

RECENT ROCK STRUCTURE RESEARCH  
IN PUKASKWA NATIONAL PARK

by Sheryl A. Smith

Introduction

Archaeological research and reporting at Pukaskwa National Park on Lake Superior has been directed toward three fundamental goals: first, to protect its significant archaeological resources; second, to place sites in a context which will be useful to cultural resource managers, detailing the impacts of development and some monitoring measures; and third, to attempt to explain why the so-called "Pukaskwa pits" or "cobble beach features" occur, and to devise and test hypotheses concerning their functions and significance.

Archaeological research at Pukaskwa, most done by consultants, has focused on the preparation of site inventories for selected areas. The final stages of intensive archaeological research in the park, from 1980 to 1982, were conducted in-house to accomplish the following:

1. to collate and integrate relevant background data and test results into a coherent picture of the archaeological resources;
2. to refine the archaeological inventory in certain areas slated for development or special treatment;
3. to provide a useful set of management guidelines for the cultural resources of the park in general and for individual sites in particular; and
4. to provide an analysis framework and cultural resource management model by means of which future work may be integrated into the management guidelines.

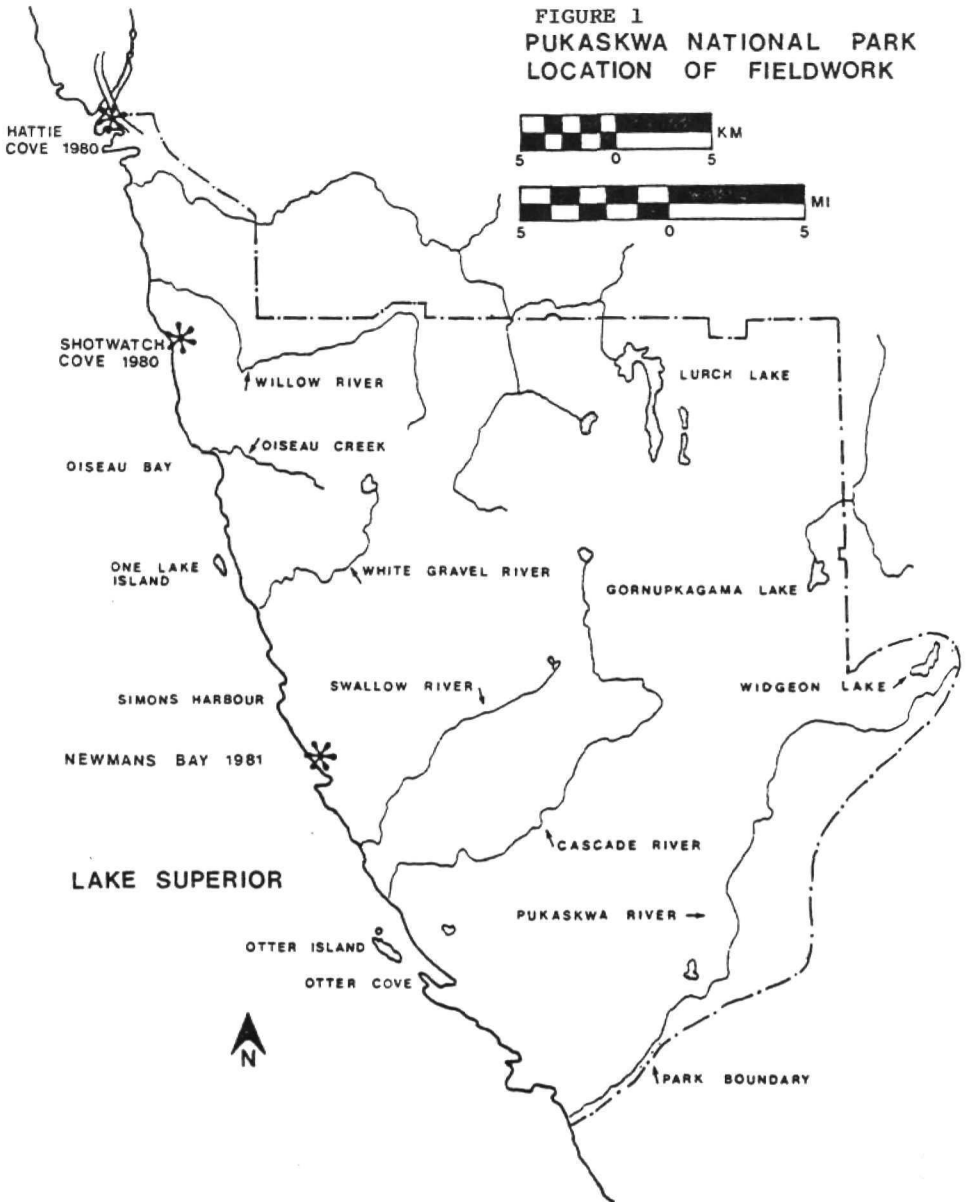
Research Conducted

Research on cobble beach features on the Pukaskwa shore was conducted by the University of Toronto in 1955, 1957, 1958, 1959 and again in 1971 (Emerson 1958, 1959, 1960; Hurley 1971), by K.C.A. Dawson and Associates in 1974 (Dawson 1975), by Peter Lane and Harley Stark of Parks Canada in 1977 (Lane and Stark 1977), by John Dewhirst of Parks Canada in 1980 (Dewhirst 1981: pers. com.), and by myself and Gary Foster in 1981 (Smith and Foster 1982). Figure 1 and Figure 2 show the location of recent fieldwork by Parks Canada.

One of the areas to be developed at Pukaskwa is the Coastal Trail, a hiking path which roughly parallels the shoreline and, to date, extends about 65 km south from the Pic River to Trapper Harbour. The trail is to be upgraded and added to as time and money permit, and as use warrants. Sites examined by Parks Canada staff were selected for intensive study because of their proximity to the coastal trail and because park officials and regional staff were concerned that when the park was officially opened in 1983, increased use

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This is a revised version of a paper presented at the Fifteenth Annual Meeting of the Canadian Archaeological Association, Hamilton, Ontario, April 29 - May 2, 1982.



would introduce the potential for disturbance of cobble beach features. By establishing a comprehensive record of sites we hope to provide an accurate data base for archaeological research and a means of gauging the amount of damage caused by increased visitation.

Three sites comprising 19 cobble beach features have been intensively examined. In each case data were collected to produce an accurate contour map, cross-sections of each site and feature, and photogramme try of each feature. A thorough record of the sites was amassed and consisted of:

1. rectified photographs of each feature taken from a Whittlesey bipod, at an elevation of 8.25 m;
2. stereo pairs of photos, also taken from the bipod;
3. a comprehensive photomosaic taken from a monopod at an elevation of 3.05 m;
4. oblique photographs of each feature in colour and black and white; and
5. datum photographs done with a wide-angle lens along the datum line at prescribed distances and bearings in degrees East of North.

Finally, each feature was described using an attribute checklist which has been designed in a form to allow computer coding at a later date. An example of a completed Cobble Beach Feature Summary Form is found in Figure 3.

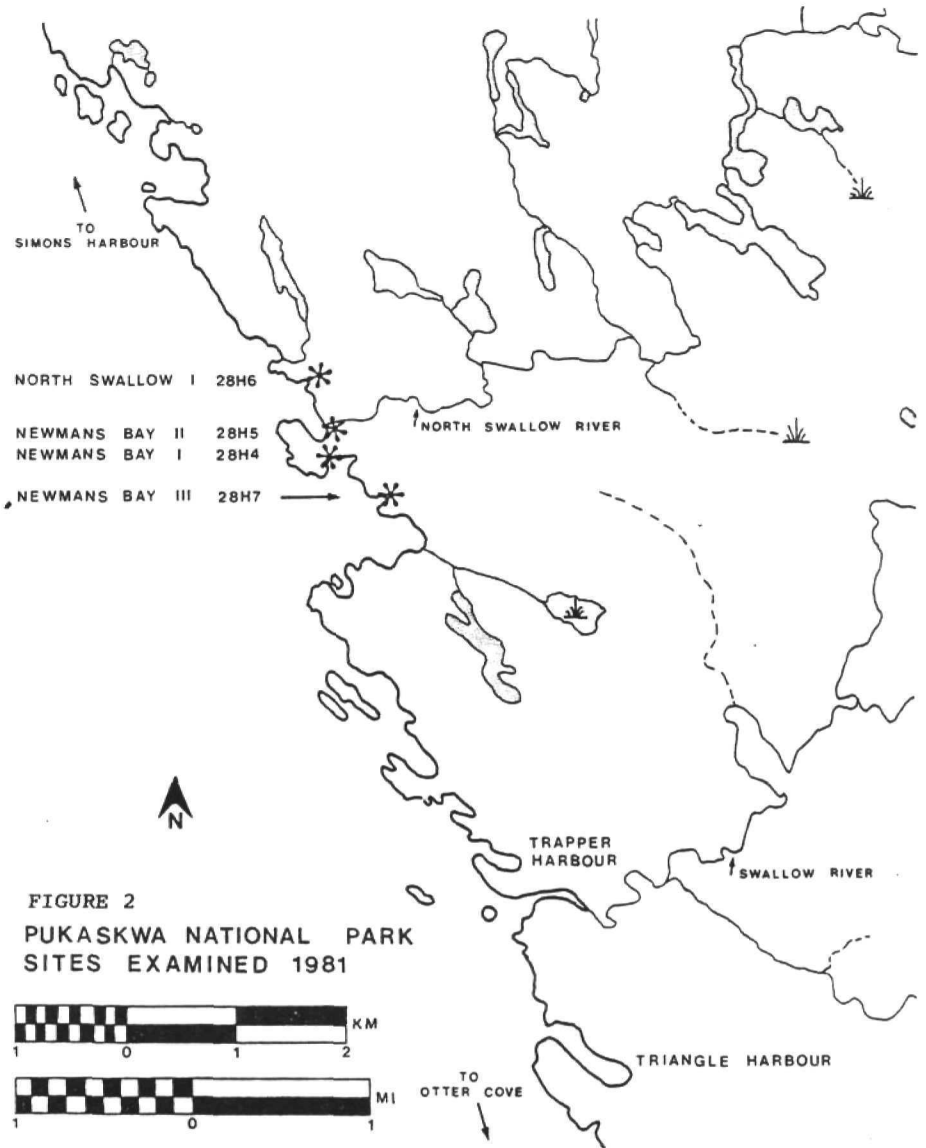
### Results of Research

The contour maps of the sites at Newmans Bay have been prepared (Fig. 4 and Fig. 5). Metrical data and descriptions for features have been compiled and have been published in Parks Canada's Manuscript Report Series. Use of a Whittlesey bipod has aided in recording features.

Heritage Recording Reports which have been produced for these sites contain a brief description of the work, oblique photographs with general views, oblique stereo pairs for each site and feature, contact prints of all vertical photographs, and what is called the "hand recording" or "extant recording" report. This consists of key plans, line drawings, site plans, unrectified photomosaics of each site, topographic sections for each site, cross-sections of each feature, rectified overhead views of each feature, and stereo pairs of each feature. In conjunction with wide-angle oblique photographs compiled by park staff and regional archaeologists, the Heritage Recording Report gives the most complete and least subjective record of cobble beach features of which I am aware. Full-size and quarter-size copies of the 1981 Heritage Recording Report for the sites at Newmans Bay are available for inspection through the Ontario Region office of Parks Canada.

### Monitoring Programme for Resource Managers

One of the objectives of our work is to provide a means by which the condition of previously recorded sites may be monitored by park staff, obviating the need for Regional archaeological staff to conduct the work, and thus saving both time and money. Wardens and patrolmen are in the vicinity of sites on a daily basis, and the monitoring programme has been designed in such a way that anyone with a basic knowledge of 35 mm cameras can monitor sites



SAMPLE COBBLE BEACH FEATURE SUMMARY FORM

COBBLE BEACH FEATURE SUMMARY

Site Designation 28 HA Borden Db Im-4 Map Ref. 42/D1 UTM Ref. \_\_\_\_\_ Military Grid Ref. \_\_\_\_\_  
 Sub-operation # 0 Previously Assigned Feature # 2 Source Dawson (1975)  
 Terrace I II III IV V VI VII VIII IX X Other \_\_\_\_\_ Dist. to terrace edge 2 metres Elevation \_\_\_\_\_  
 Distance to neighbouring features a) Sub-op # 0; dist. 1.25 m; bearing 90 degrees E of N (mag).  
 b) Sub-op # 0; dist. 6.0 m; bearing 350 degrees E of N (mag).  
 c) Sub-op # \_\_\_\_\_; dist. \_\_\_\_\_ m; bearing \_\_\_\_\_ degrees E of N (mag).

Form: Circular Compound \_\_\_\_\_  
Pit Ring Wall Cairn Mound Other \_\_\_\_\_  
 Shape: Round Oval Rectangular Crescent \_\_\_\_\_  
 Semi-Circular Other \_\_\_\_\_  
 Walls: Well-defined Poorly-defined Collapsed Absent  
 Floor: Flat Conical Basin-shaped  
 Entrance: Location - N NE E SE S SW W NW  
None Shape - Simple opening Overlapping Walled  
 Orient'n - Perpendicular Oblique (Angle \_\_\_\_\_ deg. E of N)

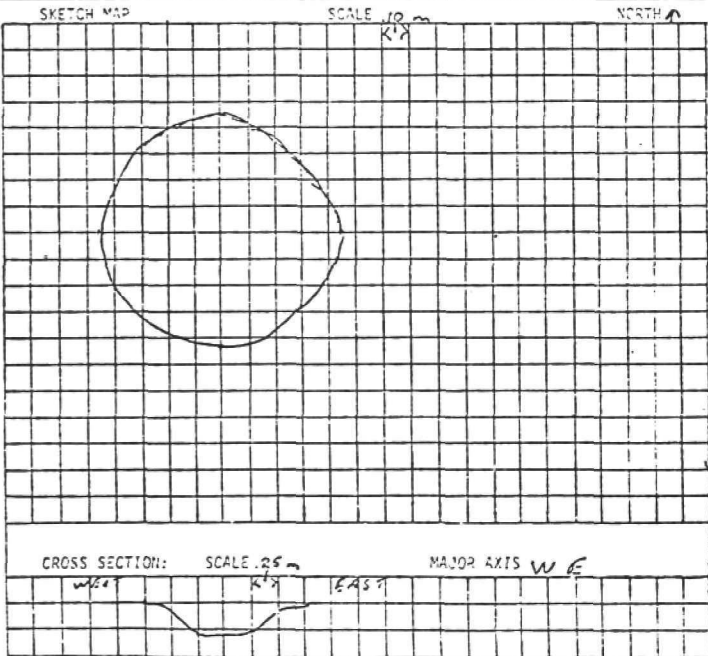
Outer Diameter: N-S \_\_\_\_\_ m E-W \_\_\_\_\_ m  
 Inner Diameter: N-S 75 m E-W 75 m  
 Major Axis: Length 75 m Minor Axis: Length 75 m  
 Orient'n 90 deg. E of N Orient'n 0 deg. E of N)

Feature Depth: Top of wall to centre bottom \_\_\_\_\_ m  
 Beach surface to centre bottom .28 m  
 Wall height \_\_\_\_\_ m

Entrance: Width \_\_\_\_\_ m; Wall length \_\_\_\_\_ m; Wall height \_\_\_\_\_  
None Distance between walls \_\_\_\_\_ m

Cobble Diameter: Wall \_\_\_\_\_ cm; Sample size \_\_\_\_\_; Sample area \_\_\_\_\_  
 Floor 8 cm; Sample size 23; Sample area 5.5 m<sup>2</sup>  
 Beach 6 cm; Sample size 36; Sample area 5.5 m<sup>2</sup>

General (Condition, vegetation, climate, lichen, etc. Vicinity of  
Pit feature associated with 28HA. Void of trees shrubs  
etc. Entire beach area is covered (over)



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FIGURE 3

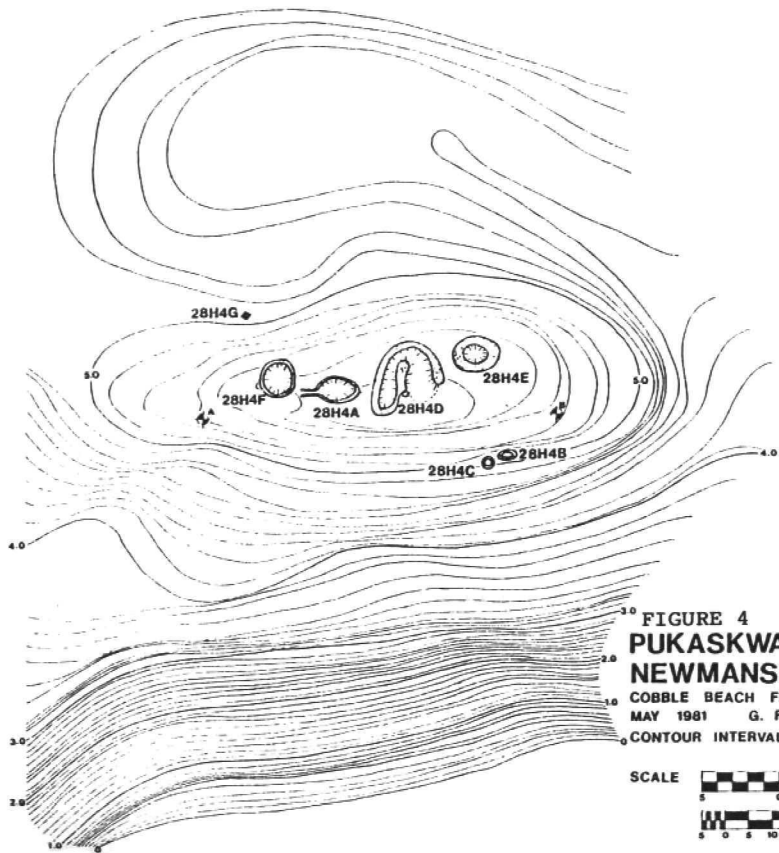


FIGURE 4  
PUKASKWA NATIONAL PARK  
NEWMANS BAY I 28H4  
COBBLE BEACH FEATURE SITE  
MAY 1981 G. FOSTER/S. SMITH  
CONTOUR INTERVAL 10cm



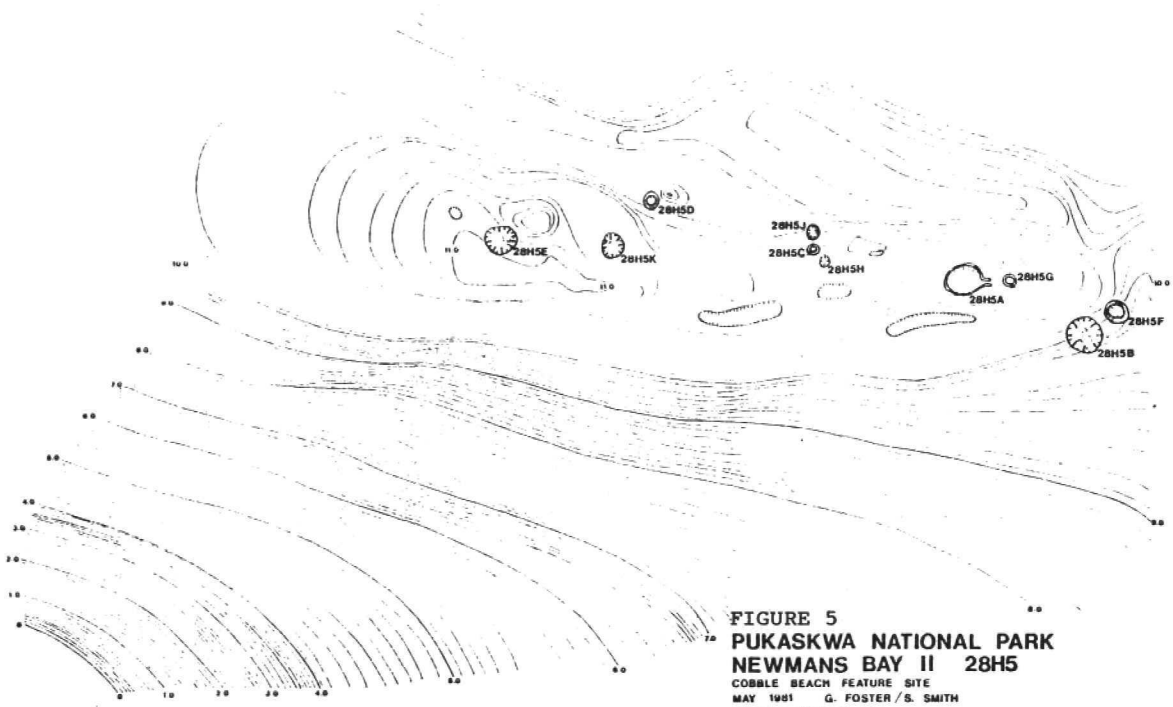


FIGURE 5  
PUKASKWA NATIONAL PARK  
NEWMANS BAY II 28H5  
COBBLE BEACH FEATURE SITE  
MAY 1981 G. FOSTER/S. SMITH  
CONTOUR INTERVAL 10cm



annually, or perhaps before and after times of peak visitation.

The oblique recording procedure is as follows: at each site a 30 m tape is strung between concrete data points clearly labelled "A", "B", and so on. Tables and figures to be photographed are then consulted and photos are taken with black-and-white film and a wide-angle lens. Figures 6 through 8 give examples of the camera stations used to record three sites at Pukaskwa. Copies of the photos are sent to the regional office, where a file will be maintained for each feature and site, by year, as they are recorded. Disturbances or anomalies can be noted quickly and at minimum cost.

### Significance of Cultural Resources

Sites examined in 1981 have been evaluated in terms of their attractiveness to visitors and their physical properties, to try to quantify disturbances which might be expected. Analysis of cobble size, feature construction and feature location has led to one site at Newmans Bay being identified as more threatened than the other. In addition, two other sites were examined briefly in the time remaining in the field; both contain some features which have been flagged for future considerations. In this way we have been able to pinpoint certain features or "hot spots" which can be quickly and easily monitored by park staff.

### Conclusion

During the course of fieldwork in 1981, site relief was recorded with a theodolite, rectified photographs were taken and a datum line was established at two sites to standardize the photographic record. The intensive recording of the Newmans Bay I and II sites has fulfilled two goals. Enough data have been recovered to allow for archaeological analysis and interpretation of these sites, and to ensure that the original shape of the cobble structures will not be lost because of the impacts of increased visitation.

Future archaeological research will give high priority to those sites which are easily accessible to visitors. The Coastal Trail at Pukaskwa represents the most critical and controllable medium for the introduction of park visitors to the lakeshore area. While in the field it was noted that two other nearby sites are visible from the Coastal Trail. When sites recorded by Dawson (1975) were correlated with the location of the Coastal Trail, it became evident that at least 15 sites are located within the immediate vicinity of the trail and its proposed extensions. It is clear that a number of sites are vulnerable, but we recognize that the trail needs to be close to the shore of Lake Superior.

Two courses of action are possible. First, the archaeologists should examine selected portions of the proposed trail extension to judge the visibility of cobble beach features, thereby minimizing detours. Second, a programme of intensive recording of all the sites near the Coastal Trail should be continued, as the trail is extended further south. The Heritage Recording Service of Parks Canada has been approached to suggest various ways by which we may proceed quickly and cost-efficiently with the recording programme. In the meantime, it is our intention to continue the cobble beach feature monitoring programme on a year-by-year basis.



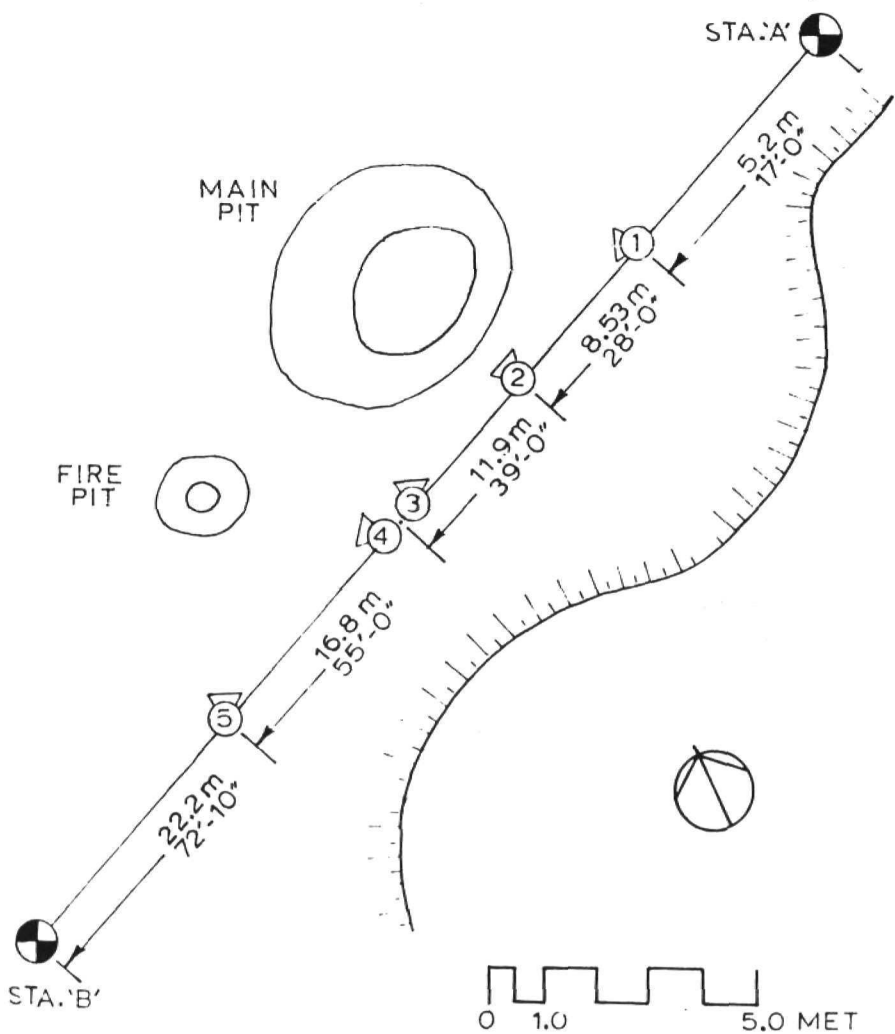
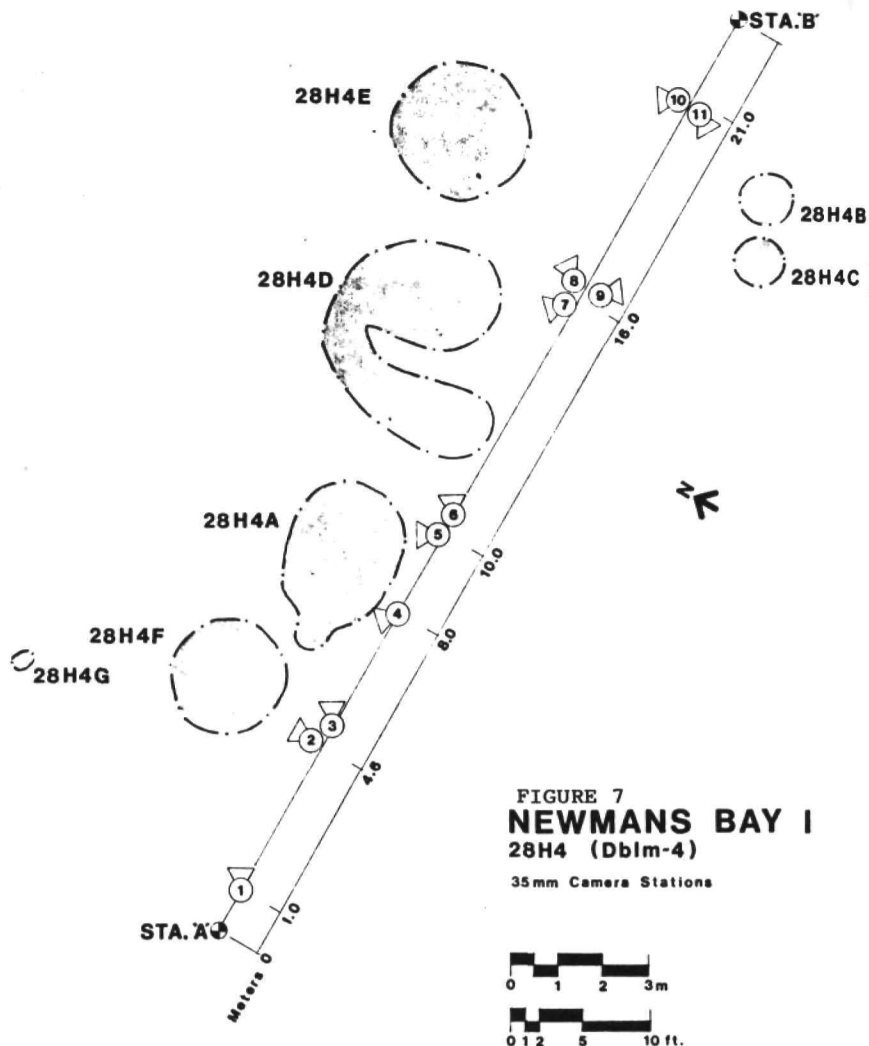


FIGURE 6  
SHOTWATCH COVE SOUTH (DcIn-2)  
35mm CAMERA STATIONS

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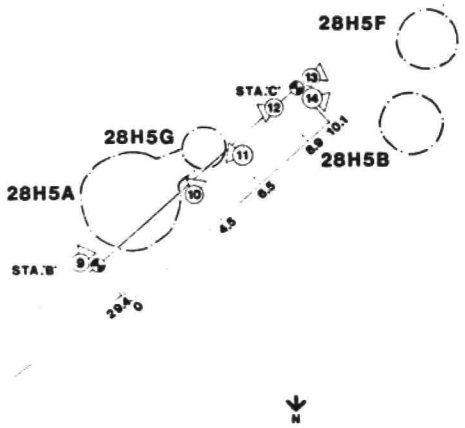
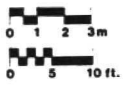


FIGURE 8  
**NEWMANS BAY II**  
**28H5 (Dbim-5)**

35mm Camera Stations



An Archaeological Resource Evaluation was prepared for Pukaskwa National Park and will serve as a cultural resource management plan for sites and features in the park. We have chosen to use a format which is familiar to park staff and which mimics that used for natural resource management plans. Cultural resources can thus be monitored by local, rather than regional staff; we anticipate the quality of work and level of cooperation will be high. Finally, the cultural resource management plan for Pukaskwa will act as a "test case". If the format is suitable, it will be adapted for archaeological resource evaluations scheduled for the other three national parks in Ontario.

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ARCH NOTES is published with the assistance of the Ontario Government through the Ministry of Citizenship and Culture

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