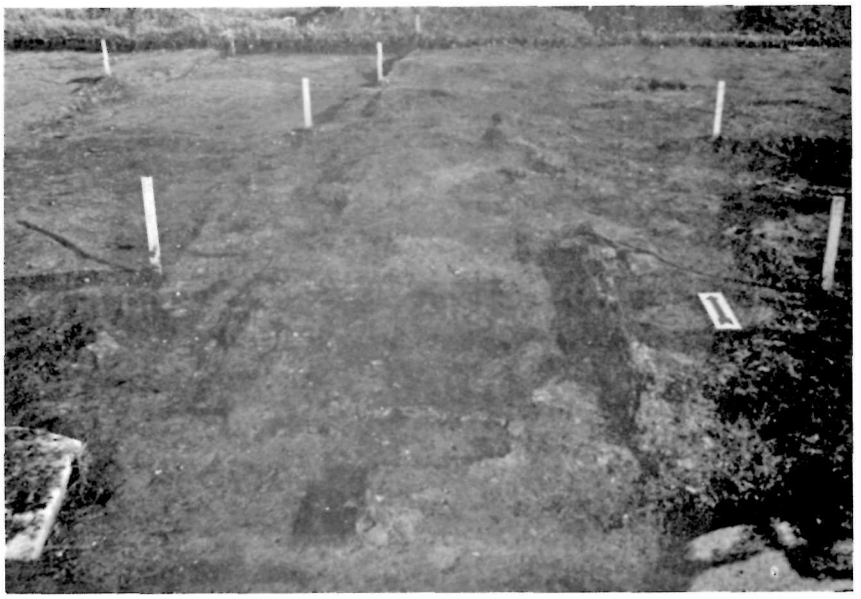


Figure 42. One of the wooden support blocks for the boardwalk leading from the trade store (1884-1919) to the warehouse. 3T-117 M.

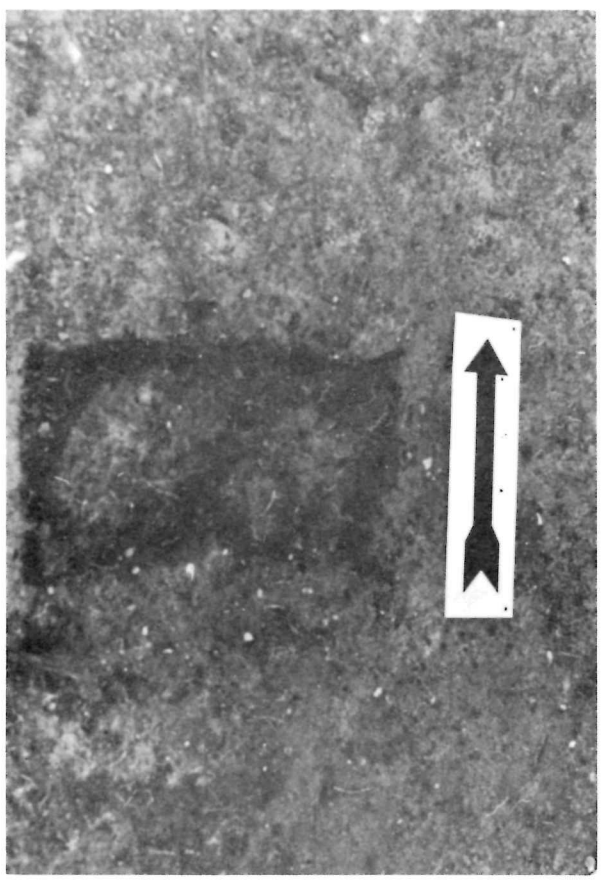
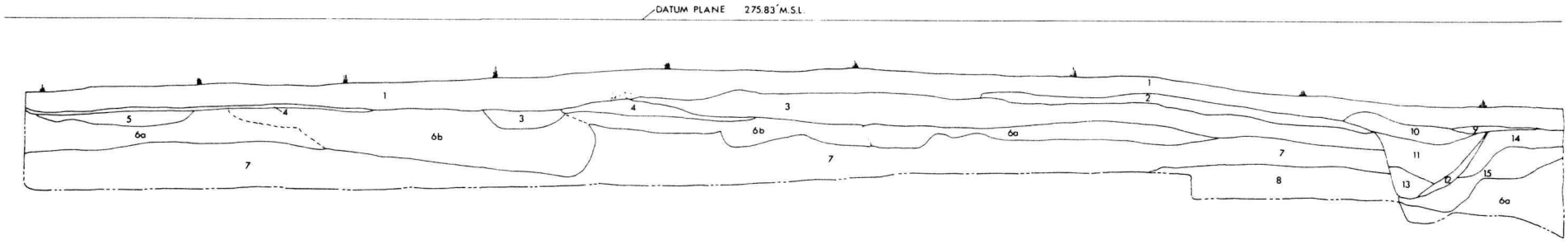


Figure 43. Profile of 3T1F showing ditch (3T-72-102-13).



PROFILE
3T1F

0 2 FT.

Structures of an Unknown Origin

3T1L

During the search for the boardwalk between the clerk's quarters and the trade store the remains of another structure were uncovered. This structure illustrated in Figure 2 bears no relation to the current post of Fort St. James and its origin was unknown. It was thought that it might possibly have dated from one of the other earlier posts.

Stratigraphy

The stratigraphy of this area was the same as that of the rest of the site in that there were two basic layers of soil, the sod layer and the humus layer. Below this was an underlying layer of clay.

Features

Basically the features uncovered were several long fragments of timber and rooted wood and some small limestones near the center of the postulated structure. There was no evidence of the diagonal walk illustrated in MacFarlane's map, but there was evidence of a plank lined gravel walk that led directly out from the front door of the clerk's quarters on an axis parallel to that of the grid system. This walk was

found in the sod layer and it was concluded that it post-dated the operational period of the fort, probably dating from time the clerk's quarters were rented to the local inhabitants of Fort St. James. Its elevation was 2274.9 ft. MSL.

As stated above, it was assumed that the stones and timbers uncovered were the remnants of a structure whose function or date of origin were unknown. The stones, which were centrally located within the timber foundation, do not describe any definite pattern, but their proximity to each other suggests such possibilities as a fireplace base or a forge, although no charcoal or ash was found in the vicinity. The timbers between 1195N-1235N, 1455E-1475E described three sides of a rectangle and this impression was further enhanced by the presence of timbers at 1200N, 1505E in the eastern section of the excavation. The elevations of these timbers and stones were 2274.4 MSL. Associated with this structure were also several post holes located for the most part adjacent to the timber foundation.

3T1E

This sub-operation, whose co-ordinates were 1230N-1240N, 1395E-1415E, was begun as an exploratory search for evidence of the boardwalk that connected the warehouse with the trade store. In this respect the successfulness of the sub-operation was questionable for, as excavation of the trade shop later revealed, the boardwalk sought would have been located in the most westerly extent of the sub-operation. The possible

exception to this was the timber running north and south from 1232N-1240N, 1398.3E-1399E. It was first thought that the boardwalk was centered on the south door of the warehouse, but as illustrated in Figure 3 and later revealed by excavation, this walk was offset from that door by 10 ft. The direction of this walk paralleled the orientation of the buildings and the timber in question was oriented approximately 2^{o} closer to magnetic north than the buildings, but it may have been disturbed from its original position. However, Figure 35 shows several timbers and scattered stones, and the soil was mottled and disturbed. Because of the small size of the excavation it was impossible to tell what, if any, type of structure was involved, but the presence of the two parallel timbers in the northeast section of the sub-operation were suggestive of some sort of structure. This excavation will be expanded in 1972 and this problem too will hopefully be resolved.

3T1F

This was the first excavation opened on the site and its main purpose was to provide data concerning the fence that closed the gap between the warehouse and the fish cache, as well as giving a stratigraphic profile for control. In this respect it was successful, for a thin line of mottled soil was discovered at 1299N, 1450E-1455E. This line corresponds to the position of a post hole located adjacent to the wall of

the warehouse and was in the proper position shown in the available historic photographs. The enigmatic feature uncovered in this excavation was a 1.2 ft. wide, shallow trench whose centre line co-ordinates were 1294.8N, 1450E-1455E. The bottom of this ditch was located at an elevation of 2272.9 MSL and evidence of wood along its edges gave the impression that it had been wood lined. The wood in this case was identified as western red cedar. The soil that constituted the fill of the ditch was a brown mottled sand and it did contain some artifacts.

Synopsis

The function of this trench or ditch was unknown and as discussed under 3T1J it appeared to continue westward beneath the foundation of the warehouse. It might have been either a drainage ditch or fence line.

CONCLUSION

At this point it would be premature to make conclusive statements concerning much of what has been excavated, because further research both on the site and with the aritfacts will bring to light new information. This is particularly true of the trade store. Despite this it is possible to make some tentative statements about the excavations and to outline some of the problems and questions they have been posed for the 1972 season.

Tramway

It is already known why the tram was constructed and why its use was discontinued. The historic photographs provide a great deal of structural data and the excavations of the past summer have provided the exact location of the path of the rails in relation to the warehouse and the surrounding topography. By expanding these excavations down the shore of the lake it may be possible to locate further evidence of the support cribs. A search offshore in the lake proved fruitless and it is doubtful that any information relating to the exact location of the termunus point of the wharf will be forthcoming.

The Warehouse

To date the excavations around the warehouse have been

peripheral, but they have provided a great deal of information concerning the foundations of that building. They have also created some problems in the form of the fence that ran along the southern side of the warehouse that seemed to pre-date the building. Another question that has arisen from this excavation is the one concerning the ditch that runs beneath the eastern foundation of the building. It is doubtful that further excavations in the near vicinity of the warehouse will provide the solutions to these problems and it is hoped that at some date in the future it will be possible to excavate beneath the floors of the building. This would also answer the question regarding the relationship of the beams that dissect the stone foundations to the floor joists.

The Fish Cache

The fish cache as a standing structure requires little in the way of archaeology. However, its relation to other features is important. From the excavations it was determined that this building was erected above the site of another structure whose date of origin and function are unknown. This question should be pursued because that structure may be an element of one of the earlier posts of Fort St. James.

The Clerk's Quarters

Only a minimum amount of information is currently known about the subterranean aspects of the clerk's quarters. During the

1971 season only one small excavation was conducted at the northwest corner of this building and it is necessary to explore its foundations more thoroughly so that its pertinent constructional details can be recorded. It is also necessary to excavate the outlying areas of this building in order to determine its relationships to the rear perimeter fence of the post, the 1928 false palisade and various boardwalks.

The Interpreter's House

The interpreter's house which was destroyed by fire in 1935 was completely excavated during the 1971 season and all that remains of the analysis is the study of the artifacts. The data concerning this building was presented in the text of this report and will not be reiterated here. It should be said, though, that this site was not occupied prior to the construction of the interpreter's house. Excavations will be continued in the vicinity of the house in search of fences, etc., but no further work will be done on the house site proper.

The Trade Shop and Office

Though only partially excavated, it has been possible to determine the foundation of the later 20th century store as well as those of the 19th century store. During the 1971 excavations a considerable amount of information was gathered about these foundations and a large quantity of artifacts was

collected. These artifacts are essential to any interpretation of the interior of the store and any conclusions that might be made should await their analysis.

3T1L

This enigmatic structure that was located in the centre of the compound may possibly date to an earlier post. Further excavation will hopefully determine this.

This report is intended as a preliminary account of the findings of the first field season at Fort St. James. Much of the work done needs further substantiation and there are also a number of areas on the site that still require excavation. These include the workshop and forge east of the fish cache, the eastern fence, several privies and finally a great deal of work is required around the main dwelling house of factor's residence. This last structure which is still standing remains in private hands and the authorization to excavate the property on which it stands may or may not be forthcoming during the 1972 season.

As a final statement to this report it should be said that, while archaeology can provide a considerable amount of data relating to the actual on-site locations of buildings, etc., there are several other disciplines being utilize in the research of this site. These will, when combined, provide a very complete record of not only the structural elements of the site, but the life styles and personal histories of its

inhabitants and the people who traded there, the political and economic pressures affecting its existence and its relationship and importance to the fur trade in general.

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Appendix A: Lot Summaries and Proveniences for the Interpreter's House.

Sub-op	Lot	Coordinates	H.Dim.	Elev. MSL	S.Type	S.Col.	Features
3T3A		1170N-1180N. 1515E-1525E.	10x10ft	2275.1			None
	1	Same	Same	2275.0	Sod	Br.	None, post occupation
	2	Same	Same	2274.5	Humus	Dk.Br	None, occupation layer, 1890s-1935
3T3B		1170N-1180N 1525E-1535E	Same	2275.3			
	1	Same	Same	2275.0	Sod	Br.	None, post occupation
	2	Same	Same	2274.8	Humus	Dk.Br	None, post occupation
	3	Same	Same	2274.5	Clay	Buff	Wood chips in s.w. corner, occupation layer.
3T3C		1170N-1180N 1535E-1545E	Same	2275.4			None
	1	Same	Same	2275.1	Sod	Br.	None, post occupation
	2	Same	Same	2274.6	Humus into clay	Dk.Br to Buff	Band of grey powdery ash along a line from 1170N-1180N, 1534.8 -1537.5E. Occupation layer, 1935.
3T3D		1170N-1180N 1545E-1555E	Same	2275.4			None
	1	Same	Same	2275.1	Sod	Br.	None, post occupation
	2	Same	Same	2274.6	Humus	Dk.Br	None, post occupation
	3	Same	Same	2274.5	Clay	Buff	None, occupation layer and pre-occupation layer, 1890s-1935
3T3E		1160N-1170N 1515E-1525E	Same	2275.1			None
	1	Same	Same	2274.9	Sod	Br.	None, post occupation
	2	Same		2274.7	Humus	Dk.Br	None, post occupation
	3	Same	Same	2274.5	Humus to clay	Br. to Grey	None, occupation layer 1890s-1935

Appendix A Lot summary description of 3T3.

Sub-op	Lot	Coordinates	H.Dim.	Elev. MSL	S.Type	S.Col.	Features
3T3F		1160N-1170N 1525E-1535E	10x10ft Same	2275.1			None
	1	Same	Same	2274.9	Sod	Br.	None, post occupation
	2	Same	Same	2274.6	Humus	Dr.Br.	Foundation stones, occupation layer, 1935
	3	Same	Same	2274.5	Clay	Buff	Foundation's stone, footing ditch dating to 1889.
3T3G		1160N-1170N 1535E-1545E	Same	2275.1			None
	1	Same	Same	2274.9	Sod	Br.	None, post occupation
	2	Same	Same	2274.6	Humus	Dk.Br.	Foundation stones, occupation layer, 1935
	3	Same	Same	2274.5	Clay	Buff	Foundation stones, footing ditch
	4	1157.6N-1165.3N 1532E-1537E	5x8ft	2272.6	Ash & Charcoal	Grey	Pit filled with ash, charcoal and sandy clay lensed with brown humus. Pit pre-dates 1935 fire.
3T3H		1160N-1170N 1545E-1555E	10x10ft	2275.3			None
	1	Same	Same	2275.1	Sod	Br.	None, post occupation
	2	Same	Same	2274.9	Humus	Dk.Br.	Foundation stones west wall
	3	Same	Same	2274.8	Clay	Buff	Foundation stones, footing ditch plow marks, dated 1889-1935.
3T3J		1150N-1160N 1515E-1525E	Same	2275.1			None
	1	Same	Same	2274.9	Sod	Br.	None, post occupation
	2	Same	Same	2274.7	Humus	Dk.Br	Wooden timber, dated 1889-1935
	3	Same	Same	2274.5	Clay	Buff	None, pre-occupation.
3T3K		1150N-1160N 1525E-1535E	Same	2275.1			None
	1	Same	Same	2274.9	Sod	Br.	None, post occupation
	2	Same	Same	2274.7	Humus	Dk.Br.	Wooden beam and foundation stone-1889
	3	Same	Same	2274.5	Clay	Buff	Foundation stone and footing ditch dated 1889-construction period clay pre-dates occupation.

Sub-op	Lot	Coordinates	H.Dim.	Elev. MSL	S.Type	S.Col.	Features
3T3K (Cont')							and a dark stain that ran from the doorway to the rear of dwelling
3T3L		1150N-1160N 1535E-1545E	10x10ft.	2275.2			None
	1	Same	Same	2274.9	Sod	Br.	None, post occupation
	2	Same	Same	2274.7	Humus	Dk.Br.	Rotten beam - 20th century occupation lay.
	3	Same	Same	2274.5	Clay	Buff	Central stain, south footing ditch and stones -1889 occupation layer.
3T3M		1150N-1160N 1545E-1555E	Same	2275.3			None
	1	Same	Same	2275.0	Sod	Br.	None, post occupation layer
	2	Same	Same	2274.7	Humus	Dk.Br.	Tops of foundation stones-20th Cent. Occup.
	3	Same	Same	2274.5	Clay	Buff	Juncture of eastern foundation wall with central stain -1889 occupation layer.
3T3N		1140N-1150N 1515E-1525E	Same	2275.1			None
	1	Same	Same	2274.9	Sod	Br.	None
	2	Same	Same	2274.6	Humus	Dk.Br.	Rotted timbers - 20th century occup. layer
	3	1144N-1518E	5.2x3.5	2273.0	Humic	Dk.Br.	Refuse pit, modern 20th century " "
	4	1140N-1150N 1515E-1525E	10x10ft	2274.5	Clay	Buff	Several pieces of rotted timbers 1889-1935 occupation layer.
3T3P		1140N-1150N 1525E-1535/	Same	2275.2			Several foundation stones on the surface
	1	Same	Same	2274.9	Sod	Br.	None, post occupation layer
	2	Same	Same	2274.6	Humus	Dk.Br.	None, post occupation layer
	3	Same	Same	2274.5	Clay	Buff	None, 1889-1935 occupation layer.

Sub-op	Lot	Coordinates	H.Dim.	Elev. MSL	S.Type	S.Col.	Features
3T3Q		1140N-1150N 1535E-1545E	10x10ft.	2275.2			None
	1	Same	Same	2274.9	Sod	Br.	None, post occupation layer
	2	Same	Same	2274.6	Humus	Dk.Br.	Fragments of timber believed to have been collapsed fence -early 20th cent.,
	3	Same	Same	2274.5	Clay	Buff	Same 1889-1935 occupation layer. occup.
3T3R		1140N-1150N 1545E-1555E	Same	2275.3			None
	1	Same	Same	2275.0	Sod	Br.	None, post occupation layer
	2	Same	Same	2274.6	Humus	Dk.Br.	Timber fence fragments
	3	1143N-1549.5E	2.0x1.8	2273.2	Humic	Dk.Br.	Modern refuse pit -20th century
	4	1140N-1150N 1545E-1555E	10x10ft.	2274.5	Clay	Buff	Timber fragments -1889-1935 occupation lay.
3T3S		1140N-1170N 1540E-1545E	3x30ft	2274.5	Sandy Clay	Buff	Footing ditches to north and south walls of dwelling as well as the central stain that ran through house
	1	Same	Same	2274.0	Sandy Clay	Tan to buff	Same as 3T3S - 1889 occupation layer
	2	1157.3N 1540E-1543E	11.3x2.0	2272.2	Humus	Br.	Fill from centrally stained area -1889 occupation layer
	3	Same as 3T3S	3.0x30ft	2272.0	Sandy Clay	Tan	None , pre-occupation.

Appendix B. Lot Summaries and Provenciences for the Trade Store.

Sub-op	Lot	Coordinates	H. Dim.	Elev. MSL	S. Type	S. Col.	Features
3T2A-Z		1150N-1200N 1375E-1425E	50x50ft.	2273.9	--	- -	Ground slopes slightly toward the road from 2274.2-2273.0 MSL.
	1	Same	Same	2273.6	Sod	Br.	Sod covering all sub-ops removed at one time - post occupation
3T4A		1150N-1160N, 1415E-1425E	10x10ft.	2273.9	--	--	None , post occupation
	1	Same	Same	2273.6	Sod	Br.	None , post occupation
3T5A		1190N-1200N, 1365E-1375E	10x10ft	--	--	--	Not excavated , post occupation
3T5B		1190N-1200N, 1375E-1385E	10x10ft	2273.2	--	--	None
	1	Same	Same	2272.9	Sod	Br.	None, 1920-1940s occupation layer
3T5C		1180N-1190N, 1375E-1385E	10x10ft.	2273.2	--	--	None
	1	Same	Same	2272.8	Sod	Br.	Stones for the new store foundation 1920-1940s occupation layer
3T5D		1180N-1190N, 1365E-1375E	10x10ft	--	--	--	Not excavated - post occupation
3T6A		1190N-1200N, 1385E-1395E	10x10ft	2273.4	--	--	None
	1	Same	Same	2273.0	Humus	Dk.Br.	None - 1920-1950s occupation layer
3T6B		1190N-1200N, 1395E-1405E	10x10ft	2273.5	--	--	None
	1	Same	Same	2273.4	Humus	Dk.Br.	None - 1920-1950s occupation layer

Sub-op	Lot	Coordinates	H.Dim.	Elev. MSL	S.Type	S.Col.	Features
3T6C		1180N-1190N, 1395E-1340E	10x10ft.	2273.6	--	--	Foundation stones of the new store and evidence of the old one.
	1	Same	Same	2273.5	Humus	Dk.Br.	NW corner of the old store.-1919 occupa.
	2	Same	Same	2273.4	Humus	Same	Same -1919 occupation
		N					
3T6D		1180N-1190N, 1385E-1395E	Same	2273.4	--	--	Fragmentary evidence of the new store
	1	Same	Same	2273.0	Humus	Dk.Br.	Same - 1920 -1940s occupation
3T7A		1190N-1200N 1405E-1415E	Same	2273.7	--	--	Evidence of the charred remains of the lean-to addition to the old trade store.
	1	Same	Same	2273.6	Humus	Dk.Br.	Same-early 20th century occupation
3T7B		1190N-1200N, 1415E-1425E	Same	2273.9	--	--	Fragmentary evidence of the old store, miscellaneous timbers and stones.
	1	Same	Same	2273.85	Humus	Dk.Br.	Same - 1920-1940s occupation
	2	Same	Same	2273.8	Same	Same	Same - 1919 -occupation
3T7C		1180N-1190N 1415E-1425E	Same	2274.0	--	--	Foundation stones of the new store and the northeast corner of the old trade store.
	1	Same	Same	2273.9	Humus	Dk.Br.	Same -1920-1940s occupation
	2	Same	Same	2273.8	Same	Same	Same - 1919 occupation

Sub-op	Lot	Coordinates	H.Dim.	Elev. MSL	S.Type	S.Col.	Features
3T7D		1180N-1190N 1405E-1415E	10x10ft.	2273.7	--	--	New store foundation and the rear wall of the old store.
	1	Same	Same	2273.6	Humus	Dk.Br.	Same - 1920-1940s occupation
	2	Same	Same	2273.55	Same	Same	Same - 1919 occupation
3T8A		1170N-1180N 1365E-1375E	Same	--	--	--	Not excavated-post occupation
3T8B		1170N-1180N 1375E-1385E	Same	2273.4	--	--	Front door area of the new store.
	1	Same		2273.3	Humus	Dk.Br.	Same - 1919-1940s occupation
	2	Same	Same	2273.2	Clay	Grey	Same 1919 occupation
	3	Same	Same	2273.15	Same	Same	Same pre-occupation
3T8C		1160N-1170N 1375E-1385E		2273.5	--	--	Southwest corner of the new store
	1	Same	Same	2273.4	--	Dk.Br.	Same - 1920-1940s occupation
	2	Same	Same	2273.4	Same	Same	Same - 1919 occupation
	3	Same	Same	2273.35	Clay	Grey	Same - 1919 occupation
3T8D		1160N-1170N 1365E-1375E	Same	--	--	--	Not excavated - post occupation
3T9A		1170N-1180N 1385E-1395E	Same	2273.7	--	--	Posthole and timber fragment
	1	Same	Same	2273.5	Humus	Dk.Br.	Same - 1920-1940s occupation
	2	Same	Same	2273.4	Same	Same	Same - 1919 occupation
	3	Same	Same	2273.3	Same	Same	Same - 1919 occupation.

Sub-op	Lot	Coordinates	H.Dim.	Elev. MSL	S.Type	S.Col.	Features
3T9B		1170N-1180N 1395E-1405E	10x10ft	2273.65	--	--	West wall of trade store (old) and part of flagstaff boardwalk.
	1	Same	Same	2273.6	Humus	Dk.Br.	Same - 1920-1940s occupation
	2	Same	Same	2273.55	Same	Same	Same - 1919 occupation
	3	Same	Same	2273.5	Clay	Grey	Same - 1884-1919 occupation
3T9C		1160N-1170N 1395E-1405E	Same	2273.65	--	--	West wall of the trade store and boardwalk footing
	1	Same	Same	2273.6	Humus	Dk.Br.	Same - 1920-1940s occupation
	2	Same	Same	2273.55	Same	Same	Same 1919 occupation
	3	Same	Same	2273.5	Same	Same	Same - 1884 occupation
3T9D		1160N-1170N 1385E-1395E	Same	2273.6	--	--	Boardwalk to flagstaff
	1	Same	Same	2273.5	Humus	Dk.Br.	Same - 1919 occupation
	2	Same	Same	2273.45	Same	Same	Same - 1884 occupation
3T10A		1170N-1180N 1405E-1415E	Same	2273.8	--	--	Interior of old trade store
	1	Same	Same	2273.75	Humus	Dk.Br.	Same - 1920-1940s occupation
	2	Same	Same	2273.7	Same	Same	Same - 1919 occupation
	3	Same	Same	2273.6	Same	Same	Same 1884-1919 Occupation
3T10B		1170N-1180N 1415E-1425E	Same	2273.95	--	--	West wall of the old trade store
	1	Same	Same	2273.9	Humus	Dk.Br.	Same - 1920-1940s occupation
	2	Same	Same	2273.85	Same	Same	Same - 1919 occupation
	3	Same	Same	2273.7	Same	Same	Same - 1919 occupation

Sub-op	Lot	Coordinates	H.Dim.	Elev. MSL	S.Type	S.Col.	Features
3T10C		1160N-1170N 1415E-1425E	10x10ft.	2273.8	--	--	Partition wall of old store and foundation of new store
	1	Same	Same	2273.8	Humus	Dk.Br.	Same- 1919 occupation
	2	Same	Same	2273.75	Same	Same	Same- 1884-1919 occupation
	3	Same	Same	2273.7	Same	Same	Same- 1884-1919 occupation
3T10D		1160N-1170N 1405E-1415E	Same	2273.85	--	--	Partition wall of old store and foundation of new store.
	1	Same	Same	2273.85	Humus	Dk.Br.	Same - 1919 occupation
	2	Same	Same	2273.8	Same	Same	Same - 1884 - 1919 occupation
	3	Same	Same	2273.7	Same	Same	Same - 1884-1919 occupation
3T11A		1150N-1160N 1365E-1375E	Same	--	--	--	Not excavated - post occupation
3T11B		1150N-1160N 1375E-1385E	Same	2273.4	--	--	None - post occupation
	1	Same	Same	2273.3	Humus	Dk.Br	None - post occupation
3T11C		1140N-1150N 1375E-1385E	Same	2273.0	Humus	Dk.Br.	This area was disturbed, no apparent features. post occupation
3T11D		1140N-1150N 1365E-1375E	Same	--	--	--	Not excavated post occupation
3T12A		1150N-1160N 1385E-1395E	Same	2273.4	--	--	None
	1	Same	Same	2273.3	Humus	Dk.Br.	None - post occupation
3T12B		1150N-1160N 1395E-1405E	Same	2273.65	--	--	Fragments of west wall of old store
	1	Same	Same	2273.6	Humus	Dk.Br.	Same - post occupation
	2	Same	Same	2273.55	Same	Same	Same - 1919 occupation
	3	Same	Same	2273.5	Same	Same	Same - 1884-1919 occupation

Sub-op	Lot	Coordinates	H.Dim.	Elev. MSL	S.Type	S.Col.	Features
3T12C		1140N-1150N 1395E-1405E	10x10ft.	2273.5	--	--	Fragments of the front of the old store.
	1	Same	Same	2273.4	Humus	Dk.Br.	Same - post occupation
	2	Same	Same	2273.3	Same	Same	Same - 1919 occupation
	3	Same	Same	Same	Same	Same	Same - 1884-1919 occupation
3T12D		1140N-1150N 1385E-1395E	Same	2273.4	--	--	None
	1	Same	Same	2273.3	Humus	Dk.Br.	None - post occupation
	2	Same	Same	2273.2	Same	Same	Same - 1919 occupation
	3	Same	Same	Same	Same	Same	Same - 1884-1919 occupation
3T13A		1150N-1160N 1405E-1415E	Same	2273.85	--	--	Southwest corner of the old trade store.
	1	Same	Same	2273.7	Humus	Dk.Br.	Same
	2	Same	Same	2273.7	Same	Same	Same
3T13B		1150N-1160N 1415E-1425E	Same	2273.75	--	--	Southeast corner of the old trade store.
	1	Same	Same	2273.7	Humus	Dk.Br.	Same - post occupation
	2	Same	Same	2273.7	Same	Same	Same - 1919 occupation
	3	Same	Same	2273.65	Same	Same	Same - 1884-1919 occupation
3T13C		1140N-1150N 1415E-1425E	Same	2273.9	--	--	South end of old store and boardwalk.
	1	Same	Same	2273.7	Humus	Dk.Br.	Same - post occupation
	2	Same	Saem	2273.6	Same	Same	Same - 1919 occupation
	3	Same	Same	2273.65	Same	Same	Same - 1884-1919 occupation
3T13D		1140N-1150N 1405E-1415E	Same	2273.8	--	--	Southern end of trade store and boardwalk
	1	Same	Same	2273.7	Humus	Dk.Br.	Same - post occupation
	2	Same	Same	2273.5	Same	Same	Same - 1919 occupation
	3	Same	Same	2273.4	Same	Same	Same - 1884-1919 occupation

Sub-op	Lot	Coordinates	H.Dim.	Elev. MSL	S.Type	S.Col.	Features
3T14A		1190N-1200N 1425E-1435E	10x10ft.	2274.7	--	--	Evidence of eastern boardwalk of Trade Store.
	1	Same	Same	2274.2	Humus	Dk.Br.	Same - 1920-1940s occupation
	2	Same	Same	2274.05	Same	Same	Same - 1919 occupation
	3	Same	Same	2273.8	Same	Same	Same - 1884 occupation
3T14B		1190N-1200N 1435E-1445E	10x10ft	--	--	--	Not excavated - post occupation
3T14C		1180N-1190N	10x10ft	--	--	--	Not excavated - post occupation
3T14D		1180N-1190N 1425E-1435E	10x10ft	2274.3	--	--	North east corner of new store and eastern boardwalk.
	1	Same	Same	2274.0	Same	Same	Same - 1920-1940s occupation
	2	Same	Same	2273.9	Same	Same	Same - 1919 occupation
	3	Same	Same	2273.85	Same	Same	Same - pre-occupation
3T15A		1170N-1180N 1425E-1435E	10x10ft.	2274.5	--	--	Eastern foundation of new store.
	1	Same	Same	2274.0	Same	Same	Same - 1920-1940s occupation
	2	Same	Same	2273.95	Same	Same	Same - 1919 occupation
	3	Same	Same	2273.85	Same	Same	Same - pre-occupation
3T15B		1170N-1180N 1435E-1445E	10x10ft.	--	--	--	Not excavated - post occupation
3T15C		1160N-1170N 1435E-1445E	10x10ft	--	--	--	Not excavated - post occupation

Sub-op	Lot	Coordinates	H.Dim.	Elev. MSL	S.Type	S.Col.	Features
3T15D		1160N-1170N 1425E-1435E	10x10ft.	2274.5	--	--	Southeast corner of new store.
	1	Same	Same	2274.15	Humus	Dk.Br.	Same - 1920-1940s occupation
	2	Same	Same	2274.1	Same	Same	Same - 1920-1940s occupation
	3	Same	Same	2274.1	Same	Same	Same - pre-occupation
3T16A		1150N-1160N 1425E-1435E	10x10ft	2274.5	--	--	Eastern boardwalk
	1	Same	Same	2274.2	Same	Same	Same - 1920 occupation
	2	Same	Same	2274.1	Same	Same	Same - 1919 occupation
	3	Same	Same	2274.0	Same	Same	Same - 1884 occupation
3T16B		1150N-1160N 1435E-1445E	10x10ft	--	--	--	Not excavated - post occupation
3T16C		1140N-1150N 1435E-1445E	10x10ft	--	--	--	Not excavated - post occupation
3T16D		1140N-1150N 1425E-1435E	10x10ft	2274.1	--	--	Eastern boardwalk
	1	Same	Same	2273.85	Same	Same	Same - 1920-1940s occupation
	2	Same	Same	2273.8	Same	Same	Same - 1919 occupation
	3	Same	Same	2273.8	Same	Same	Same - 1884 occupation

Appendix C. Inventory of glass and metal artifacts from Fort St. James.

INVENTORY OF GLASSWARE FROM FORT ST. JAMES

Except for gin bottles, all black glass fragments have been typed as wine bottles, although they may possibly have been beer of spirit containers.

Fragments have not been dated, but the majority are "of the period", or modern.

Other glassware that has not been dated is generally "of the period" as well.

Re: Washboards - 1) Pieces which have double ribbing on one side and are flat on the other, are definitely from washboards. These are still being manufactured today - ECONOMY, MANUFACTURED BY THE CANADIAN WOODENWARE CO., WPG., ST. THOMAS, MONTREAL.
2) Pieces which have single ribbing on one side and are textured on the other, may be from either washboards or window panes.

DATEABLE 19TH CENTURY

WINE BOTTLES	Black Glass Bottles	
BEER BOTTLES	Black Glass Bottles R & Co.	1880-1900

DATEABLE 19TH CENTURY Con't.

SPIRITS BOTTLES	Black Glass Bottles	
MEDICINAL BOTTLES	Turlington's Balsam of Life	1754-
	Perry Davis Veg. Pain Killer	1840-
	Mexican Mustang Linament	1856-
	ENO	1880-
	Northrop & Lyman	late 1800s
FOOD STORAGE	MacLaren's Imperial Cheese	1875-1909 approx.
	Cannington Shaw & Co.	1875-1913
	Lea & Perrins	pre 1877?
	Porcelain Lined fruit jar	1883-1891
BEVERAGE or FOOD	Nuttall & Co.	1872-1913
TABLE GLASS	Decanter	late 1700s
	Tumblers	pre 1860

PROV.	3T GLASSWARE	WINE BOTTLES	BEER BOTTLES	SPIRITS BOTTLES	SOFT DRINK BOTTLES	MEDICINAL BOTTLES	FOOD STORAGE JARS	PERFUME & COSMETIC	STOPPERS	MARBLES	LIGHTING DEVICES	TABLE GLASS	MISCELLANEOUS	RELEVANT DATA	DATING
1A2			X		X										Modern
1A3			X												Modern
			?		?									Owen's scar on base.	Modern
1B1			X		X										Modern
		X												Black glass.	
													Mirror		
											X				
													Frags		Modern
1B2			X												Modern
						X								__S.OX__ embossed	
							X							Hand finished.	pre 1920
													Frags		
1B3		X												Black glass.	
						X								Perry Davis Veg. Pain Killer.	1840 -
													Frags	1)Hand finished;2)3Piece mould	pre 1920
													Frags		
1B4			X												Modern
1C1			X	X	X										Modern
							X							Fruit jar lid included.	Modern
								X						1) Cologne with ground lip ,	Modern
														screw threads, & metal cap.	
														2) ~~Small jar with screw threads~~	
														Owen's scar, & 238 on base.	Modern
												X		1) Opaque white cup.	
														2) Opaque blue plate rim; with ribbing perpendicular to it.	
													Base	Heavy, oval?; GWC embossed in	
														very large letters.	
													Mirror		
													Frags		
1C2		X												Much embossing;"The London	pre 1920 ?
														HYGIENIC WINE Co., FULHAM S.W;	
														~~Hand tooled stopper finish.~~	
			X											Includes Victoria Brewing Co.	Modern & pre 1920
				X											Modern
					?									~~K.O.S~~ on bases; stopper finishes	Modern & pre 1920

PROV. / 3T GLASSWARE	WINE BOTTLES	BEER BOTTLES	SPIRITS BOTTLES	SOFT DRINK BOTTLES	MEDICINAL BOTTLES	FOOD STORAGE JARS	PERFUME & COSMETIC	STOPPERS	MARBLES	LIGHTING DEVICES	TABLE GLASS	MISCELLANEOUS	RELEVANT DATA	DATING
1C2					X								1) Blown in a mould: 2) C51 ?	
													on base; diagonal mould line.	
										X			Opaque white lamp chimney;2)	
												X 14A2	Large lantern globe with	
												14A3	ground rim; purplish tinge.	pre WW1
											X		Opaque green cup rim.	
												Frags		
1C3	X												Black glass	
		X												Modern
					X								Hand finished.	pre 1920
										X			Lamp chimneys-beaded,& fired.	pre WW1
												Mirror		
												Wash-board ?		
												Frags		
1C5												Frags		
1C10												Frags		
1C12												Frags		
1C13												Frag		
1D1												Frag		
1D2												Frags		
1D3												Frags		
1F1								X						
												Frags		
1E2												Frags		
1E3												Frags		
1F1	X												Black glass.	1850-75
		X				X							Includes fruit jar lid.	Modern
					X								Blown in a mould.	
								X				Frags		
1F2	X												Black glass; hand finished.	pre 1920
		X												Modern
			?	?									Hand finished.	pre 1920
					X								Blown in a mould.	
					?		?						Blown in a mould; hand finish	pre 1920
												Frags		

3T GLASSWARE PROV.	WINE BOTTLES	BEER BOTTLES	SPIRITS BOTTLES	SOFT DRINK BOTTLES	MEDICINAL BOTTLES	FOOD STORAGE JARS	PERFUME & COSMETIC	STOPPERS	MARBLES	LIGHTING DEVICES	TABLE GLASS	MISCELLANEOUS	RELEVANT DATA	DATING
1F3												Frags		
1F4												Insulator	CHES N.Y. , embossed.	
1G1		X	X	X		X	X							Modern
					X								Blown in a mould; R^{D}S embossed	
												Frags		
1G2		X										X 1H1	Includes VICTORIA BREWING CO.	
								X					LEA & PERRINS.	
												Frags		
1G3												Frags		
1G4					X								MEXICAN MUSTANG LINIMENT, LYON MFG. CO. NEW YORK - embossed horizontally; hand finished.	1856-
										X			Lamp chimney; (some) lead glass.	
1H1	X												1) Black glass; 2) LONDON HYGIENIC WINE CO. FULHAM S.W.	
		X	X	X		X	X							Modern
					X								Includes mould blown with embossed lettering.	Modern & other
								X				X 1H2	LEA & PERRINS; hand finish also.	pre 1920
									X				Cat's eyes.	
										X			Lamp chimney with beaded rim.	
											X		Opaque green, white; cups mob.	
												Frags	Includes, 1) -★G B on base; & 2) MATTHIAS & HARRISON.	
												Reflector		
1H2	X												LONDON HYGIENIC WINE CO.	
		X												Modern
			X										Black glass; hand finished	pre 1920
					X								1) (lead) TURLINGTON'S BALSAM OF LIFE; 2) assorted others; some embossing, mould & mach.	1754-
						X							1) Cannington Shaw & Co.	1875-1913
													2) PORCELAIN LINED fruit jar.	1883-91
							X	X						
									X				Cat's eye.	

PROV. / 3T GLASSWARE	WINE BOTTLES	BEER BOTTLES	SPIRITS BOTTLES	SOFT DRINK BOTTLES	MEDICINAL BOTTLES	FOOD STORAGE JARS	PERFUME & COSMETIC	STOPPERS	MARBLES	LIGHTING DEVICES	TABLE GLASS	MISCELLANEOUS	RELEVANT DATA	DATING
1H2											X		1) Tumbler; lead; cut; finished base. 2) Tumbler; non-lead; faceted.	prel860?
												Frags		
1H3												Frag		
1H5		X												Modern
						X							1)Complete LEA & PERRINS with stopper; hand finished.2)Lid.	prel877?
								X				Frag		
1J1	X												1) Black glass. 2) LONDON HYGIENIC WINE CO.	
		X											Includes, 1) R.&C.,(S.F. Cal.) 2) VICTORIA BREWING CO. 3)etc.	1880-1900 Modern
			?	?										
					X								Hand finished.	prel920
						X							Includes, 1) LEA & PERRINS. 2) K.B.Ltd. - Kilner Bros.	
							X						Hand finished.	prel920
												Frags		
1J2	X												Black glass.	
		X												Modern
					X								Blown in a mould.	
						X							Includes, 1) A.C.B.Co. (LEA & PERRINS). 2) Fancy mould.	prel877? -Modern
											X	X 1S1	1) Pitcher-Sawtooth type pat. pressed	
												X 1L4 2A1, 1M1, 3F3 Mirror	2) Tumbler?;lead;pressed ◇.	prel870
												Window	Flashed ruby red on both sides	
1J3			X										BLANKENHEYM & NOLET gin?	
					X								Blown in a mould.	
												Frags		
1K1	X												Black glass.	
												Frags		
1K2												Frags		

3T GLASSWARE / PROV.	WINE BOTTLES	BEER BOTTLES	SPIRITS BOTTLES	SOFT DRINK BOTTLES	MEDICINAL BOTTLES	FOOD STORAGE JARS	PERFUME & COSMETIC	STOPPERS	MARBLES	LIGHTING DEVICES	TABLE GLASS	MISCELLANEOUS	RELEVANT DATA	DATING
1K3	X				X							Frags	Black glass. Includes, 1) hand finished ~~ball neck. 2) embossed letters~~	prel920
1L1	X		X										Black glass.	
		X		X		X								Modern
					X								Includes, 1) mould blown. 2) ~~embossed lettering. 3) G53~~ on base.	
							X					Frags		
1L2	X												Black glass. Includes ~~S&~~ on base	
					X								Purplish tinge.	preWW1
												Frags		
1L4	X												Black glass.	
		X				X								Modern
					X								Includes, 1) embossed letters	
													2) hand finishes. 3) "opium" ~~vial-gather of glass added~~ around tubing,& shaped.	prel920
							X						re:perfume, 'touchmark' on base.	
											X		Tumbler?;lead;cut;finished bs.	
												Window?	Cobalt blue; may be a bottle.	
												Frags		
1M1	X												Black glass.	
		X	X											Modern
							X					Frags		
											X		Tumbler;lead;cut.	
1N1	X												Black glass.	
		X												Modern
						?					?		Hazel-Atlas,Wheeling,W.Va.	1920-64
												Frags		
1N2	X											X 1H1	Black glass.	
												Frags		
1P2					X								Includes hand finishes.	prel920 &Modern
												Frags		
1Q2												Frags		

PROV. / 3T GLASSWARE	WINE BOTTLES	BEER BOTTLES	SPIRITS BOTTLES	SOFT DRINK BOTTLES	MEDICINAL BOTTLES	FOOD STORAGE JARS	PERFUME & COSMETIC	STOPPERS	MARBLES	LIGHTING DEVICES	TABLE GLASS	MISCELLANEOUS	RELEVANT DATA	DATING
2A1	?	X	?	X		X							Includes, SILVER SPRINGS BREWERY LTD., VICTORIA, B.C.	Modern
					X								Includes hand finishes, embossing, mould blown.	prel920
								X						
									X				½ clear; ½ clear & streaked with cobalt blue	
												Mirror		
												Wash-board ?		
												Frags	Many burnt.	
3A1	X												Black glass; 3 piece mould.	
		X		X										Modern
			X										Black glass gin.	
						X							MacLaren's Imperial? Includes opaque white cheese container, & modern fruit lid.	~1875-1909
								X						
											X		1) Decanter; lead; cut base.	late 1700s -
													2) Stopper or finial; pressed.	
													3) Small tumbler.	
													4) Salt shaker.	Modern
												Tubing		
												Wire separator		
												Wash-board		
												Frags	Includes, 1) AB-ADOLPHUS BUSCH GLASS MANUFACTURING CO.	1904-07
												(See 3K3 unidentified with rounded edge	2) Ink - SANFORDS INKS??, UNDERWOODS INKS??	1880 - 1910??
3A2	X												Black glass.	
								X					LEA & PERRINS.	
											X		1) Frag; pressed. 2) rim; lead.	
												Frags		
3B2		X												Modern
			X										Black glass; gin.	
					X								Hand finished; purplish tinge.	preWW1
												Frags	Some burnt.	
3B3	X		X										Black glass.	
		X												Modern
												Frags		

3T GLASSWARE / PROV.	WINE BOTTLES	BEER BOTTLES	SPIRITS BOTTLES	SOFT DRINK BOTTLES	MEDICINAL BOTTLES	FOOD STORAGE JARS	PERFUME & COSMETIC	STOPPERS	MARBLES	LIGHTING DEVICES	TABLE GLASS	MISCELLANEOUS	RELEVANT DATA	DATING
3C2		?		?									Hand finished.	prel920
												Wash-board ?		
												Frags		
3D2					X								Mould blown.	
												Frags		
3D3												Frags		
3F2												Frags		
3F2	X		X										Black glass;gin included.	
		X											Hand finished included.	prel920 &Modern
					X							X 3F3		
												Frags		
3F3	X		X										Black glass;gin included.	
		X												
					X								Includes mould blown, hand finished	prel920
							X						Mould blown	
								X					LEA & PERRINS.	
										X			Beaded lamp chimney rim.	
											X		Tumblers; lead.	
												Tubing		
												Frags	Many burnt.	
3G2												Frags		
3G3												Frags	Many burnt.	
3G4		X												Modern
					X								Includes,1)Hand finished, complete.2)"opium" vial.	prel920
							?						Octagonal;cobalt blue;moulded.	
								X					Includes, ROWLANDS ✤	
										X			Includes,1)beaded rim.2)fired rim.3)milk glass.	
											X		Tumbler.	
												Tubing	Very small diameter opening.	
												Wash-board		
												Optical lense	Sunglass;oval shaped;grey colour;one screw hole through lense remains;finished edge.	
												Frags		

PROV. / 3T GLASSWARE	WINE BOTTLES	BEER BOTTLES	SPIRITS BOTTLES	SOFT DRINK BOTTLES	MEDICINAL BOTTLES	FOOD STORAGE JARS	PERFUME & COSMETIC	STOPPERS	MARBLES	LIGHTING DEVICES	TABLE GLASS	MISCELLANEOUS	RELEVANT DATA	DATING
3H2											X		Unidentified; pressed.	
												Frags		
3H3												Frags		
3J2		X												Modern
								X				Frags		
3J3	?			?									Hand finished;light honey hue.	prel920
												Frags		
3K2	X		X										Black glass; gin included.	
				?									Hand finished.	prel920
					X								Includes, NORTHROP & LYMAN.	late 1800s
											X		2 tumblers;both cut;one lead.	
												Ink	CARTERS MADE IN CANADA on base	
												Wash-board		
												Frags		
3K3						X							Lid.	
										X			Fire polished rim.	
											X		Tumbler; cut; lead.	
												Wash-board		
												Frags	Many burnt.	
3L2												Frags		
3L3											X	X 3A1	?	
												3R3 Frags		
3M2												Frags		
3M3									X				Clear; bubbled.	
												Frags		
3N2												Frags		
3N4	X												Includes, 1) Black glass.	
													2) High light green kickup with mamelon.	
		X											Includes Owen's scar.	Modern
		?	?	?									Hand finished.	prel920
					X								PERRY DAVIS VEG. PAINKILLER.	1840 -
						X								Modern
												Frags		

3T GLASSWARE / PROV.	WINE BOTTLES	BEER BOTTLES	SPIRITS BOTTLES	SOFT DRINK BOTTLES	MEDICINAL BOTTLES	FOOD STORAGE JARS	PERFUME & COSMETIC	STOPPERS	MARBLES	LIGHTING DEVICES	TABLE GLASS	MISCELLANEOUS	RELEVANT DATA	DATING
3P2	X												Includes, 1) Black glass. 2) Light green kickup with mamelon.	
		X												Modern
												Frags		
3P3	X												Black glass.	
		X												Modern
											X		Unidentified; lead;	
												Frags		
3Q2												Frags		
3Q3	X												Black glass.	
		X												
3R2		X												Modern
					X								Includes, 1)Hand finished. 2)Ball neck. 3)Embossing - ✓ELL - other side illegible.	prel920
							X							Modern
												Frags	Many burnt.	
3R3		X	X				X							Modern
												Frags	Including BG, cylindrical, moulded base - unidentified.	
3R4												Frags		
3S1		X	X		X	X						Frags		
3S2												Frags		
3S3												Frags		
3Z99	X		X										Black glass; gin included.	
		X											Includes SILVER SPRINGS BREWERY LTD. VICTORIA B.C.	1908 -
				X		?	?							Modern
					X								Includes, 1) Hand finishes. 2) T MIL---	prel920
											X		Tumbler;lead;cut;finished base	prel860
												Wash-board		
												Frags	Includes, DR SBH & CO 6B?.	preWW1
5B1					X								Lead; embossed --- D^{S}_{R}	
												Frags		

3T GLASSWARE / PROV.	WINE BOTTLES	BEER BOTTLES	SPIRITS BOTTLES	SOFT DRINK BOTTLES	MEDICINAL BOTTLES	FOOD STORAGE JARS	PERFUME & COSMETIC	STOPPERS	MARBLES	LIGHTING DEVICES	TABLE GLASS	MISCELLANEOUS	RELEVANT DATA	DATING
5C1												Frags		
5C2					X									Modern
												Frags		
6A1												Frags		
6B1		X		X										Modern
												Frags		
6B2												Frags		
6C1											?		Diamond pattern.	
												Frags		
6C3												Frags		
6D1												Frags		
7A1		X										Frags		
7A2								X					PREPARED BY FNO Ltd.; some burnt.	1880 -
												Frags		
7B1					X								Hand finished; cork stopper.	prel920
												Frags		
7B2												Frags		
7B3		X										Frags		
7C1												Frags		
7C3		X		X										Modern
												Frags		
7D1		X	?											Modern
												Frags		
8B1		X												Modern
						X							Includes, 1)Milk bottle neck.	
													2) ---OND--- ; LONDON MUSTARD??	
9A1												Frags		
9A2												Frags		
9B1												Frags		
9B2												Frags		
9B3										X			Lamp chimney.	
												Frags		
9C1												Frags		
9C3				?								Frags		

PROV. / 3T GLASSWARE	WINE BOTTLES	BEER BOTTLES	SPIRITS BOTTLES	SOFT DRINK BOTTLES	MEDICINAL BOTTLES	FOOD STORAGE JARS	PERFUME & COSMETIC	STOPPERS	MARBLES	LIGHTING DEVICES	TABLE GLASS	MISCELLANEOUS	RELEVANT DATA	DATING
9D1								X					ground; "star" design.	
									X				Cat's eye; green in clear gls.	
											?	X 12C2	Includes blown, diamond-type	
												Frags	design; lead.	
10A1												Frags		
10A2												Frags	Some burnt.	
10A3	X												Black glass; hand finished.	prel920
			?	?									Hand finished.	prel920
												Frags		
10B1		X	X	X		X								Modern
											X	X 13B1	Pressed; dish?.	
												Frags		
10B2		X	?	?										Modern
												Frags		
10B3	?	X	?	?									Includes frags from some	Modern
													NEW WESTMINSTER B.C. Brewery.	
												Frags	Includes, 1) Chinese embossed	
												X 10B1	lettering - EMPIRE AIRLINE CO.	
												10B2	2) ~~PATENTED APRIL 25 on mod-~~	
													ern jar base.	
								X					ROWLANDS ✱. (unlike 3G4).	
10C1		X	X											Modern
												Frags		
10C3	?	X	?	?									Includes CINCINNATI? beer.	Modern
						X							LONDON MUSTARD?; lead.	
											X		Vessel; lead.	
												Frags		
10D1											X		Unidentified.	
												Frags		
10D3					X								Mould line to finish; lead.	
											X		Tumbler; lead; cut; finished.	prel860
												Frags		
12A1												Frags		
12A2		X												Modern
												Frags		

PROV.	3T GLASSWARE	WINE BOTTLES	BEER BOTTLES	SPIRITS BOTTLES	SOFT DRINK BOTTLES	MEDICINAL BOTTLES	FOOD STORAGE JARS	PERFUME & COSMETIC	STOPPERS	MARBLES	LIGHTING DEVICES	TABLE GLASS	MISCELLANEOUS	RELEVANT DATA	DATING
12B1												X		Tumbler; cut; finished base.	prel860
													Frags		
12B2						X								CORPO--- embossed on panel.	
													Frags		
12B3	X													Black glass; hand finished.	prel920
													Frags		
12C2												X		Includes 1) Stemware foot; lead. 2) Fired rim; lead.	
													Frags		
		X													Modern
12C3		X													Modern
													Wash-board?		
													Frags		
12D1		X													Modern
						X								COMPANY embossed on wide panel; 17mm below is S 70 (?).	
													Frags		
13A1						X							Frags		
13A2													Frags		
13A3							X							Lid.	
									X					1) PREPARED BY FNO Ltd. - some missing. 2)Burnt; lettering melted.	1880-
													Frags		
13B1													Frags		
13B2													Frags		
13B3													Frags	Includes a heavy storage-type vessel with large IT -type finish.(~~Interrupted thread~~)	
													X 15A1 16A1		
13C1													Wash-board?		
													Tubing	Very small diam. opening.	
													Frags		
13C2													Frags		
13C3									X						
													X 13C2		
													Frags		

PROV. / 3T GLASSWARE	WINE BOTTLES	BEER BOTTLES	SPIRITS BOTTLES	SOFT DRINK BOTTLES	MEDICINAL BOTTLES	FOOD STORAGE JARS	PERFUME & COSMETIC	STOPPERS	MARBLES	LIGHTING DEVICES	TABLE GLASS	MISCELLANEOUS	RELEVANT DATA	DATING
13D3												Frags		
14A1		X												Modern
			X										Black glass; gin.	
				X									moulded LIME JUICE?; K on kickup; V	
									X				Cat's eye - orange, yellow, opaque, in clear glass.	
												Frags		
14A2	X		X										Black glass.	
		X												Modern
	?	?	?	?		?							N & Co. - NUTTALL & CO., St. Helens, Lancs., England. - embossing on base reads, EVANS SONS LESCHER & WEBB LIVERPOOL & LONDON ---.	1872-1913
												Wash-board		
												Mirror		
												Frags		
14A3		X	X											Modern
			X										Black glass; gin.	
										X			Globe rim; purplish; ground.	preWW1
												Mirror		
												Frags		
14Z1											X		Beer glass.	Modern
												Frags	Includes embossed ST-----.	
15A1		X	X											Modern
												Frags	Includes hand made stopper finish, of a beverage bottle.	
15A2		X												Modern
					X								Includes, 1) PERRY DAVIS VEGETABLE PAINKILLER. 2) hand finish.	1840-
								X						
												Frags		
15A3		X												Modern
					X								Includes, 1) PERRY DAVIS VEGETABLE PAINKILLER. 2) em-band down side. bossed	1840-? preWW1

3T GLASSWARE / PROV.	WINE BOTTLES	BEER BOTTLES	SPIRITS BOTTLES	SOFT DRINK BOTTLES	MEDICINAL BOTTLES	FOOD STORAGE JARS	PERFUME & COSMETIC	STOPPERS	MARBLES	LIGHTING DEVICES	TABLE GLASS	MISCELLANEOUS	RELEVANT DATA	DATING
15A3										X			Beaded lamp chimney rim.	
											X		Tumbler; cut; lead.	prel860?
												Frags		
15D3												Frags		
16A1	X												Black glass.	
		X		X										Modern
												Mirror		
												Frags		
16A2		X		X										Modern
												Frags		
											X	X 16A3	Tumbler; ground resting pt.	
												Mirror		
16A3		X												Modern
					X									
									X				Cat's eyes.	
										X			Beaded lamp chimney rim.	
												Wash-board ?		
												Frags		
16D3		X												Modern
												Frags		

INVENTORY OF BUILDING HARDWARE FROM FORT ST. JAMES

Provenience	Wrought	Cut	Wire	Other
3T1A1		3		
3T1A2	2	7	4	2 pieces wire 2 wire staples 1 bolt
3T1A3	4	3	1	
3T1B1	1	15	15	
3T1B2	1	19	22	2 pieces wire rod
3T1B3	1	18	3	
3T1C1		20	99	one horseshoe nail one piece wire one roofing nail one keyhead 'Yale Pardcentric 25133' - the term pardcentric was instituted in 1892/this particular head type was in use around 1904.
3T1C2	4	59	196	4 bolts 3 screws, one with nut 1 horseshoe nail 3 metal strips 1 metal strap 1 squared staple 1 3-part double strap hinge 1 padlock 'V.R. - Improved Tumbler Lock' 1 padlock 'M.W. & Co.' 1 single strap hinge
3T1C3		16	11	2 cut nails with roves
3T1C5		1		1 wire staple
3T1C6		1		
3T1C10		1		
3T1C12			1	

Provenience	Wrought	Cut	Wire	Other
3T1D1		4	1	1 zinc coated wire nail 1 rove
3T1D2	2	10	10	1 bolt 1 piece wire
3T1D3		1	1	
3T1E1	8	21	15	6 nail of indeterminate manufacture 1 screw
3T1E2		22	1	
3T1E3	5	40	5	1 brass handle
3T1F1	1	10	1	1 two part cast butt hinge 1 wrought nail in rove 1 possible thumb latch plate
3T1F2		13	3	
3T1F3		6		
3T1F5		4		
3T1G1		3	6	
3T1G2		5	4	
3T1G3			1	
3T1H1	2	54	56	one of the wrought nails is a clout nail with a hole drilled into the flattened shank 2 bolts, 3 screws, 3 hasps
3T1H2	5	159	154	1 Brass threaded rod 3 bolts lone with nut 2 screws 5 metal straps
3T1H3		14	3	
3T1H4		3		
3T1H5		3	82	One screw one metal strap with wire nail one iron staple
3T1H99				One key

Provenience	Wrought	Cut	Wire	Other
3T1J1	1	47	24	unidentifiable metal piece one door keep
3T1J2		40	6	one rove, one iron lock bolt
3T1J3		12	1	
3T1K1		14	19	
3T1K2		2	3	
3T1K3	1	14	56	3 horseshoe nails, 3 screws, 1 bolt
3T1L1	17	18	18	2 horseshoe nails, 1 screw 2 hinge parts, 1 metal strap
3T1L2	3	5	8	
3T1L4	33	88	48	2 metal strips, 3 bolts, 1 nut, 1 screw, 1 rove with nail of indet. Manuf., 1 piece wire, 1 wire staple 1 hasp, 1 hook
3T1M1	3	80	24	1 hinge with one wrought nail 1 horseshoe nail, 1 screw
3T1N1		3		1 bolt
3T1N2			4	1 wire staple
3T1P2		12	5	1 screw with nut 1 strap hinge
3T1Q2		15	3	
3T2A1	53	891	1454	153 horseshoe nails 211 screws 3 bolts (two with nut) 1 cut nail with rove 13 roofing nails 1 double strap hinge 2 door keeps 2 butt hinges 2 wire staples 1 fork fragment 3 cup hooks 1 winding key

Provenience	Wrought	Cut	Wire	Other
3T2A1				1 door spindle 1 hook 1 wire pin 1 15" spike 2 metal stars 4 unidentifiables one wardlock key one three-part hinge one mortice lock one padlock
3T2C1		5	5	
3T3A1	5	64	24	1 bolt 1 T-strap 3 part hinge 3 screws 1 trunk lock
3T3A2		10		1 cut nail with rove
3T3B1		3	64	
3T3B2		22	15	1 screw 1 horseshoe nail 1 wire staple
3T3B3	12	195	116	3 screws 2 bolts 2 roves (one with cut nail) 1 brass nail
3T3C2	2	26	16	1 metal strip with one wire nail
3T3D2		7	1	
3T3D3	4	85	1	1 screw
3T3E2	2	76	25	1 line cleat
3T3F2		4		
3T3F3	3	228	69	1 cut nail with rove 4 screws 2 horseshoe nails 2 hooks 1 spring 1 key (padlock?)

Provenience	Wrought	Cut	Wire	Other
3T3G2		69	47	1 screw
3T3G3	5	252	166	9 screws (one with nut) 9 roofing nails 1 wire staple 5 hooks
3T3G4	11	622	983	14 screws, one with washer 3 bolts 3 wire staples 4 horseshoe nails 27 roofing nails 3 hooks 1 hinge (3 part) 1 cut nail with metal strap
3T3H2	1	24	9	
3T3H3		74	47	3 roofing nails 1 screw 1 metal strap
3T3J2		15	10	1 hammer head
3T3J3	1	18	3	
3T3K2		56	49	1 piece brass rod 1 roofing nail 4 screws
3T3K3	1	120	132	5 screws 1 hook 3 horseshoe nails 2 roofing nails
3T3L2	2	84	83	1 screw 2 roofing nails 1 horseshoe nail 1 trunk lock
3T3L3		107	334	6 roofing nails 2 screws
3T3M2		27	16	1 screw
3T3M3	2	76	71	1 rove
3T3N2		30	31	

Provenience	Wrought	Cut	Wire	Other
3T3N4	1	62	37	1 piece wire
3T3P2		12	14	
3T3P3		22	13	
3T3Q2		21	1	1 roofing nail
3T3Q3	1	31	12	2 roofing nails 1 hinge
3T3R2		7	4	1 roofing nail 1 screw
3T3R3			8	
3T3R4		42	16	
3T3S1	1	30	24	1 wire staple 1 rove 1 screw
3T3S3	1	7	1	
3T3Z99		49	60	1 screw
3T5B1		10	30	1 bolt
3T5C1		2	51	1 horseshoe nail 1 piece wire 1 cartridge
3T5C2			11	
3T6A1		9	18	
3T6B1		21	46	10 roofing nails 1 horseshoe nail 1 screw 3 wire staples
3T6B2	1	33	33	3 roofing nails 30 horseshoe nails
3T6C1		79	61	49 horseshoe nails 3 screws 5 bolts with nuts 1 piece sheet metal with wire nail

Provenience	Wrought	Cut	Wire	Other
3T6C1				1 butt hinge 1 double action spring hinge
3T6C3		5	2	
3T6D1		12	14	
3T7A1		35	115	2 wire staples 9 roofing nails 1 hinge 7 screws 3 horseshoe nails 1 piece metal strap 1 key head
3T7A2	1	51	85	17 screws 1 bolt 17 roofing nails 7 horseshoe nails 1 wire staple 2 piece metal chain 1 spring 1 hinge
3T7B1		17	98	1 screw 3 roofing nails 1 threaded rod with bolt 19 bolts, 3 with nuts 2 pieces metal strap
3T7B2		43	173	9 horseshoe nails 6 bolts, 2 with nut 9 screws 4 roofing nails 1 hook 2 pieces metal strap 1 key (padlock?) 1 segment of fork stem
3T7B3		20	88	1 horseshoe nail 2 screws 7 bolts 1 with nut 2 roofing nails
3T7C1		57	129	34 Horseshoe nails 12 screws 3 roofing nails

Provenience	Wrought	Cut	Wire	Other
3T7C1				1 hinge 1 piece metal strip 1 wire staple 1 ceiling hook 1 wall hook 1 cup hook 3 segments of chain 1 unidentifiable metal piece
3T7C3	3	38	45	11 screws 1 nut 1 door keep 2 roofing nails 1 wire staple 1 piece wire handle 1 piece ceiling hook 3 pieces of metal strap, 2 with wire nails 9 horseshoe nails 1 unidentifiable metal piece (gun part?)
3T7D1		174	190	18 horseshoe nails 9 roofing nails 1 nut / one nightlatch 1 cog mechanism from oil lamp 5 wire staples 3 ceiling hooks 2 roves - countersunk 1 tin can key 1 hook & eye 1 harness snap 91 screws
3T9A1		6	14	1 roofing nail
3T9A2		6	9	3 horseshoe nails
3T9B1	1	37	33	27 horseshoe nails 3 screws 1 roofing nail

Provenience	Wrougt	Cut	Wire	Other
3T9B2	1	72	33	4 horseshoe nails
3T9B3		24	8	3 horseshoe nails /one door keep 1 bolt 1 screw hook
3T9C1		64	28	
3T9C3	3	70	17	1 wire staple 1 horseshoe nail 1 unidentifiable metal piece
3T9D1	2	15	50	
3T10A1		126	59	1 screw
3T10A2	1	99	23	1 screw hook 2 roofing nails 2 screws 1 unidentifiable
3T10A3		104	22	2 horseshoe nails 1 coat hook 5 screws 1 wire staple 1 piece metal sheet with wire nail
3T10B1		47	58	1 horseshoe nail 2 screws
3T10B2		240	695	1 wire staple 4 screws 1 roofing nail 1 tin can key 1 fork stem fragment
3T10B3		297	140	10 horseshoe nails 3 pieces metal strip 24 screws 1 coat hook 1 ceiling hook 1 wall hook 1 wire staple 1 piece metal strip with wire nail 1 part of pocket knife? 1 door keep

Provenience	Wrought	Cut	Wire	Other
3T10B3				2 hinge sections 2 key fragments 1 iron cylinder with bolt & nut inserted 1 unidentifiable
3T10C1		63	318	1 bolt 2 screws 1 tin can key
3T10C3		289	1083	1 screw 1 tin can key 1 horseshoe nail
3T10D1		84	78	
3T10D3		126	69	2 screws /one with nut 1 bolt 1 horseshoe nail 1 piece metal strap with cut nail 1 rove 2 hinges 1 unidentifiable
3T11Z1		9	2	1 2-part hinge
3T12A1		1	40	
3T12A2		8	39	
3T12B1		44	59	1 screw
3T12B2		67	48	3 screws 1 rove
3T12B3		124	34	1 rove 1 metal ring
3T12C2		79	98	1 Alarm Till Lock - inscription - "CKER'S (possibly TU) Alarm Till" "-LOCK - No 1." 1 door spindle 1 screw 1 horseshoe nail 2 unidentifiables

Provenience	Wrought	Cut	Wire	Other
3T12C3		43	18	3 screws 1 rove 1 unidentifiable
3T12D1		45	79	2 screws 1 rove
3T13A1		143	24	2 screw hooks 1 unidentifiable
3T13A2		300	64	7 screw hooks 3 screws 2 small metal rings 1 rove 1 piece wire 3 unidentifiables
3T13A3		402	77	6 screw hooks 1 rove with wire nail 3 screws 1 piece lead 1 cog machanism (From oil lamp) 1 unidentifiable
3T13B1		53	17	
3T13B2		139	75	1 horseshoe nail 2 roves uncut 2 screw hooks 1 cartridge
3T13B3		72	39	
3T13C1		242	94	1 screw hook 1 piece metal strip 7 screws 1 bolt 1 rove with wrought nail 1 hinge 1 metal pin  1 cartridge
3T13C2	3	698	192	1 horseshoe nail 7 screw hooks 8 screws 9 roves 1 eye screw 1 piece metal strap 1 window catch 1 bolt with nut

Provenience	Wrought	Cut	Wire	Other
3T13C2				1 brass nail 1 white metal spoon handle 1 tin can key 1 striker 3 unidentifiables
3T13C3		162	48	6 roves (one with cut nail) 2 screw hooks 3 screws 1 bolt with nut
3T13D3		49	29	4 screws 1 screw hook
3T14A1	1	87	254	2 roofing nails 1 horseshoe nail 1 tin can key 4 bolts (One with nut) 3 screws 1 unidentifiable
3T14A2	1	139	541	2 keys - 1 YALE - 1 broken 1 door keep 8 screws 4 horseshoe nails 2 roofing nails 1 T-strap hinge 1 harness snap 1 wire staple 1 ceiling hook 1 unidentifiable white metal piece
3T14A3		50	203	1 horseshoe 4 wire staples
3T14Z1		6	3	
3T15A1		72	87	1 hinge (3 part) 5 screws 1 key 'DL' 1 roofing nail 1 horseshoe nail 1 wire ring
3T15A2		127	145	2 bolts 1 wire staple 1 roofing nail

Provenience	Wrought	Cut	Wire	Other
3T15A3	1	123	77	1 wire staple 1 screw 1 piece metal strip with wire nail 1 wrought spike section 1 door latch 1 rivet, 'N' on the head
3T15D3		6	2	
3T16A1		47	104	1 screw
3T16A2		189	286	3 screws 1 wire staple 1 piece metal strap
3T16A3		100	139	
3T16D3		15	14	
	221	10,143	11,733	

- MISCELLANEOUS METAL - INVENTORY

Provenience

3T1A1	-	one 1 1/2 lb scale weight
3T1A2	-	one wire handle
	-	one toy car part
	-	one bottle cap (Crown closure caps)
	-	one piece strap iron
3T1A3	-	one piece wire
	-	one piece sheet metal with crimped seam
3T1B1	-	one iron ring
	-	one metal disc
	-	wire pieces
	-	sheet metal fragments
	-	one piece threaded rod
	-	one piece metal strap + 1
3T1B2	-	pieces of sheet metal, some crimped
	-	crown closure caps
	-	wire pieces
	-	metal bar section, 2 1/2" x 4 1/4" x 1/2"
	-	one heal cleat
	-	one angled metal fragment
3T1B3	-	metal straps
	-	one staple
	-	one iron rod
	-	sheetiron fragments
3T1B4	-	one metal closure cap, red./sq.
	-	tin can fragments, some crimped
	-	one tin can key
3T1C1	-	crown closure caps
	-	tin can keys
	-	one screw-on cap
	-	crimped tin fragments
	-	wire pieces
	-	file section
	-	paper clip
	-	nail file
	-	metal straps
	-	light bulb base
	-	cartridge fragments
	-	one metal plate
	-	toy car piece

Provenience

3T1C1
- iron handle with wooden knob
- top plate from oil lamp
- one unidentifiable
- tin can keys
- crown closure caps
- two axe heads
- wire
- metal straps
- tin can fragments, crimped seam
- chain links
- one harness snap
- one hook
- one spring
- one key with spring / function unknown
- one fishing hook
- one filter hole cap
- one circular weight
- one flint lock plate
- scissor handle fragment
- two unidentifiable

3T1C3
- metal straps
- one flint lock plate
- crown closure caps
- brass plate & cylinder

3T1D2
- sealer cap
- crown closure caps [Orange Crush]

3T1D3
- one axe head
- one piece lead
- metal strap
- one piece wire

3T1E1
- metal straps
- one curved metal piece
- one metal rod
- one alarm clock housing

3T1E2
- wire rods
- metal straps
- brass pieces

3T1E3
- metal file
- metal ring
- metal straps
- table knife handle
- lead piece

Provenience

3T1F1
- metal straps
- screw-on jar top — light bulb base
- tin cans & key

3T1F2
- cast iron.
- metal straps
- tin can fragments
- wire pieces

3T1F3
- tin can bottom
- tin strip

3T1F5
- tin can bottom

3T1G1
- "McClary" stove parts
- tin cans
- sheet metal

3T1G2
- metal plate
- chrome tube
- brass rod, threaded
- metal strap
- sheet iron

3T1G3
- sheet iron

3T1G4
- metal straps
- tin sheet

3T1H1
- wire — side support from a convertible carriage top
- metal straps
- sheet iron
- metal button
- tin can & key
- jar tops
- crown closure caps
- padlock key
- huge horseshoe, made of several small ones
- stove parts
- one 'Dinky Toy,' Austin Healey ' - really neat' (complete with detachable man)
- threaded pipe fittings

3T1H2
- metal straps
- tin cans
- file
- one axe head
- safety pin
- brass fittings
- iron plate / function unknown
- scythe fittings

Provenience

3T1H3
- sheet iron
- two unidentifiables

3T1H5
- tin cans
- crown closure caps
- wire handle
- pocket watch
- safety pin
- suspender clip

3T1J1
- horseshoes
- one juice harp (jew's harp)
- tin can fragments & key
- crown closure caps
- wire
- metal straps
- metal bar 15" x 3" x 1/4" with one hole
- circular metal section / unidentifiable
- two metal rods
- threaded metal tube

3T1J2
- one buckle
- tin cans
- metal strips
- one pair shears
- iron rod
- one iron lock bolt
- crown closure caps
- one unidentifiable

3T1J3
- one axe head
- one metal rod
- wire
- metal straps

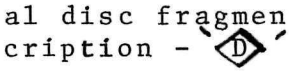
3T1K1
- horseshoe fragment
- measuring tape section
- tin can sections
- one battery

3T1K2
- one awl
- one bail seal
- one section of fork stem
- one metal ring
- one metal strap
- unidentifiable metal piece

3T1K3
- one metal button
- tin can sections
- wire pieces

Provenience

3T1K3
- tin can key
- one hall-marked silver band

3T1L1
- one metal handle
- metal straps
- aspirin tin
- tin can fragment
- one metal disc - possible scale weight
- crown closure caps
- one zinc plated pieces
- wire
- chain link
- metal disc fragment (hollow centre) inscription - 
- two unidentifiables
- wire handle
- sheet iron fragments

3T1L2
- wire
- sheet metal fragment
- metal strap
- 'HB'? closure cap

3T1L4
- 9 wire staples /one horseshoe
- metal plates with strap
- 5 wrought nails
- 'HB Co.' closure caps
- wire
- sheet iron
- two chain links
- section from metal clip
- one buckle
- one backplate to a watch
- 4 awls
- metal rod
- tin can key
- one file section
- one fork section
- two pieces brass with rolled edges
- tumbler from door lock

3T1M1
- white metal cap
- cut nail fragments
- wire
- one metal tube
- wrought nail fragments

3T1N1
- tin can sections
- 3 in 1 oil can
- zinc plated edging
- wire
- one unidentifiable

Provenience

3T1N2 - zinc cover "(UL) Reliable 2000"

3T1P2 - one horseshoe
- one crown closure cap

3T1Q2 - one file section
- one metal strap
- one lead unidentifiable

3T2A1 - one square washer
- one large circular washer
- sheet iron fragments
- one strike o'light
- cast iron stove parts
- metal straps
- several bolts with nuts
- metal buttons
- pans from spring traps
- metal rings
- several indeterminate metal conglomerates
- 2 files
- wire
- two metal handles - levers
- wire staples
- padlock key
- several cut nails
- tin can sections
- indeterminate lead pieces
- pocket watch - melted glass
- buckles
- jew's harp
- safety pin
- awls
- compass
- several lead lumps
- several harness snaps
- one padlock key
- small three-part hinge
- one axe head
- one small trunk lock
- 3 metal handle attachment
- 2 ceiling hooks
- 1 nail conglomerate
- door spindle
- one door knob rose
- crown closure caps
- one hammer head
- one pulley
- one glasscutting mechanism
- one bobbin winder

Provenience

3T2A1
- one padlock
- one mortice lock
- handles from shears
- one table knife stem
- 12 weird & unidentifiable items
- depth gauge from plane

3T3A1
- one axe head
- one screwdriver with plastic handle
- tin can sections
- crown closure caps
- one ferrule
- metal ring
- filler hole cap
- metal tubing
- pocket watch housing
- flashlight pack
- section of metal disc
- metal cup fragments
- pieces of lead
- small pulley
- cast iron stove parts
- two indeterminate machine parts
- copper sheeting
- one cut nail shank
- one horseshoe
- one trademark from sewing needle package

3T3A2
- copper ring
- piece of wire
- metal strap
- chrome piece

3T3B2
- metal strap
- horse bit section

3T3B3
- door keep section
- brass button
- metal strap
- copper strip
- wire pieces
- tin can key
- knife stem fragment
- one rove with head fragment

3T3C2
- crown closure cap
- screw-on cap
- wire
- tin can sections
- metal strips

Provenience

3T3D2
- metal straps
- metal tubing
- one file

3T3D3
- metal straps
- tin can sections & key
- one small spring
- wire pieces
- 12 gauge shotgun cartridge
- threaded brass cylinder
- 2 tin screw-on caps
- 2 indeterminate pieces of metal

3T3E2
- one axe head
- one horseshoe
- dry cells from a battery
- two indeterminate objects
- sealer cap

3T3F2
- 3 cut nail & one wrought
- one buckle
- tin can key
- one metal tube
- piece of lead
- soldered tin can top - one unidentifiable

3T3F3
- one percussion cap
- metal straps
- battery dry cells
- wire pieces
- two metal buttons
- metal disc section
- lead disc
- cartridge

3T3G2
- shears blade
- small spring
- lead pieces
- metal strap
- lock bolt fragment
- knob fastener

3T3G3
- one washer
- battery dry cells
- salmon vertebrae
- metal strap
- can opener part
- wrench part
- cast iron stove part

Provenience

3T3G3
- wire
- tin can key
- lead pieces
- brass ring
- one indeterminate

3T3G4
- metal straps / one pellet
- battery dry cells
- tin can fragments & key
- wire staple
- wire pieces
- cogs from pocket watches
- crown closure caps
- several buckles
- two lead rods (weights?)
- suspender clasp
- safety pin fragments
- one awl
- small saw blade
- one metal comb
- several small metal rings
- one wrought nail
- chain link fragments
- one large metal link
- several indeterminate metal lumps
- one pan from spring trap
- one brass handle
- sealer caps
- long metal handle
- six unidentifiable items

3T3H2
- one piece lead
- one piece wire
- tin can fragments
- metal straps

3T3H3
- one metal button
- metal straps
- one small metal disc
- metal scraps

3T3J2
- tin can fragments
- metal straps
- beer can pull
- section of file
- small metal disc with cork washer
- one metal button

Provenience

3T3J3
- several brass pieces
- small metal disc
- sheet iron fragments / one piece with handle

3T3K2
- one caster / 'Bassick' /
- metal strap
- spring
- crown closure caps

3T3K3
- tin can key & fragments - one gilette razor
- small brass hinge - dry cell battery
- small metal ring pieces
- metal disc sections
- control knob from oil lamp
- inscription - "Crystal Light Pat. Apr. 16,1870"
"Sept. 19, 1871"
"Sept. 24, 1872"

3T3L2
- metal tube
- lead pieces
- one metal button
- large safety pin
- one battery dry cell
- metal ring
- sheet metal fragments

3T3L3
- one pair scissors
- tin can fragments & key
- pieces of lead
- pocket watch plates
- pieces of wire
- metal washer
- battery dry cells
- cast iron parts
- one indeterminate
- one bit section

3T3M2
- one piece wire
- main plate fragment & tumbler from door lock
- metal strap
- sheet iron fragments

3T3M3
- lead piece
- battery dry cells
- brass rod
- metal strap

3T3N2
- one scissor handle
- one nut
- crown closure cap
- rope thimble

Provenience

3T3N4
- tin cans
- crown closure caps
- metal strips

3T3P2
- metal straps
- cast iron part
- lead ring

3T3P3
- tin can fragments

3T3Q2
- metal strap

3T3Q3
- metal strap
- metal rod with pin inserted
- safety pin
- small metal disc

3T3R2
- tin can fragments
- battery dry cells
- screw-on cap

3T3R3
- harmonica plate
- wire
- tin cans - crimped seams

3T3R4
- one brass screw?
- tin fragments
- one small metal disc
- metal straps
- metal ring

3T3S1
- crown closure cap
- tin can fragments
- small brass pieces
- lead pieces
- one indeterminate piece

3T3S2
- metal strap
- metal scraps

3T3S3
- 1 piece tin

3T3Z99
- cast iron stove part
- sheet metal fragments
- pliers
- screw-on cap B/A
- one file segment
- two awls
- one metal washer
- one wire nail
- small metal hinge
- one unidentifiable

Provenience

3T5C1 - wire pieces

3T5B1 - metal scrap

3T6A1 - metal strap
- wire

3T6B1 - 2 files
- one metal button
- metal straps

3T6B2 - 2 axe heads
- 2 small saw blades
- several metal buttons
- 2 awl
- one ceiling hook
- wire pieces
- metal rings
- threaded rods with nuts
- metal scraps
- one unidentifiable machinery part

3T6C1 - several percussion caps
- several harness snaps
- many metal buttons
- one cast iron handle
- many threaded rods with nuts
- one awl
- metal strap
- one buckle fragment
- metal scraps

3T6C3 - metal scraps

3T6D1 - metal strap
- metal ring

3T7A1 - one child's toy part
- one metal knob
- one H.B. Co. Seal
- one crown closure cap
- one tin can key
- two metal rings
- metal scraps
- one short metal bar
- one pocket watch

3T7A2 - one tin can - crimped seam
- one pocket watch

3T7A2
- one harness strap
- metal straps & scraps
- threaded rods with nuts
- tin can key
- crown closure cap
- small springs
- lead pieces
- repair link for chain

3T7B1
- tin can keys
- crown closure caps
- metal straps & scraps

3T7B2
- several harness
- several repair links for chains
- wire nail conglomerate
- metal buttons wire pieces
- 4 indeterminate items

3T7B3
- metal wedge
- alarm clock housing
- crown closure caps
- one awl
- tin can key
- metal straps
- wire pieces

3T7C1
- one axe head
- one small saw blade
- metal rings
- threaded rods with nuts
- wire
- repair links for chains
- tin can fragments
- 3 harness snaps
- 2 buckles
- metal straps & scraps
- 2 centre punches for drill

3T7C3
- one large metal ring
- 2 buckles
- pocket watch pieces
- tin can fragments
- small metal knob
- metal straps & sheeting
- one oil lamp burner

3T7D1
- several pieces of lead
- several harness snaps
- one night latch
- several threaded rods with nuts
- one buckle
- one cut nail

Provenience

3T7D1
- metal straps
- wire pieces
- general crud
- end of extension ruler
- 5 unidentifiable items

3T8B1
- one tin can - all crimped seam
- one machine part

3T9A1
- one finial
- one piece of brass

3T9A2
- one metal button
- metal straps
- wire pieces

3T9B1
- several metal buttons
- one buckle
- one percussion cap
- one metal ring
- one piece cast iron

3T9B2
- many buckles / 2 beam scale weights
- several buttons
- one tin can key
- one metal strap
- 3 metal fasteners
- several indeterminate metal lumps

3T9B3
- several metal buttons
- metal straps
- cast iron piece
- one metal fastener
- tin can fragments
- several indeterminate metal lumps

3T9C1
- one tack
- one metal ring
- clevice from wagon hitch
- two jew's harps
- one buckle
- one truck lock

3T9C3
- 3 buckles
- 1 file
- many metal straps
- 1 piece of wire
- 1 unidentifiable

Provenience

3T9D1
- crown closure caps
- tin can fragments
- one small brass handle

3T10A1
- 2 fish hooks
- 1 metal ring
- 4 buckles
- 1 cast iron stove part
- metal straps & scraps
- several pieces of lead
- 1 metal button
- 1 file
- 1 piece wire
- 2 probable finials
- gas can top & cap?

3T10A2
- several pieces of lead
- 1 piece metal tubing
- 1 tin can key
- metal scrap
- 2 metal buttons
- upper end of auger or similar T-handled tool

3T10A3
- 2 hinges
- one metal ring
- metal buttons
- metal straps & scraps

3T10B1
- one spring from a trap
- two buckles
- several lead pieces
- metal scrap
- 2 unidentifiable pieces

3T10B2
- two beam scale weights
- several tin can fragments & keys
- many sheet iron fragments
- a few cast iron fragments
- a few wire pieces
- one spring from a trap
- crown closure caps
- one boot clasp
- much metal scrap
- a few metal buttons
- one brass lighter case
- one buckle
- 2 carbon electrodes from dry cell battery
- 1 unidentifiable

Provenience

3T10B3
- several buckles
- several harness snaps
- metal straps & scraps
- trunk lock plates
- pieces of wire
- some metal buttons
- some metal rings
- one spring from a trap
- some pieces of lead
- one crown closure cap
- tin can fragments & key
- one fishing lure
- one needle
- one pair scissor blades
- one piece of metal rod
- some nails in conglomerates
- one screw-on cap
- table knife handle
- decorative metal plate
- 5 indeterminate items

3T10C1
- one possible finial
- 3 buckles
- 3 buttons
- 2 tin can keys
- metal scrap
- one wrench?

3T10C3
- several buckles
- several buttons
- some pieces of lead
- tin can fragments & keys
- one scale arm from beam scale & weight
- one nail conglomerate
- one metal ring
- one nut
- metal straps & scraps
- suspender clips
- one horseshoe

3T10D1
- some buckles
- some buttons
- wire pieces
- part of mantle lantern
- piece of metal rod
- some suspender clips
- lead pieces
- one hook
- part of a metal ring
- 2 inidentifiables

Provenience

3T10D3
- brass bell section
- one fish hook
- some buckles
- metal straps
- wire pieces
- metal plate pieces
- suspender clips
- one fishing lure
- 3 unidentifiable metal pieces
- tin can fragments & key

3T11Z1
- one tin can
- 3 pieces of lead

3T12A1
- tin can roll from key
- crown closure cap
- one bottle opener

3T12A2
- metal strap & scrap

3T12B1
- one piece of wire
- one unidentiable machine part
- metal scrap
- one circular metal strap

3T12B2
- one possible harness buckle
- wire pieces
- lead pieces
- trunk lock part
- one unidentifiable machine part
- one crown closure cap
- metal straps & scraps

3T12B3
- some small metal rings
- some metal buttons
- metal straps & scraps
- one cast iron piece
- 2 indeterminate items

3T12C2
- one crown closure cap
- one piece wire
- one metal ring
- 3 metal straps
- one small buckle

3T12C3
- one piece cast iron
- 2 pieces metal strap
- 2 nail fragments, possibly cut
- metal scrap

Provenience

3T12D1
- one lead seal. "P."
- metal strap & scrap
- one penny - 1956 -
- one button
- one crown closure cap
- one staple
- one tin can
- one cast iron piece
- two metal discs

3T13A1
- one piece metal sheeting
- two buttons
- one safety pin
- metal scrap
- part of metal wheel
- lead seal - "M C I"

one piece of wire

3T13A2
- depth guide for plane
- one safety pin
- 2 buttons
- one buckle
- one double pronged hook
- one leader
- much lead scrap
- much metal scrap
- 2 indeterminate items

3T13A3
- cobbler's last
- small screwdriver
- two symmetrical metal discs
- several small metal rings
- cast iron stove parts
- several wire pieces
- several lead pieces
- many buckles
- a few harness snaps
- a few crown closure caps
- metal straps & scraps
- tin can keys
- one fishing lure
- one roll-top can
- part of metal lure

3T13B1
- several lead pieces
- one harness clip
- one tin can key
- one small ring
- one button

Provenience

3T13B2
- several lead pieces
- 2 tin can keys
- some metal straps
- wire fragments
- tin fragments
- one button

3T13B3
- one tin can key
- two pieces lead (lead from pencil?)
- one metal strap
- metal scrap 1 & salt shaker top
- 2 beam scale weights 3/4 lb., & 1 1/2 lb.

3T13C1
- one harness snap
- some buckles
- several pieces lead
- some metal straps
- one brass rect. / sq. washer
- depth gauge from plane
- wire pieces
- tin can keys
- metal straps
- sheet metal
- 3 small metal rings
- 1 "OFFICE SPECIALTY" clip board clip

3T13C2
- several pieces of lead
- 2 "OFFICE SPECIALTY" clip board clips
- several wire pieces
- 2 hooks
- several tin can keys
- 1 pin
- 1 cartridge
- 1 rove
- some small rings
- some metal strap
- one crown closure cap
- 2 indeterminate items

3T13C3
- several pieces of lead
- some small metal rings
- metal straps & scraps
- crown closure caps
- some metal buttons
- one buckle
- one harness snap
- sheet iron fragments
- some cast iron pieces
- one cast iron decorative piece
- one fishing lure

Provenience

3T13D3
- metal straps
- wire pieces
- one buckle
- sheet metal
- one piece lead

3T14A1
- several crown closure caps
- several tin can keys
- some wire pieces
- some lead pieces
- one rove
- one buckle
- one lead seal "2"
- one brass machine part
- many metal straps
- sheet iron fragments

3T14A2
- several crown closure caps
- several tin can keys
- one harness snap
- some small metal rings
- tin cans & sheet iron
- coat hook pieces
- some lead pieces 1 & one pivoted key
- 3 indeterminate items
- 2 lead labels 3 from liquor bottles
- one pan from sping trap

3T14A3
- several crown closure caps
- several tin can fragments & key
- some metal straps
- one lead disc
- some wire pieces
- one possible finial
- one buckle

3T14Z1
- one file
- one button
- one metal ring
- one pocket watch housing "Manufactured by the Ansonid clock Co. New York United States of America Patented April 17th 1888"
- one safety pin
- 2 indeterminate items

3T15A1
- one crown closure cap
- several wire pieces
- several tin can keys
- some lead pieces
- some metal strap

Provenience

3T15A2
- metal sheeting
- some crown closure caps
- one button
- some tin can fragments & key
- one indeterminate item

3T15A3
- several tin can fragments & keys
- metal sheeting
- several metal straps
- copper insulated wire
- some crown closure caps
- wire pieces
- one horseshoe
- 2 indeterminate items

3T15D3
- metal sheeting

3T16A1
- several lead pieces
- several tin can keys
- some metal straps
- some wire pieces
- 2 indeterminate items

3T16A2
- some lead pieces
- some tin can keys
- one crown closure cap
- some wire
- some metal strap
- one indeterminate brass object
- one nail

3T16A3
- some lead pieces
- some metal buttons
- some tin can fragments
- some metal straps
- some crown closure caps
- one harness snap
- one percussion cap
- one hook

Environmental Study of Fort St. James, B.C.

by Donald J. Norris

ABSTRACT

As an adjunct to the archaeological research conducted on the site of Fort St. James the environmental factors effecting the site were also studied. Data relating to temperature, precipitation, geology, soil development, water drainage and vegetational complexes and succession were obtained. The average annual temperature is 35°F, and the average annual precipitation is 15.61 inches. The site is located on a Pleistocene glacial lake bed and the ridges to the east of the post are limestone. Soils on the site are classed in the Grey Wooded Group, Fort St. James Series and consist of grey plastic clays with a pH of 7-9. The site at present is covered with grasses and open field crops, but the pre-trader vegetational cover is postulated to have been white spruce. Appended to the report are observations on stinging nettles as a plant indicator and the results of phosphorus testing as an indication of habitation location.

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ILLUSTRATIONS

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INTRODUCTION

The research for this report was done in the summer of 1971 while the National Historic Sites Service was conducting archaeological excavations on the site of Fort St. James under the direction of Donald A. Harris (Harris 1972). The primary purpose for the research herein reported was to establish the environmental milieu of the vicinity of Fort St. James so that its effects on the Hudson's Bay Company personnel, the local Carrier Indians and the post itself might be determined. This report is a presentation of those variables such as climate, geology, soils, hydrology and the vegetational complexes that exist on the site. Correlations of this data with historical material has yet to be completed.

CLIMATOLOGY

The climate at Fort St. James is classed as a microthermal continental sub-boreal type of climate which is characterized by a heavy snow cover, severe winters and frozen ground (the ground freezes to an average depth of 1-2 ft. before the snow falls). Temperatures have dropped to 60°F below zero, and 40°F below zero temperatures are frequent, although sub-zero conditions seldom persist for more than a week at a time (Armstrong 1965: 5). The severity of the winters combined with the frozen ground controls the kinds of natural vegetation which may exist in this area.

The average yearly temperature at Fort St. James is 35°F, with average winter, spring, summer and fall temperatures of 13°F, 35°F, 55°F and 37°F respectively (Farstad & Laird 1954: 16). With these average temperatures a growing season for hardy crops would be around 145 days from approximately 8 May to 30 September.

The frost free period, when the temperature is in excess of 32°F, is 32 days, and where the temperature is in excess of 26°F, or a killing frost, the period is 85 days. Temperature inversions during the summer may be responsible for these rather short frost free periods.

The summer is relatively cool, with individual hot days and warm nights with a maximum summer high of 98°F.

The average yearly precipitation is 15.6 in. (Armstrong 1965:5) of which one-third to one-half falls as rain in the summer (Farstad & Laird 1954:13). All months generally receive more than 1.0 in. of precipitation with the exception of August and September, when a water deficiency of 4.8 in. (in relation to crop requirements) occurs (Farstad & Laird 1954:13). The water deficiency value is a theoretical value and is a measure of thermal efficiency with mean monthly precipitation and temperatures being taken into account. It is during this one to three week period that water stored in mesic soils is exhausted, and all plants (agricultural and native) must rely on current precipitation and/or seepage water for their moisture needs.

As a result of the short growing season and the short frost free periods, only frost resistant crops can be grown.

GEOLOGY

Physiographically, the Fort St. James area lies within the Interior system of the Canadian Cordillera which is characterized by a dissected plateau and scattered mountain ranges. The town of Fort St. James lies on the Nechako Plain which is composed of glacial lake deposits at least 100 ft. in depth (Armstrong 1965: 15). With the exception of a few rock outcroppings, the area was entirely covered by an ice sheet during the Pliestocene.

The last advance of the Cordilleran ice sheet was followed by stagnation and decay of the ice in the Nechako Plain and Nechako Plateau. It was during this period that the glacial lakes and eskers were formed (Armstrong 1965: 16). A great glacial lake extended along the Fraser, Nechako and Stuart Rivers, where great thicknesses of stratified sands, silts and clays were deposited.

On the present site of the post well sorted, alternating layers of silty, fine to coarse sands were deposited. There are eight of these layers above the water line of Stuart Lake which form the bench or shore upon which Fort St. James was built.

Figure 1 is a cross-section of that bench. This cross-section is based on observations made in the field of

the drainage pattern of the beach in front of the post. The bottom-most of these exposed layers is composed of compacted clays and is currently undergoing erosion by wave action. The upper-most layers were also exposed to wave action when the lake level was higher and it has been referred to as beach sand. Lateral movement of water occurs along all of these sand layers.

The sand layers are ranked according to their wetness, where layer 1 is the wettest and layer 4 the dryest. The layers were ranked towards the end of a one month dry spell. During a wet spell or just after, the uppermost layer of sand remained virtually dry on the western or "downhill" side of the road, but was quite wet on the eastern or "uphill" side of the road. The "beach" sand layer (4) was moist even at the height of the dry spell on the site of the post, but not at the downhill side of the road where the layer was quite dry. The source of the water flowing in the sandy layers was almost entirely runoff from the massive Permian limestone ridge northeast of the fort.

The ridge forms a broad white belt from Mount Pope, 5 miles from Fort St. James west by northwest on a bearing for 35-40 miles and, has been traced 140 miles northwest to the Omineca River. The limestone in the ridge contains minor amounts of argillite, slate, chert and greenstone. From laboratory tests the limestone has been found to be

composed of: CaO (50), MgO (0-18), $(FeAl)_2$ (0.5), $CaCO_3$ (90), $MgCO_3$ (0-38) and SiO_2 (0-28). The numbers reflect the proportional amounts of the compounds. (Armstrong 1965: 36)

Water flowing from this ridge into the seepage layers was greatly enriched in calcium and magnesium, and would aid considerably plant growth on the lacustrine material during the water deficiency period in August and September.

PLANT ECOLOGY

Figure 2 is a map of Fort St. James illustrating the vegetational arrangement of the various plants found on the site. Plant numbers 6, 12, 18, 23, and 44 were too young or without flowers and could not be identified. All of these plants were dicotyledons and with the exception of No. 44, possibly a very young specimen of yellow Penstemon, all had a wide valence, i.e., tolerance for environmental conditions, and thus did not indicate anything in particular.

Numbers 7, 8, 17, 22, 26, 48 and 49 were redendant, i.e., repetitions of plants already collected, and numbers 27-40 were not used for numbering plants.

Species Description

Swamp Species List

Moss Layer

- Amblystequim serpens
- Mnium spindulosum

Herb Layer

- Rumex crispus
- Equisetum arvense
- Gentiana spps. (48)

Grass Layer

Glycera borealis (Northern Manna Grass)

Carex spps. (3 species)

Shrub Layer

Salix spp.

pH 7.2 (Range 7 - 8)

Dry Area Species List

Moss Layer

Mnium spindulosum	(3)
Amblystequim serpens	(18)
Craton neuron filicinum	(25)

Herb Layer

Taraxacum vulgare (dandelion)	(4)
Alisma plantago-aquatical (plantain)	(5)
Trifolium spp. (clover)	(9)
Achillea millefolium (yarrow)	(10)
Rannunculus occidentalis (buttercup)	(13)
Equisetum arvense* (horsetail)	(14)
Mentha arvense (wild mint)	(15)
Salix spps.*	(16)
Rumex crispus	(19)
Dicentra formosa (bleeding heart)	(20)
Potentilla nuttallii	(41)
Cirsium brevistylum (thistle)	(43)
Geum macrophylum	(26)
Gentiana spps.	(53)
Urtica lyallii* (stinging nettle)	(54)

Iridaceae (member of iris family) (46)

Grass Layer

Poa trivialis (rough stalked meadow blue grass - good forage) (1)

Alopecurus aequalis (shortawn foxtail good forage) (2)

Agrostis alba (red top-good forage lawn grass) (10)

Hordeum jubatum (foxtailed barley-forage only when young) (47)

Agropyron repens (quack grass - has forage and hay value) (51)

Dactylis glomerata (introduced orchard grass) (52)

Shrub Layer

Rubus pubescens* (21-55)

Salix spps* (56)

* Krajina indicator species

Plant Indicators for Nutrients and/or Moisture Regimes

Amblystequim serpens (a moss) was correlated with pH readings in excess of 7.5 and surplus moisture, not only in the Fort St. James site, but in at least three other areas, and was found on limestone or rocks very high in limestone content.

Equisetum arvense is always associated with moist, wet conditions. Horsetail, its common name, prefers rich habitats but does not necessarily indicate them.

Trifolium spss (clover) indicates circumneutral conditions, because it fixes nitrogen and "leaks" into the system $NO_3^=$ ions. The symbolic bacteria that work with the clovers, require a pH between 6.2 - 7.5.

Mentha arvense (wild mint or Canada mint) usually indicates moist-rich conditions. However, to a certain extent, moisture can substitute for nutrients and vice-versa, i.e., poorer, but wetter soils, or richer but drier soils.

Salix spps. indicates a high moisture content and above average nutrient content.

Dicentra formosa (bleeding heart) indicates a high calcium content in the soil.

Geum macrophyllum indicates a relatively high NO_3 content in the soil.

Urtica lyallii indicates a high calcium content, a high phosphrous content, and, indirectly, circumneutral pH conditions, since at very high levels of calcium in the soil, $CaPO_3$ will precipitate and the phosphorus will then be fixed.

Achillea Millefolium (yarrow) is said to indicate dry poor sites. However, the pH where it was found on the site was 7.5. This plant was not common on the site, but some

individuals do appear to be able to grow in better conditions than have been indicated by some authors.

From the above indicator plants, the site is evidently quite rich and moist.

Indicator plants for Krajina Edatopes in the Sub Boreal Spruce Zone.

Equisetum arvense Rubus pubescens	- Edatope 115
Equisetum arvense	- Edatope 122
Urtica lyallii Salix spps	- Edatope 123

Together these species would tend to indicate an edatope of 6E which is rich (subeutrophic) and moist (hygric). Hygric conditions occur where permanent seepage (lateral movement of water underground) occurs during the whole of the growing season, and where surplus free water may occur.

Subeutrophic conditions are nutrient conditions where no nutrients are limiting, but rather are in such quantities that if much more nutrients were to be placed in the soil, trees would not be able to grow. However, there are only four plant indicators for forest types, so the above estimation needs to be substantiated by soil tests. The probable reason for so few indicator plants is the fact that the land has been cleared, and kept cleared, for a long period of time. Thus an invasion of grasses and other open field plants has occurred. On this soil such an invasion may be necessary before reforestation can occur, because of

the lack of sufficient organic matter.

Prior to clearing the most likely forest type would be a pure white spruce (Picea glauca) type, especially if the forest type was an edaphic climax. Subalpine fir (Abies lasiocarpa) would form the climax, if no fires occurred, and if the elevation above sea level were higher. As it is subalpine fir is limited by altitudinal constraints.

Another possibility, although less likely, would be an intermediate succession composed of trembling aspen (Populus tremuloides), white spruce and black cottonwood (Populus trichocarpa) stands. This possibility is less likely since no evidence of tree roots has been found. Both of the poplars are very heavy transpirators, and would dry the soil out enough to put down deeper roots, which would leave evidence of their presence. No such evidence was found.

Other trees such as Pinus contorta var latifolia (lodgepole pine), and Picea mariana (black spruce), would not grow here because the soil is too rich and wet. Douglas-fir (Pseudotsuga menziesii var glauca) could not grow in this site because of the excess moisture. Englemann spruce (Picea englemannii) does not grow in the Sub Boreal Spruce biogeoclimatic zone.

Soil samples were taken and pollen analysis should provide some indication of the original ground cover. Attempts to find comparable locations to Fort St. James proved unfruitful. That part of the shore with similar flat

terrain with the same relationship to the hills east of the lake have all been disturbed and do not represent climax conditions. The vegetational coverage in these areas is represented by open field plants, Saskatoon berry bushes (Almelanchier alnifolia), cottonwood trees (Populus trichocarpa), willows and alders.

SOILS

Classification

The soils in the lacustrine deposits are classified as to belonging to the Grey Wooded Great Group (Farstad & Laird 1954: 35). They are further classified as belonging to the Fort St. James soil series. The characteristics of the soil series is as follows (Farstad & Laird 1954: 36):

A_o	Litter layer	1-0 in. deep	
A_1	Dark grey fine granular clay	0-1 in. deep	pH 5.6
A_2	Grey clay to heavy clay; strongly developed coarse granular to fine nuciform structure - hard when dry, plastic when wet	1-4 in. deep	pH 5.2
B_{21}	Dark greyish brown to dark brown coarse prismatic heavy clay - very hard when dry, very plastic and stocky when wet; few roots	4-10 in. deep	pH 5.9
B_{22}	Brown - dark Brown massive heavy clay	10-18 in. deep	pH 5.9
B_{31}	As above but with laminate structure	18-28 in. deep	pH 5.9
C_{28}	Varved material occurring in alternating bands of grey and dark grey clay and heavy clay. Lime carbonates and salt accumulations occur frequently	28 in.	pH 7.9 - 8

The soil on the site has been modified considerably. The A_o to B_{21} has become an Ap or A disturbed horizon, with a pH 7-8; B_{22} and B_{31} dark grey - dark brown with a pH of 7-8 (9) and the C horizon has a pH of 7.8 - 8.7 (9). The sand layer is between 21 and 26 inches deep.

The soil also has indications of gleysation (waterlogging which causes iron and aluminum to reduce and form mottles of a reddish colour), so that now the dominant pedogenic processes are gleysation and enrichment. Prior to the road construction, these two processes were probably counteracted by podzolization (leaching).

The road constructed on the west side of the post has either cut or compacted the uppermost sand layer which would normally provide internal drainage. Prior to this disturbance the drainage would have been slow enough to allow, at least in certain kinds of weather, the processes of enrichment and gleysation to occur. Now that this drainage has been disrupted (surface drainage is minimal, because of the flatness of the land), these two processes have been encouraged at the expense of the podzolization process, resulting in very much higher pH readings.

As water evaporates from the soil, salts and dissolved carbonates are drawn up from the C horizon and are deposited within the B or A horizons. Enriched water is supplied to the naturally rich C horizon via the uppermost sand layer. Water likely flows from the limestone ridge, where it has

picked up nutrients and eventually moves into streams or into the sand layers where seepage occurs.

Since the soil contains large amounts of clay, which has a high cation exchange capacity, most of the calcium and magnesium ions are held onto cation exchange sites, or are dissolved in the soil water. As the soil water evaporates, deposits of nutrients are formed on the surface layer of the soil. In a period of ten dry, hot days, the pH of the surface layer of mineral soil jumped in some cases from 7 to 9. Fine deposits of carbonates were also found on freshly cut soil.

In the spring, or in rainy weather, the water table rises to the surface and gleysation processes become dominant. Iron and aluminum ions are reduced, and they form small reddish mottles, and with such high pH's, are insoluble. Phosphorus is also fixed forming insoluble compounds with calcium and magnesium.

As a result of these pedogenic processes, the soil structure will revert to a massive, i.e., to very coarse, blocky forms. In wet conditions with large amounts of calcium, soil particles flocculate (break up), and soil aeration and drainage become poorer with reduced microflora activities. This immediately reduces the nitrogen content of the soil.

Prior to road construction and subsequent damage to

internal drainage, the soil was probably much like the Fort St. James series, but with perhaps slightly greater pH values. Initial cropping would have been aided considerably by the seepage water, but continuous cropping and ploughing would have the effect or raising or helping to raise soil pH by reducing soil organic matter.

NUTRIENT STATUS

Nitrogen (N)

The nitrogen ions $NO_3^=$, NH_4^+ and NO_2^-, total less than 1 ppm, probably because the nitrogen is used up as quickly as it is produced. The nitrifying power of this soil (the power to produce the above ions) is very low, and the major causative factor is the high soil pH values which adversely affect nitrifying bacteria. Other factors which help to keep low nitrogen content in soils are coolness and low amounts of organic matter. Activity of bacteria increases as organic matter increases, because pH is lowered.

Phosphorus (P)

The ambient level of phosphorus on the site is between 0.5 to 2.0 ppm which is adequate for most crops. Almost all the phosphorus in the soil is fixed in the form of an insoluble compound ($CaPO_3$).

Potassium (K)

The soil contains 40-100 ppm potassium; 80-100 ppm is excessive for some crops.

Calcium (Ca)

The soil contains 100-175 ppm of calcium and is good for most crops. 150 ppm of calcium is excessive for acid soil plants.

Magnesium (Mg)

The soil contains 6-7 ppm of magnesium which is suitable for almost all crops.

Aluminum (Al) - Iron (Fe) - Manganese (Mn)

Aluminum and iron are insoluble in the pH range 5.5 - 8.0. Manganese is insoluble in the pH range of 6.5 - 8.0.

Prior to road construction, calcium, magnesium and potassium levels would likely be significantly lower, but still would be insufficient amounts to supply crops.

HYDROLOGIC STATUS

Water Sources

(A) Precipitation (1) Snow - During the winter, the ground would be frozen, and as a result, pedogenic processes would be slowed down if not stopped. Much of the water from snow melt would remain in situ, since overland drainage is unlikely in such a flat area.

(b) Rain - Rain during the spring may keep soil wet for a period immediately after snow melt. However, during the summer rain would moisten the surface, but would not be likely to cause leaching since internal soil drainage would be slow. Heavy rains of long duration may force water through soil, but by far the greatest portion of water would sit on the surface and evaporate. Some water may drain away via microtopographic drainage paths.

(B) Underground seepage provides water in dry summers, as well as dissolved mineral nutrients from Permian limestone. Seepage would keep the ground rich and wet, and prevent to a great extent podzolization processes.

Water Drainage

(A) Overland Flow: Overland flow would be minimal since land is flat. All such drainage would occur in microtopographical drainage pathways.

(B) Underground Seepage: Underground seepage through the site would be much reduced, since the road has cut off or compacted the layers reponsible for drainage. Water percolation to the next sand layer would be negligible since water movement downward is restricted by the soil structure and closely knit clay particles.

(C) Evapotranspiration: Evapotranspiration would account for almost all the water removed from the site since other mechanisms are not operative.

Soil as a Factor in Vegetational Succession

The soil was probably an Orthic grey wooded soil under forested conditions. Above the mineral soil a layer of organic matter composed of decayed wood, needles, bark and roots would provide a pH somewhat lower than that of the mineral soil (approximately 6-6.8). The forest was probably composed mainly of white spruce (Picea glauca) since this species is not deeply rooted and therefore would have no physical impact on the B horizon.

The forest was removed for building materials, firewood and farming and most of the organic layer was lost through decomposition, burning and ploughing. Once this was accomplished, evaporation of water would draw up mineral nutrients to the surface and raise the pH to around 7-7.8. This pH would be too great for trees so that after farming began, natural re-vegetation would consist of calciphilous (calcium loving) plants, such as grasses. These plants would tend to build up the organic matter in the soil and thereby reduce the pH in the surface soil, and over a period of many years, trees would re-establish themselves. The new forest would likely consists of aspen (Populus tremuloides), black cottonwood (Populus trichocarpa) and white spruce. Since many farm crops (i.e. potatoes) could not be grown

in high pH soils, farmers would tend to move onto virgin fields or change their crops for those which tolerated very rich soils.

Soil and Soil Forming Processes-Forest Habitat Effects on Cropping by the Hudson's Bay Company

The species or kind of crops grown were selected on the basis of the ability of the crops to store well. Crops that did not keep well in storage were not grown in quantity. The following plants were grown at Fort St. James.

Potatoes

When the first crops of potatoes were grown on soil covered with the original forest organic matter, they probably did very well with little or no fungal infection. But as the organic matter in the soil decreased and the soil pH increased, each successive harvest would suffer more and more from fungal damage. The seriousness of the infection would tend to increase with the use of manure, because the manure would contain spores of the fungal scab disease. The Indians did not use manure and their crops were less affected by this agent. As a result, the Hudson's Bay Company had to rotate their crops or move to virgin fields where possible. It has been historically reported that where fields had formerly grown potatoes, they soon supported nothing but turnips (Leechman 1970: 30).

Turnips

Turnips will grow well in acid soil of fair to good fertility, but prefer slightly acid to neutral soils.

Carrots

Carrots prefer slightly acid to neutral soils and with the addition of manure would do very well.

Barley

Barley would do very well in this soil since it prefers slightly acid to slightly alkaline soil.

Beets, Lettuce and Parsnips

A few of these vegetables were grown and the crops were successful, but since they do not store well they were not grown in large quantities.

Cabbages and Radishes

Cabbages and radishes are similar in soil preference to carrots and turnips, but were not grown in any great quantities because of their poor storage characteristics.

Timothy Grasses

Timothy grasses were grown by the Carrier Indians on the hillsides and reportedly did very well.

Prior to World War 1, turnips were very popular, and their seeds were bought in large cases. Carrots and then potatoes succeeded turnips in popularity. Potatoes provided good crops, but were inferior to imports. All grew well because of abundance of water even in drier years.

Black currants, both wild and domesticated, and red currants were grown and produced much fruit high in Vitamin C.

Crop growth on the site should have been ample for the wants and needs of the employees, and the Indians also did much in the way of cultivation. Frost damage may have occurred at Fort St. James, but due to cool air drainage, the earliest frosts may have been avoided. However, as the land was farmed, the organic material in the soil would be reduced through decomposition. This would allow a rise in pH to occur. As this happened, a decrease in the productivity of such crops as potatoes, turnips and carrots would occur.

Conclusions

The climate of Fort St. James is classed as a micro-thermal continental sub-boreal type of climate characterized by severe winters and mild summers. Temperatures drop in the winter to lows of 60°F. below zero and rise to as high as 98°F. in the summer. The area has a frost free period of 32 days and the average annual precipitation is 15.63 in.

Fort St. James is located within the Interior Physiographic System of the Canadian Cordillers and the site is situated on a deep lacustrine deposit sedimented from a glacial lake. This lacustrine deposit consists of alternating layers of silty sands and clays and has a depth of over 100 ft. Behind the site to the northwest is a ridge of massive limestone which provides most of the seepage water beneath Fort St. James. This limestone contains varying quantities of argillite, slate, chert and greenstone.

The soil on the site is of the Grey Wooded group, Fort St. James series which are characterized by heavy clays. The pH of the soil ranges from 7 - 8 and the plant cover consists of grasses and open field crops with a preponderance of foxtail barley (Hordeum jubatum), quack grass (Agropyrons repens), shortawn foxtail (Alopecurus

aequalis) and thistle (Cirsium brevistylum). It is postulated that prior to clearing, the vegetational covering was white spruce (Picea glauca) and associated vegetation. The indicator species for the site tend to indicate a moist, hygric soil condition rich in all nutrients.

Moisture on the site is obtained from precipitation in the form of snow or rain, and from underground seepage. Because of the flatness of the site, overland drainage occurs only along micro-topographical pathways. Underground drainage has been disrupted considerably by the construction of the road with its attendant sewer lines and the upper layers that formerly drained the site no longer do so. As a consequence, evapo-transpiration accounts for almost all of the water removal on the site.

The agricultural potential of the site is such that hardier, frost resistant plants could be grown and brought to harvest. The acidic to neutral soil supported potatoes, turnips, carrots, cabbage, beets, radishes, lettuce and barley. Potatoes, after their initial cropping, decreased in productivity, because of fungal infection and, because of the decrease in the organic matter in the soil which was not sufficiently replaced. Historical records show that the agricultural potential of the site was such that it could support some cropping and hence relieve the monotonous diet of salmon, which was frequently the only item of food during the winter months.

Appendix A

Stinging Nettles - A Notable Plant Indicator

Stinging nettles (Urtica lyalli) were noticed by Krajina (personal communication) to be an indicator for calcium and phosphorus.

Stinging nettles either have the ability to concentrate phosphorus or grow in places where phosphorus is available in large amounts. In one location, under the fish cache at the Fort St. James post, the soil under stinging nettles gave a reading of 15 ppm of phosphorus, 15 times ambient level, or 3 times as high as the highest reading obtained where no stinging nettles were growing!

At Fort McLeod, Fort Fraser, Fort St. James, and several old buildings along the Blackwater Road, stinging nettles were observed growing within 8 ft. of the walls of these old buildings. No other stinging nettles were seen in the area. At Fort Fraser, where an old building had burned down, stinging nettles and Potentilla anserina (which usually grows in saline marshes and meadows) were found growing profusely on and immediately adjacent to the old foundations. Perhaps these two plants, especially the stinging nettles, could be used to locate old foundations.

Appendix B

Phosphorus Testing on the Site of Fort St. James

Introduction

Phosphorus is an ideal element (mineral nutrient) for use in determining the location of latrines and old buildings because it becomes fixed very easily within the soil (Cook and Heizer 1965). Phosphorus occurs in the soil as $PO_3^=$, $HPO_2^=$ or H_2PO^-(in descending order of occurrence) and is fixed in high pH soils by calcium. The resultant compound, calcium phosphate, is very insoluble and precipitates out of the soil water solution. Ferro-aluminum oxides form insoluble compounds thus fixing phosphorous ions at lower pH values less than 6.2 (Tisdale & Nelson 1969: 204).

Phosphorus may also be fixed to silicate clays by either replacing a hydroxyl group from an aluminum atom or by forming a clay-calcium-phosphate linkage. In all cases, phosphorus is fixed and as the duration of fixation increases, the chance that it will become available to crops decreases.

Fish scales, excrement and urine contain appreciable amounts of phosphorus which, after decomposition or organic matter, will move into the soil and become fixed.

Experiments

The purpose of these experiments was to determine whether or not phosphate testing would aid in locating latrines, stables, barns or other features with high organic content.

Experiment 1

Purpose: To determine how much phosphorus moves vertically within a soil profile (Fig. 3).

Method: At a location known to be high in phosphorus at the surface, samples were taken from various soil horizons, in accordance with the instructions in the Simplex soil testing kit. All samples were duplicated in order to prevent or at least discover spurious readings. Ambient levels of phosphorus were determined prior to experiment and were found to be 1.0 ppm $\pm$ 0.5 ppm. This was based on 16 samples chosen randomly over the entire area of the post.

Conclusions: (A) In the soil tested, phosphorus levels tapered off to ambient level within one foot of the surface.

(B) When testing for phosphorus, test at the depth where the phosphorus was most likely added to the soil.

Experiment 2

Purpose: To determine the horizontal spread of phosphorus in the soil at a location of known phosphorus concentration (Fig. 4).

Method: At a depth of 6 in. $\pm$ 1 in., every 2 ft. from the fish cache foundation soil samples were taken as per instructions in the Simplex Soil Testing Outfit Manual. Four lines perpendicular to the foundation were chosen randomly and each sample was duplicated at least twice.

Results: Maximum spread of phosphorus in the horizontal direction was 12 ft., minimum spread was 2 ft. and the average spread of the three minimum was 2.7 ft. The largest distance was not included in that average because the prevailing wind may have blown fish scales that distance. The average spread, including the largest distance, was 5 ft.

Conclusions: (1) Phosphorus sources may be distributed over a large area and thus give indistinct phosphorus boundaries.

(2) Testing phosphorus for locating old foundations or latrines should be done in

such a manner that phosphorus contours can be drawn.

Practical Test of this Technique

Methods: As per experiment 2.

A line was marked out with grade stakes placed at 2 ft. intervals. Testing for phosphorus was done progressively along that line, and beyond any high readings. From the centermost high reading two samples were taken 2 ft. on either side of the line. More were to be taken if required. From the points of high readings, perpendicular lines were run in the direction of the readings on the higher side and those lines were sampled at 2 ft. intervals. Samples were to be taken until phosphorus contours were complete.

Conclusions: The area selected for testing was the general location of a privy. The results as seen in Figure 5 indicate the presence of high phosphorus content, but further substantiation is required in the form of an excavation of this site.

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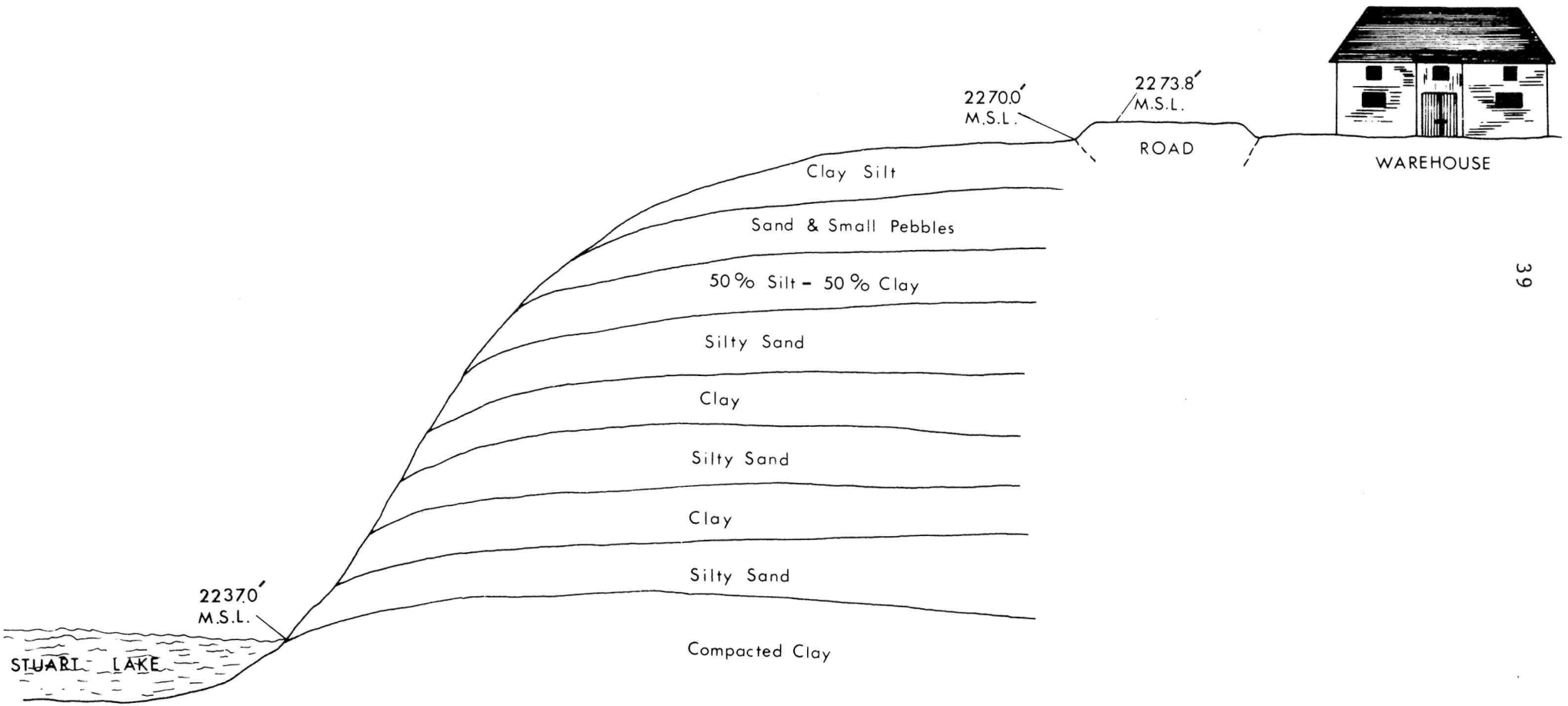
Illustrations

Figure 1. Schematic Cross-Section of Bench at Fort St. James (3T-72-102-5).



LOOKING NORTH

SCHEMATIC CROSS-SECTION
OF BENCH AT FORT ST. JAMES

Figure 2. Schematic diagram of the vegetation complexes of Fort St. James (3T-72-102-4).

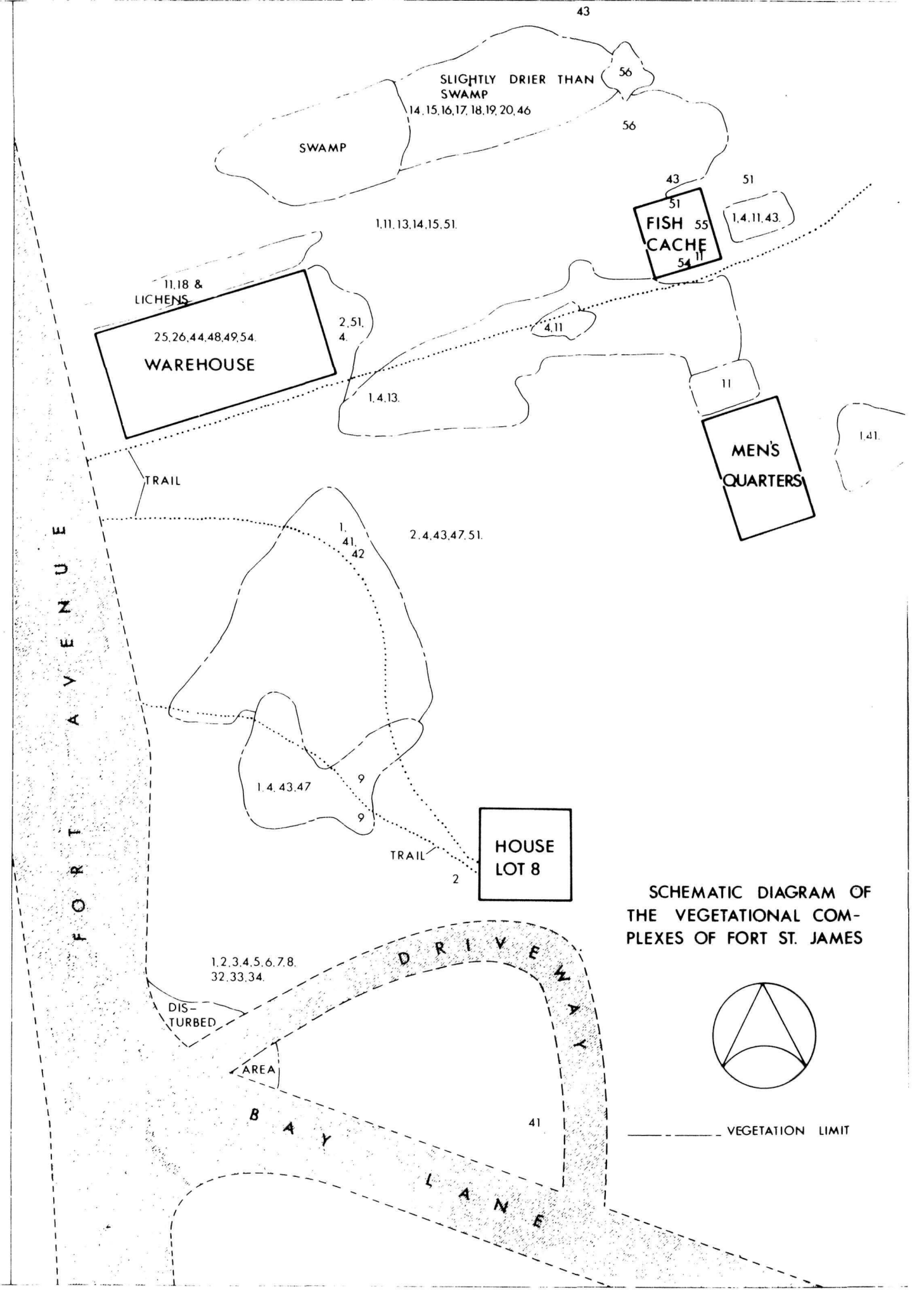
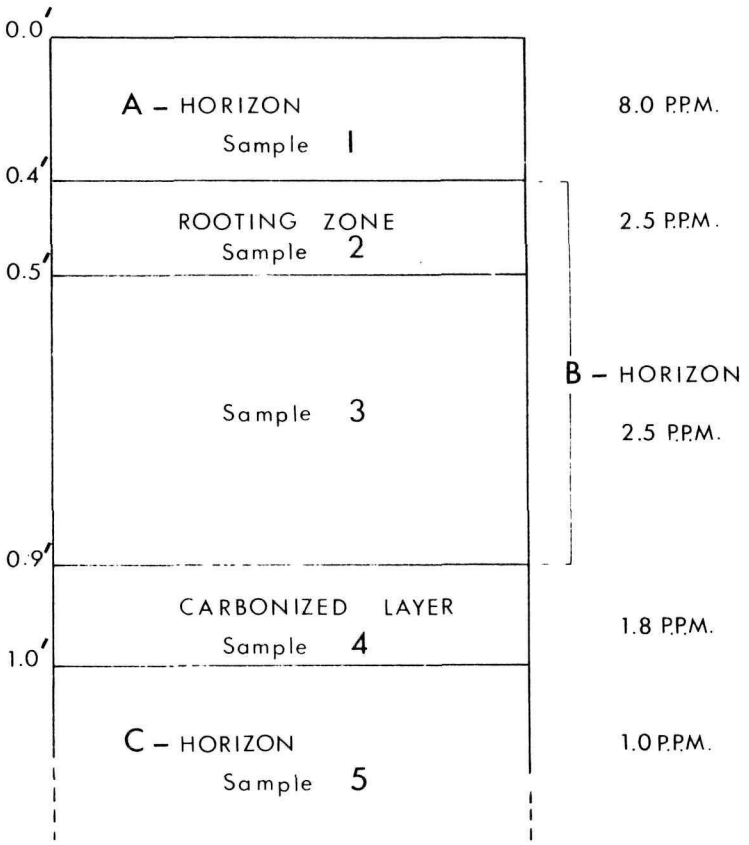

43
SLIGHTLY DRIER THAN SWAMP
14,15,16,17,18,19,20,46
56
56
SWAMP
43
51
51
FISH CACHE
55
54
1,4,11,43.
1,11,13,14,15,51.
11,18 & LICHENS
25,26,44,48,49,54.
WAREHOUSE
2,51,4.
4,11
1,4,13.
11
MEN'S QUARTERS
1,41.
TRAIL
1,41,42
2,4,43,47,51.
1,4,43,47
9
9
TRAIL
2
HOUSE LOT 8
FORT AVENUE
1,2,3,4,5,6,7,8,32,33,34.
DRIVEWAY
DIS-TURBED
AREA
BAY
41
LANE
SCHEMATIC DIAGRAM OF THE VEGETATIONAL COMPLEXES OF FORT ST. JAMES
VEGETATION LIMIT

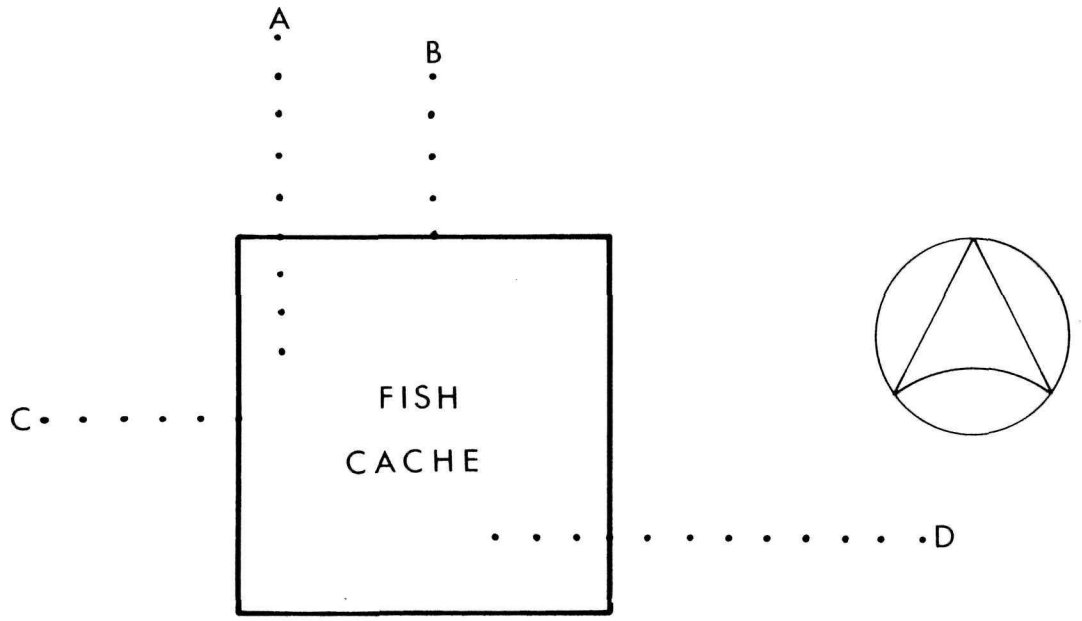
Figure 3. Vertical distribution of phosphorus within a soil profile (3T-72-102-3).



VERTICAL DISTRIBUTION OF PHOSPHORUS WITHIN A SOIL PROFILE

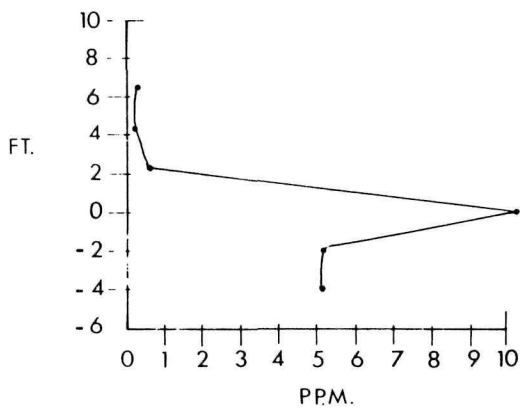
-3T-

Figure 4. Horizontal distribution of phosphorus around a known site (3T-72-102-1).

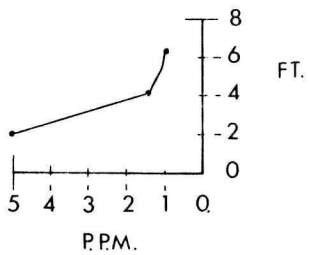


PLAN

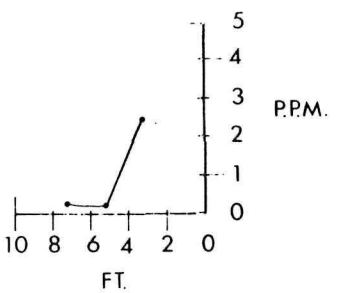
FT. - FEET
P.P.M. - PARTS PER MILLON



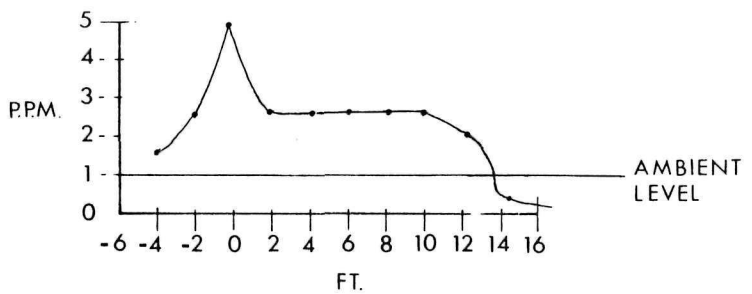
A



B



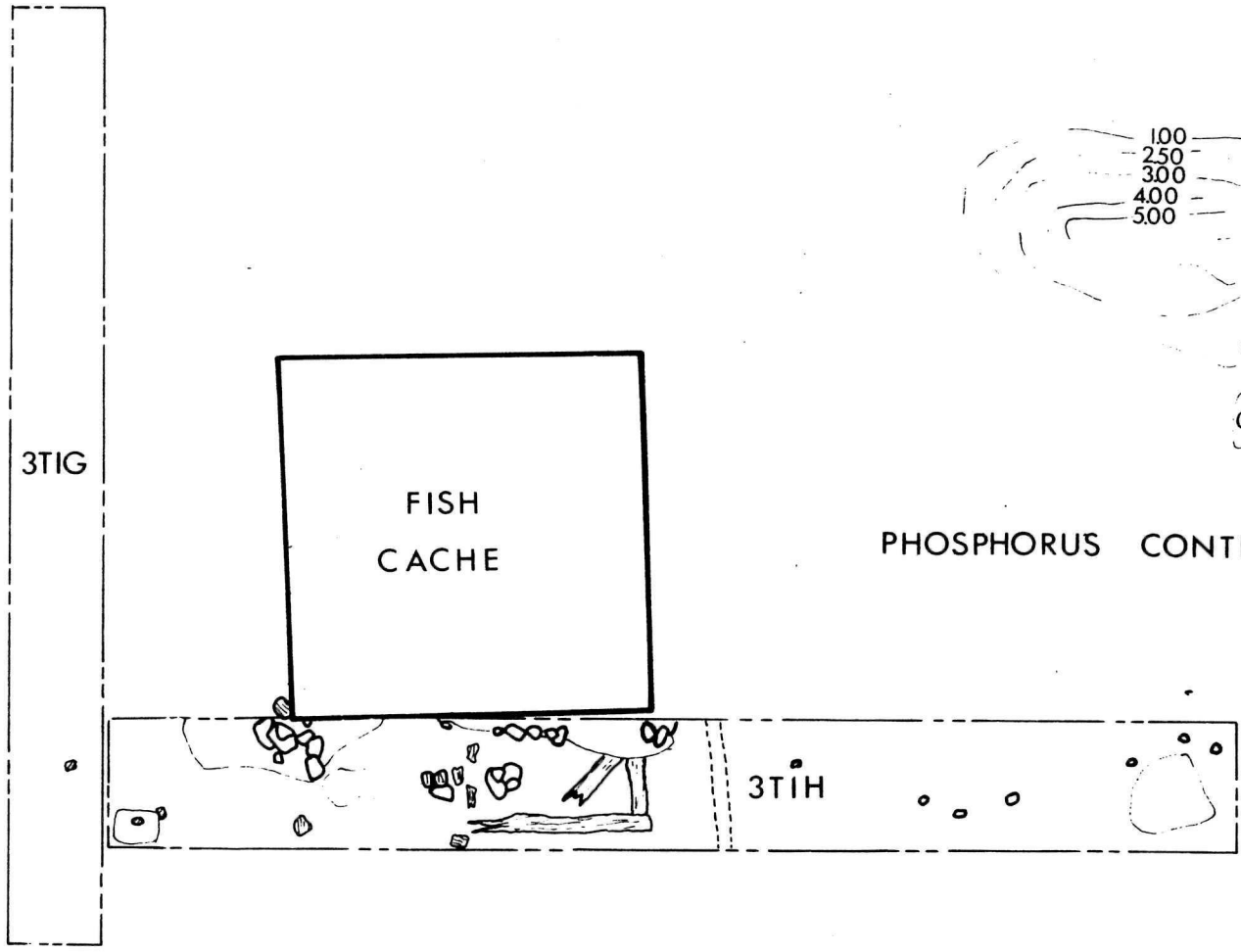
C



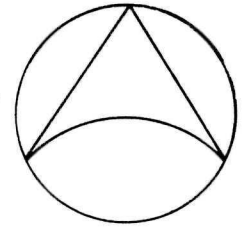
D

HORIZONTAL DISTRIBUTION OF PHOSPHORUS
AROUND A KNOWN SITE

Figure 5. Phosphorous testing results at suspected latrine site: Fort St. James (3T-72-102-2).



PHOSPHORUS CONTENT OF AREA



SITE 3T

0 10 20 FT