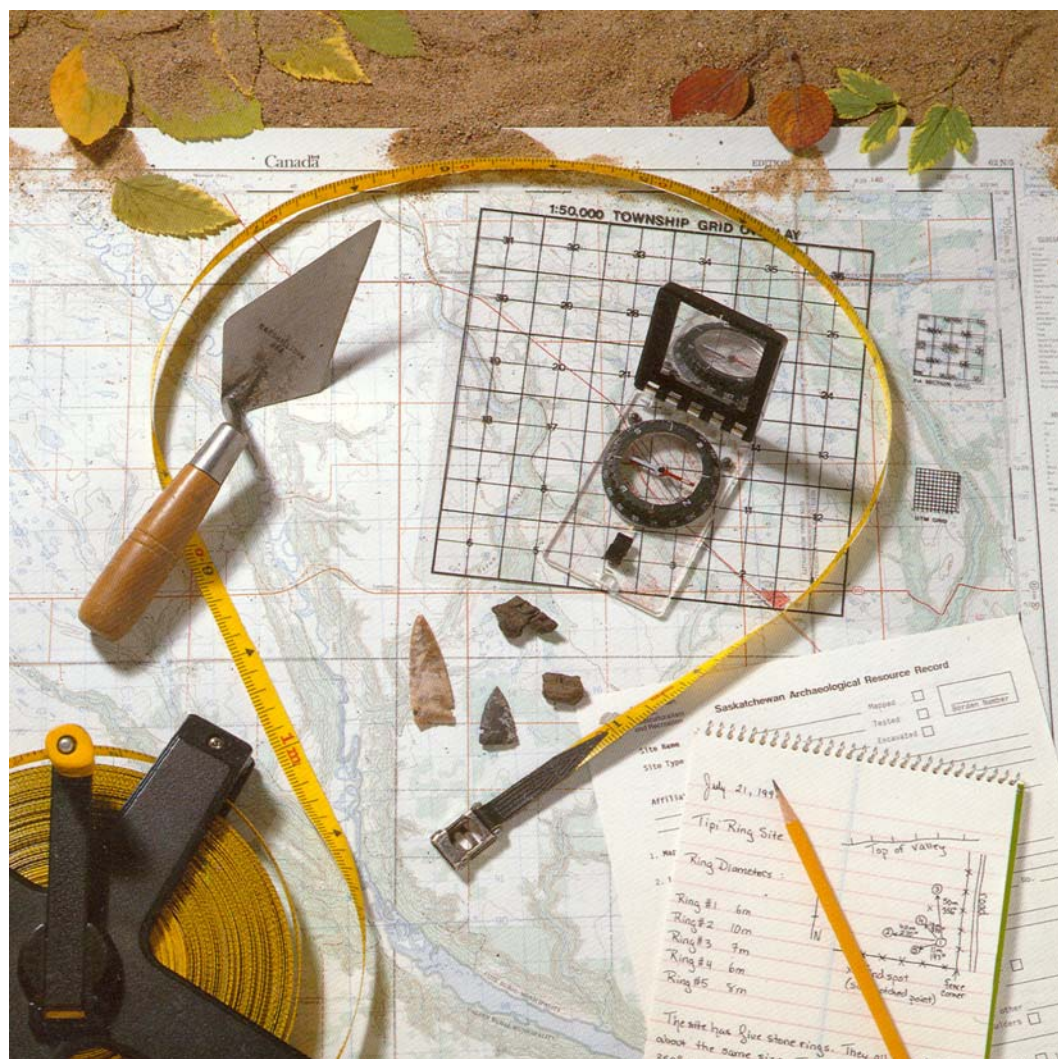




Ministry of  
Tourism, Parks,  
Culture and Sport

Heritage Resources Branch  
Archaeological Resource Management

# AVOCATIONAL ARCHAEOLOGY Field Manual





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2<sup>nd</sup> Edition (revised)  
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## Preface

The *Avocational Archaeology Field Manual* is designed to assist individuals interested in recording the past using conventional archaeological methods, but who are not professionally trained. The manual will enable avocational archaeologists to effectively contribute to the accumulation and preservation of information in a manner that is both personally rewarding and technically correct.

The manual provides step-by-step instruction in carrying out various activities including using maps, site survey and recording, detailed site and feature mapping, artifact recording and cataloguing, artifact storage, and basic field work reporting. Adherence to these basic methods and procedures will ensure the field work performed by avocationalists is of the highest quality and of maximum use to others for research or resource management purposes.

The manual has been organized and presented to be useful to most avocational archaeologists. However, some individuals may wish to undertake complex studies not covered in the manual, while others may require further elaboration or explanation on the procedures discussed.

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## Glossary of Terms

<b>Artifact Catalogue:</b>	A systematic record of collected archaeological materials providing description and provenience information.
<b>Baseline:</b>	A line (usually marked with stakes) which serves as a main reference for site mapping and/or artifact collecting.
<b>Bearing-distance Plot:</b>	A method of recording artifact provenience expressed as the distance and compass bearing from a reference point (datum) to the artifact.
<b>Bio-physical:</b>	Refers to the combined biological and geographical character of the landscape, including vegetation, animal life, landforms, topography, and so on.
<b>Borden System:</b>	System of designating archaeological sites in Canada; utilizes a code of four letters and a number (e.g. EfNg-1) to denote individual sites.
<b>Diagnostic Artifact:</b>	An artifact that can be related to a specific cultural complex and/or time period on the basis of its form or style.
<b>Easting:</b>	Part of a UTM co-ordinate. Literally describes the numbers of meters east a place is from a particular UTM datum point. Used in determining site locations
<b>Hypotenuse:</b>	In a right angle triangle, the side opposite the right angle.
<b>Judgmental Sampling:</b>	Selecting a sample on the basis of previous experience and knowledge.
<b>Legal Description:</b>	Land location expressed in terms of the Dominion Land Survey System (e.g. southwest quarter of Section 1, Township 6, Range 20, West of 3rd. Meridian).
<b>LSD:</b>	Legal Subdivision; 1/4 of a quarter-section or 1/16 of a Section.

<b>Magnetic North:</b>	The compass bearing oriented toward the magnetic north pole, located slightly east of true north.
<b>Northing:</b>	Part of a UTM co-ordinate. Literally describes the numbers of meters north a place is from a particular UTM datum point. Used in determining a site location
<b>NTS Maps:</b>	National Topographic System maps published by the Department of Energy, Mines and Resources.
<b>Probabilistic Sampling:</b>	Selecting a sample randomly. Prevents bias and allows statistical inferences to be drawn from the resulting data.
<b>Point Provenience:</b>	The location of an artifact expressed as a specific point, either as a bearing- distance plot (e.g. 10.5 m from primary datum at 320 degrees), or in relation to a baseline and grid (e.g. 5 m north and 4.5 m east of 0N/0E).
<b>Provenience:</b>	The vertical and horizontal position of an object.
<b>Random Walk:</b>	A survey transect with no predetermined pattern.
<b>Sample:</b>	A portion of the total data. When it is not practical to conduct a 100 per cent survey or collection, a <b>sample</b> is obtained. A sample can be either <b>judgmental</b> or <b>probabilistic</b> .
<b>SARR:</b>	Saskatchewan Archaeological Resource Record; a standardized form on which to record site information.
<b>Sighting Compass:</b>	A compass equipped with a device similar to a gun sight for greater accuracy in measuring bearings.
<b>Site Datum:</b>	The fixed reference point from which measurements are taken for site mapping and recording purposes. The first or main datum is the <b>primary datum</b> . On large sites additional or <b>secondary datum</b> points are sometimes required.

<b>3-4-5 Method:</b>	A technique to accurately set up the right-angled corners of a grid; based on the Pythagorean Theorem that states that in a right angle triangle the square of the hypotenuse equals the sum of the squares of the other two sides (i.e. $5^2 = 3^2 + 4^2$ ; or $25 = 9 + 16$ ).
<b>Tipi Quik:</b>	A method for time efficient mapping of stone features using a mapping board and tape measure.
<b>True North:</b>	Geographic north; the bearing oriented toward the Earth's north pole.
<b>UTM Grid:</b>	Universal Transverse Mercator grid; system of geographical co-ordinates devised by the military to specify locations to within 100 metres accuracy. Appears on 1:50,000 scale NTS maps as a series of blue-outlined squares measuring 2 cm (or 1 km) per side.



## 1.0 INTRODUCTION

Archaeological sites are a physical record of Saskatchewan's cultural history and development from the initial arrival of native people to early Euro-Canadian settlement. The record is a story of cultural change and of human adaptation and achievement spanning over 10,000 years. Only through proper documentation and study can Saskatchewan's archaeological heritage be fully understood and appreciated.

Archaeological sites are fragile, non-renewable resources that are continually being reduced in number. They are especially vulnerable to damage or destruction from land development, natural erosion, vandalism, and improper or uncontrolled data recovery.

*The Heritage Property Act* became law in 1980 to conserve and protect Saskatchewan's diminishing archaeological resources. Under the Act, permits are required in order to carry out archaeological site surveys, surface collections, or excavations. Permits ensure that all users of archaeological sites are competent in the activity they plan to undertake, employ appropriate data recovery methods, record and report the results of their work for the benefit and use of others, and provide for the suitable storage of (and access to) the information and objects recovered.

The ***Avocational Archaeology Field Manual*** is designed as a guide for those working under a (Type B) Avocational Archaeological Research Permit. The manual provides step-by-step instruction in using topographic maps and Township photomaps (Section 2), and in carrying out various field and laboratory activities, including: site survey (Section 3), site recording and feature mapping (Section 4), artifact mapping and collecting (Section 5), and artifact cataloguing and storage (Section 6). It does not address archaeological site excavation, however, as this procedure is not normally conducted under a Type B permit. The Glossary (p. vii) will help readers further understand the more technical terms used in the manual.

Finally, procedures for completing Avocational Archaeological Permit Application and Report forms are outlined in Section 7. These forms have been specially designed to reflect the various field and laboratory methods presented in the manual. Their use will streamline the (Type B) permit application process and simplify avocational reporting.

For many avocational archaeologists, the basic procedures contained in this manual will seem complicated at first, but, with practice, they will be easier to use. Their correct and consistent use will ensure that avocational studies make the best possible contribution to archaeological knowledge.

## **2.0 PREPARING FOR ARCHAEOLOGICAL FIELD WORK**

### **2.1 Maps**

Familiarity with National Topographic System (NTS) maps and Township photomaps is essential in archaeological field work, especially site survey and recording. These maps are needed to identify and document survey areas and to record site locations accurately.

#### **NTS Maps**

NTS maps come in various scales such as 1:500,000, 1:250,000, and 1:50,000. The best maps to use are those at the 1:50,000 scale, where 1 cm on the map equals 50,000 cm (or 500 m) on the ground. This scale of map is used by ARMS for plotting recorded sites and surveyed areas. The province is divided into approximately 700 map sheets at the 1:50,000 scale.

#### **Township Photomaps**

Township airphoto maps are available at 1:20,000 scale (1 cm = 200 m). These maps offer good land surface detail (e.g. edges of cultivated fields, farm access roads and trails, small sloughs, etc.), and allow very accurate pin-pointing of site locations. Also, because Section numbers are printed on the photomaps, legal descriptions (see Section 2.3) can be easily recorded.

NTS maps and township photomaps are maintained by the Saskatchewan Property Management Corporation, and may be ordered from:

Geomatics Distribution Centre  
1301 1st Avenue  
Regina, SK  
S4R 8H2  
E-mail: [saskmaps@isc.ca](mailto:saskmaps@isc.ca)  
Tel: (306) 787-2799  
Fax: (306) 787-3335  
Toll Free: 1-866-420-6577

The Geomatics Distribution Centre can also provide an Index Map of Saskatchewan showing the NTS numbering system, and a price list with further instructions on how to place an order.



## **2.2 *Recording UTM Grid Co-ordinates***

The Universal Transverse Mercator (UTM) grid can be used to describe very specific locations on an NTS map. Based on a datum point. The datum is a reference point on the earth that the co-ordinate system refers to when a location on the earth is calculated. The datum that is used will depend on the map on to which the sites will be plotted. Maps printed prior 1983 will use North American Datum 1927 or NAD 27. Maps printed more recently often use North American Datum 1983 or NAD83. The datum that a map is using can be found in the information printed in the bottom centre of the map. Plotting NAD 83 co-ordinates on a NAD 27 map will typically mean that the co-ordinate will be off by 200 metres or more in the northing, and a smaller amount in the easting. To avoid this confusion, it is best to set up the GPS ahead of time to match the co-ordinate system and datum of the map you are using.

There are two ways of recording UTM coordinates – a shorthand version (also known as the "military grid") and a complete coordinate version (also known as "civilian grid"). The military grid uses the grid zone designation, a square identifier and a six digit number. This grid system is accurate in pin-pointing locations to within 100 metres, and has in the past routinely used for archaeological site recording.

With the advent of the Global Positioning System (GPS), many have stopped using the short hand system, preferring to use the full coordinates to mark a site, which gives a position to the meter. Civilian grid coordinates will use numbers only. The co-ordinate will have a Zone (e.g. 13U), and Easting (e.g. 554623, must be six digits) and a Northing (e.g. 5647324, must be seven digits) -- literally giving the meters north and east a site is of an arbitrary datum point.

While both systems are currently used, most sites are reported with civilian grid coordinates. However sites may be submitted using either system. The military grid method is described in Section 2.2.1 and civilian grid recording is described in Section 2.3 with GPS instructions..

### **2.2.1 *Recording UTM's With the Military Grid***

The method of determining the UTM co-ordinate is described on the right hand side of the NTS mapsheet. Look for a blue rectangular box divided in two. The left box shows the Grid Zone Designation for that particular mapsheet. In the example in Figure 1, the Grid Zone Designation is 13U.

Grid Zone Designation	100 000 m Square Identification			
13U	<table border="1"> <tr> <td>DG</td><td rowspan="2">56</td></tr> <tr> <td>DF</td></tr> </table>	DG	56	DF
DG	56			
DF				

**Figure 1:UTM Grid Zone Designation and 100,000 m Square Identification**

The right half contains the 100,000 m Square Identification. In Figure 1, two sets of identification letters are shown: **DG** and **DF**. This means the mapsheet contains portions of two 100,000 metre-square identification zones. The identification letters appear on the NTS map in large blue typeface and are separated by a heavy blue line, marked **00**. In this example, the blue line is horizontal, and is labeled 56**00** on both the left and right map margins. On some maps the blue zone boundary will be vertical. Occasionally, where four 100,000 metre-square zones meet, the map will specify four sets of zone identification letters, separated by a vertical and a horizontal boundary line. If the map falls entirely within a 100,000 metre-square zone, only one set of identification letters will be specified. To determine which zone identification letters to use in your UTM co-ordinate, locate your position on the map in relation to the blue lines.

The remaining six numbers (actually two sets of three numbers each) are the horizontal UTM grid co-ordinate (or **EASTING**) and the vertical grid co-ordinate (or **NORTHING**). These numbers are used to pinpoint the location of a site. The UTM grid usually appears on NTS mapsheets as a series of thin blue lines running north/south (although not true north) and east/west. These lines are clearly numbered along the map margins (e.g. Figure 2). Note the numbering is from west to east (left to right) and south to north (bottom to top). Each UTM grid square represents one square kilometre. Each square kilometre can be further divided into ten 100-metre lengths (Figure 2), although these markings do not appear on the NTS map. However, tools can be bought for measuring these units.

Using the example in Figure 2 (where "\*" is an archaeological site or a person's position) the UTM grid co-ordinates are calculated as follows:

1. Locate the site or position on the map.
2. Locate the (blue) UTM grid square that surrounds the site or position, and find the number of the grid line immediately west (or left) of this location (i.e. 60).

## Preparing for Archaeological Field Work

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3. Determine the number of tenths (or 100 metre lengths) that the site is east (or to the right) of grid line 60 by using a UTM GRID template or by approximating. In this example, the number of tenths is observed to be four. The Easting co-ordinate is recorded as **604**.
4. Repeat this procedure to identify the Northing co-ordinate. Find the number of the UTM grid line immediately south (or below) the site (i.e. 16).
5. Determine the number of tenths (or 100 metre lengths) that the site is north of (or above) grid line 16 by using a UTM GRID template or by approximating. In this example, the number of tenths is observed to be nine. The Northing co-ordinate is recorded as **169**.
6. The complete UTM grid co-ordinate for this position is recorded as:

**13U DG 604 169**

**Remember: Always calculate the EASTING co-ordinate (from west to east) first, then the NORTHING co-ordinate (from south to north).**

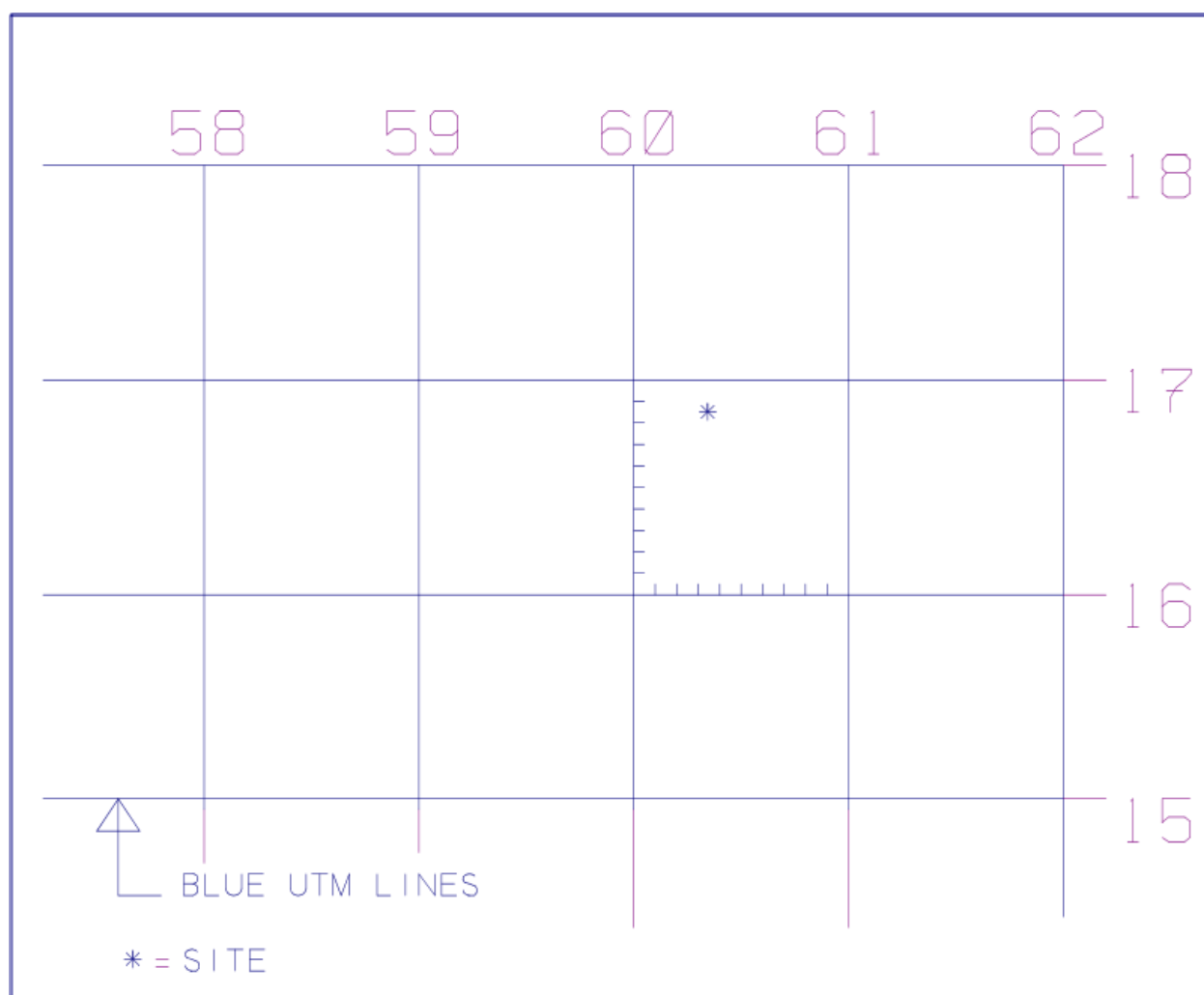


Figure 2: Determining UTM Easting/Northing Grid Co-ordinates

### 2.3 Using a Global Positioning System Unit to Record UTM's

Global Positioning System (GPS) is a navigation system developed by the United States Military. A GPS receiver works by using signals from a minimum of three satellites to calculate a location on the earth. Because the ability to calculate such precise locational information was initially considered to a security issue by the US military, they degraded the signals that could be used by civilians so that a position could only be calculated to within + or – 100 metres of its actual location. The practice of degrading the signal is known as “selective availability” or SA. In 2000, SA was turned off, and has never been re-activated. As a consequence, most hand held GPSs are capable of calculating a position with an error close to + or – 15 metres.

### **2.3.1 Wide Area Augmentation System (WAAS)**

There are some hand-held GPS receivers now available that come with WAAS capability (examples include the Garmin etrex Legend and Vista receivers). This system, developed by the United States Federal Aviation Administration (FAA), uses ground based receiving stations and satellites to correct errors within the GPS signal. Using this system, the locational error can be less than 3 metres. However, the closest base station to Saskatchewan is currently located in Montana. Because locational accuracy will decrease with distance from a base station, WAAS receivers will be most accurate in southern Saskatchewan, and may not work properly in areas of northern Saskatchewan. Currently there are plans to add WAAS base stations within Canada, so WAAS may become more widely available in the future.

### **2.3.2 Using GPS to record the location of a site**

Before using GPS to map a site, the GPS receiver needs to be set up to record locations using the correct co-ordinate system, and the correct datum. Recording sites using civilian grid Universal Transverse Mercator (UTM) co-ordinates is generally the most simple because these co-ordinates can be plotted directly on to NTS 1:50 000 topographic maps. For a discussion on how to plot sites on a map, see Section 2.2

GPS receivers are often set up initially to record locations using Latitude and Longitude, using a datum of WGS 84. If locations are recorded in one type of co-ordinate system or datum, they can be converted to another simply by changing the set-up of the GPS, or by using specialized software.

To match UTM coordinates from a GPS receiver to a topographic map, refer to the corners of the map where the complete co-ordinates are given for lines on the grid instead of the abbreviated 1000 metre grid reference. For example, starting at the lower right-hand corner of the map, a value of 5765000 N. could be given for the first blue UTM grid line moving north over the map. The next line would be labeled 66, which in civilian grid would mean a Northing of 5766000, and so on.

It is necessary to pay attention to the UTM Zone of the map you are using. Western Saskatchewan is in Zone 12 (from about Rosetown west), most of the rest of Saskatchewan is in Zone 13, but the very eastern edge of the province is in Zone 14 (from about Wapella east). A GPS will usually provide co-ordinates in the correct zone automatically.

To begin recording sites using a GPS receiver, turn on the receiver and leave it in a place open to the sky for five to ten minutes. This is especially important for older receivers, and it allows the receiver to find satellites in the sky

and begin calculating a position. Once the GPS indicates that it is able to calculate a position, and you have checked that it is set up using the correct co-ordinate system and datum, proceed to the place where you want to record a location. To record the location of a site, it is best to locate the most prominent feature of the site and record what co-ordinates the GPS provides at that location. Virtually all GPS receivers have the ability to “mark” or store locations (often called waypoints or landmarks) in its memory, and this function can be used to record the locations of several sites or features. With the correct cables and software, these waypoints can be downloaded to computer, and can be valuable in creating site maps.

Certain conditions can interfere with GPS signals, and reduce positional accuracy. Trees, buildings, hills or other obstructions can obscure the receiver’s “view” of the sky, meaning that some satellites become unavailable and the calculations for the locations provided by the GPS may become skewed. Atmospheric conditions can also affect GPS signals however these are less a factor in terms of locational error. The error within a GPS location will most likely be different during different times of the day. This is due to the changing configurations of satellites overhead that the GPS receiver is using to calculate positions. Potential sources of error should be kept in mind when recording locations with a GPS.

### **2.3.3 Recording site features using GPS**

Without WAAS, most GPS receivers have an error of + or – 15 metres. This would normally make recording site features that are closer together impossible, however the relative error of GPS locations, that is the error between two points recorded using the GPS, tends to be less when the points are recorded during a similar time period. The reason for this is that the error sources for the two locations recorded close together in time tend to have the same sources of error, and so while both points may be off by 15 meters, relative to each other the error may be significantly less. This is related to the fact that the sources for GPS error change over time (see above). Using a WAAS system, we might expect that the error for the locations of different features recorded using GPS would be significantly less.

GPS can be used to record site feature locations can be used to create a map that would not be as accurate as using a transit or total station, but would be comparable to a map generated using a compass and tape. The advantage is that the GPS can be used to rapidly record a large number of features with relatively little set up.

An example of this type of mapping might be to record a site with numerous tipi rings, cairns, and scatters of artifacts.

- Once the GPS is ready to record locations, proceed to the first feature and either note the location in a notebook, or “mark” the location using

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the GPS (create a waypoint for this location) and note in a notebook what the corresponding waypoint number is.

- Along with the position or waypoint number, note the relevant information about the feature (for tipi rings, diameter and number of stones, for cairns the diameter or length and width along with the direction the cairn is oriented). It is helpful to have one person recording using the GPS and one counting and doing measurements.
- Proceed to record all the features in the area in relatively quick succession, without doubling back if possible, ensure that the relative error between positions will be as low as possible. Recording different parts of a site at different times or on different days may give mixed results.
- Features that are less than a few meters apart should be indicated by marking one feature and giving the angle and distance of the nearby feature.
- Individual artifacts in a dense artifact scatter would not be suitable for mapping in this way. In this case, mark locations indicating the perimeter of the artifact scatter and/or areas of artifact concentrations, and describe the numbers of artifacts within the area and their characteristics.
- It can be useful to mark other landscape features, like drainages, shorelines, breaks in the landscape like valley margins, fence lines, clumps of trees etc. in order to incorporate these elements into a site map.

At the end of the day, you may have a large number of locations and associated feature descriptions. It may be possible to download this data to a computer program, and print a map of the locations you have collected. Alternately, it would be possible to plot locations on a piece of graph paper. A map of the locations you have recorded can be used to create a site map for the site you have recorded, often with great detail. It is at this point that we should remember that collecting GPS locations or waypoints is not an excuse to neglect to draw a site sketch when mapping a site. To create a proper site map, a combination of your site sketch and the plot of your GPS recorded locations works best. What often works well is to sketch landscape features, roads, etc. directly on to your plot of GPS waypoints, using your site sketch to help you place these features on your map.

There are two grids on the NTS map, the "military grid" and the "civilian grid". The "military grid" uses the 100 000 m Square Identification and is explained in the previous section. The "civilian grid" does not use the 100 000 m Square Identification but instead assigns leading digits in front of the actual UTM coordinates. The leading digit on the Easting refers to the central meridian for each zone and the leading digits on the Northing refer to how far North the specific coordinate is from the equator. Since Canada's most Southerly point is 4 620 000 metres North of the equator, there will be no Northing point lower than this number in Canada. An example of this is found on Figure 4 in the top right hand corner of the map sheet. Leading digits are often distinguished by being in a smaller font size than the rest of the number. When reading UTM

coordinates off a GPS unit remember that it displays the "civilian grid" and not the "military grid" and therefore leading digits will be present. For example, the UTM coordinates with leading digits for the archaeological site in Figure 4 (marked with the triangle) is recorded as:

13U E460520 N5616850

ARMS accepts coordinates in either military or civilian grids as well as NAD 27 or NAD 83.

## **2.4 Recording Legal Descriptions**

A **legal description** refers to an area of land rather than a specific point. It may be used both to describe a survey area, and (in conjunction with UTM grid co-ordinates) to describe the location of a specific site.

Legal descriptions are based on the legal survey system used by government and land surveyors to designate parcels of land. A legal description consists of a series of progressively larger land units, beginning with a quarter of a quarter-section (commonly referred to as a legal subdivision or **LSD**), followed by a quarter-section, section, township, range, and relation to a numbered meridian.

Most of Western Canada is divided into blocks that are six miles on a side (covering 36 square miles). Each 36-square-mile block has both a Township and a Range number. **Townships** are numbered sequentially from south to north beginning at the U.S. border. **Ranges** are numbered from east to west from major longitudinal meridians.

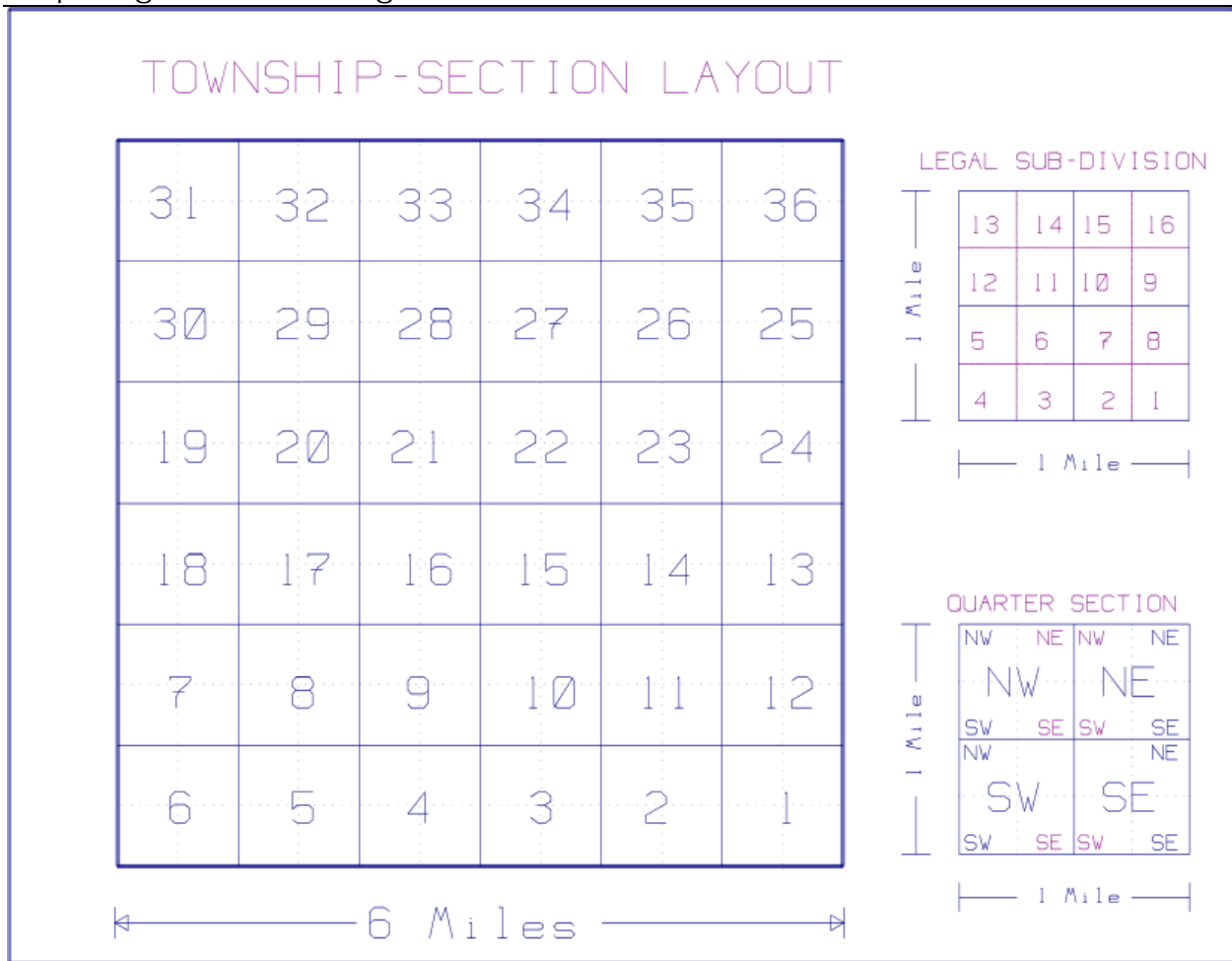
Every Township/Range is further divided into 36 "**Sections**" (one square mile each) that are numbered as shown in Figure 3. In turn, each Section is divided into 16 LSDs numbered in the same manner as sections within a Township/Range. Using this system, an area might be described as:

**LSD 10, Section 5, Twp. 12, Rge. 4, West of 3rd Meridian**

Sections may also be divided into "quarter-sections" and "quarter of quarter-sections". Using this approach, the same area would be described as the:

**SW 1/4 of NE 1/4, Section 5, Twp. 12, Rge. 4, W3rdM**





**Figure 3: Legal Subdivision (LSD) and Section Numbering**

Each Township photomap represents a single Township/Range. Determining the legal description from a Township photomap is simplified by the fact that the Township/Range numbers and meridian are recorded along the top map margin, and the sections are individually numbered (in the approximate centre of each). However, quarter-sections and quarter of quarter-sections (or LSDs) are not shown. Occasionally, the quarter-section lines may be determined from the edges of cultivated fields or from roads, although these indicators may not always be accurate.

Legal descriptions can also be determined from NTS maps. The legal survey (grid) system appears on NTS maps as a series of grey lines. Thick grey lines denote Townships/Ranges. Ranges are numbered on the top and bottom margins of the mapsheet (e.g. R4) while Townships are numbered along the right and left-hand margins (e.g. T12). Thin grey lines mark Sections which are not numbered on the maps. In Saskatchewan, roads are commonly built along Section lines. Consequently, Section lines often appear as solid or broken orange or black lines indicating different road grades. Smaller parcels are not shown on the NTS map.

Using the example in Figure 4 (where "▲" marks the survey or site area on a 1:50,000 scale NTS map) determine the legal description as follows:

1. Locate the site or survey area on the map.
2. Locate the (thick grey) Township/Range grid lines and the (thin grey) Section lines immediately surrounding the site area.
3. Find and record the Township number along the left or right map margin (i.e. 20).
4. Find and record the Range number along the top or bottom map margin (i.e. 26).
5. Determine whether the map sheet area is west of the first, second or third meridian. This information (i.e. W2ndM) is found below the map title, centered on the bottom map margin (not shown in Figure 4).
6. Using a **Township Grid Overlay** (Appendix I) or template (with numbered Section and Quarter-Section lines), or by counting in the appropriate sequence (as shown in Figure 3), find and record the Section number or numbers (i.e. 21).
7. If the survey or site area is a Quarter-Section or smaller, determine and record the Quarter-Section and the Quarter of a Quarter-Section. This is most accurately accomplished by using the Township Grid Overlay or other convenient template. In this example, the archaeological site is located in the SW quarter of the SW Quarter-Section.
8. The complete legal description for this example may be recorded as:

**SW 1/4 of SW 1/4 Sec. 21, Twp. 20, Rg. 26, W2M**

or

**LSD 4, Sec. 21, Twp. 20, Rg. 26, W2M**

## ***2.5 Recording Geographic Co-ordinates***

Geographic co-ordinates are a means of describing specific point locations from an NTS map sheet according to the degrees (°), minutes (') and seconds (") of latitude and longitude. They are most often used, in conjunction with UTM grid co-ordinates, when recording site locations in northern Saskatchewan, where the legal survey system is usually absent from NTS maps. It is not necessary to determine the geographic co-

ordinates for a site if you are able to provide both a UTM and a Legal Description.

Each degree of latitude or longitude is composed of 60 minutes, and each minute has 60 seconds. The degrees and minutes (alternating black and white bars) are marked along the margins of the map. Latitude, which increases from south to north, is noted on the left and right map margins, while longitude, which increases from east to west, is marked along the top and bottom margins. The number of seconds in a minute are too small to be individually marked, but can be easily estimated.

The geographic co-ordinates for a point on the land surface can be determined by drawing a straight horizontal line to the nearest vertical map margin and a straight vertical line to the nearest horizontal map margin. The latitude and longitude co-ordinates are determined where the line intersects the vertical and horizontal map borders, respectively. For example, the geographic co-ordinates for the archaeological site in Figure 4 (marked "▲") is recorded as:

**50° 42' 15" N. Latitude by 105° 33' 40" W. Longitude.**

Latitude and longitude are rarely used in Archaeology anymore due to the widespread use of Global Positioning Systems (GPS). Geographical co-ordinates in latitude and longitude may be submitted on the SARR form but is no longer a necessary component.

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### 3.0 ARCHAEOLOGICAL SITE SURVEY

Archaeological site survey refers to the actual inspection of land, normally on-foot, to locate and record archaeological sites. Field survey is the only reliable means of developing and improving the provincial site inventory. The survey results, whether or not sites are found, contribute to research and resource management. Knowing where sites are absent is as important as knowing where they are present. When preparing for site survey, consider the following:

1. What are the study objectives? What is to be accomplished by completing the site survey?
2. What are likely to be the most effective methods for achieving these objectives? This may depend on a number of factors, including the topography and size of the survey area, and the number of people participating.
3. What equipment will be needed to carry out the survey (e.g. maps, tools, etc.)?
4. Has permission to enter the survey area been obtained from private land owners, tenants, and/or government agencies?

#### 3.1 *Materials and Equipment*

Appropriate NTS 1:50,000 scale maps or township photomaps (preferably both) are essential for archaeological survey. The maps should be carried in the field to plot survey areas accurately, and to record site locations.

Additional survey equipment should include a clipboard and a notebook for recording field observations (e.g. on survey conditions, landowners, survey design, archaeological finds, etc.). A camera can be used to photo-document the survey area and any newly discovered sites.

#### 3.2 *Survey Design and Methods*

When it is not possible to survey entire areas or achieve 100 per cent coverage, one of two common sampling designs, or some combination of the two, is used to determine which area(s) to examine. These designs are judgmental and probabilistic.

**Judgmental sampling** involves using opinion or judgment based on previous experience in choosing areas for survey. In this approach, various factors which may have influenced the selection of site locations in the past should be considered (e.g. local topography; proximity to water, wood fuel or other

resources; wildlife habitat; shelter; vantage points; etc.). Other types of criteria, however, such as ease of access, the availability of surface exposure (e.g. blow-outs), or previous discoveries nearby, can also be considered in a judgmental survey.

**Probabilistic sampling** permits the selection of survey areas without bias from personal opinion or other factors. The sample is obtained by dividing the total survey area into numbered grid units of equal size, or into numbered linear transects that are equally spaced. The areas to be surveyed can then be determined by randomly selecting the appropriate number of grid units or transects to achieve the desired coverage (e.g. 10 per cent, 25 per cent, 50 per cent, etc.). To ensure the selection is truly random, refer to a table of random numbers (Appendix II) or write the unit numbers on slips of paper and draw lots.

Selecting an appropriate archaeological survey method is the next step. The most suitable approach is usually best determined after having considered the size, bio-physical character, and site potential of the survey area, as well as the number of surveyors involved. While it is possible to survey an area on the basis of a random walk, conventional methods involve walking regularly spaced transects, usually 5 m to 25 m apart. The transect pattern often depends on the type of terrain being covered, as shown below.

### **3.2.1 Surveying in Cultivated or Relatively Featureless Terrain**

The preferred method for covering this type of terrain is to walk in parallel transects no more than 50 metres apart (Figure 5). The transect interval chosen will determine the accuracy of coverage; the closer together everyone is, the better the coverage. Choose a reference point in the distance to help keep the transects straight. A compass can also be used for this purpose. The surveyor with the compass orients to a specific direction and acts as a guide for the others in the party. Once the end of the transect is reached, all surveyors reposition themselves along new, unsurveyed transects. Continue this procedure until all the transects have been completed.

### **3.2.2 Surveying in Slough or Small Lake Margins**

Determine the size of the area around the slough or small lake to be surveyed. Survey regularly spaced transects that radiate out from the shoreline. A zig-zag pattern around the waterbody (Figure 6) may also achieve adequate coverage. In either case, ensure that terraces, high areas, and other prominent natural features are closely inspected.

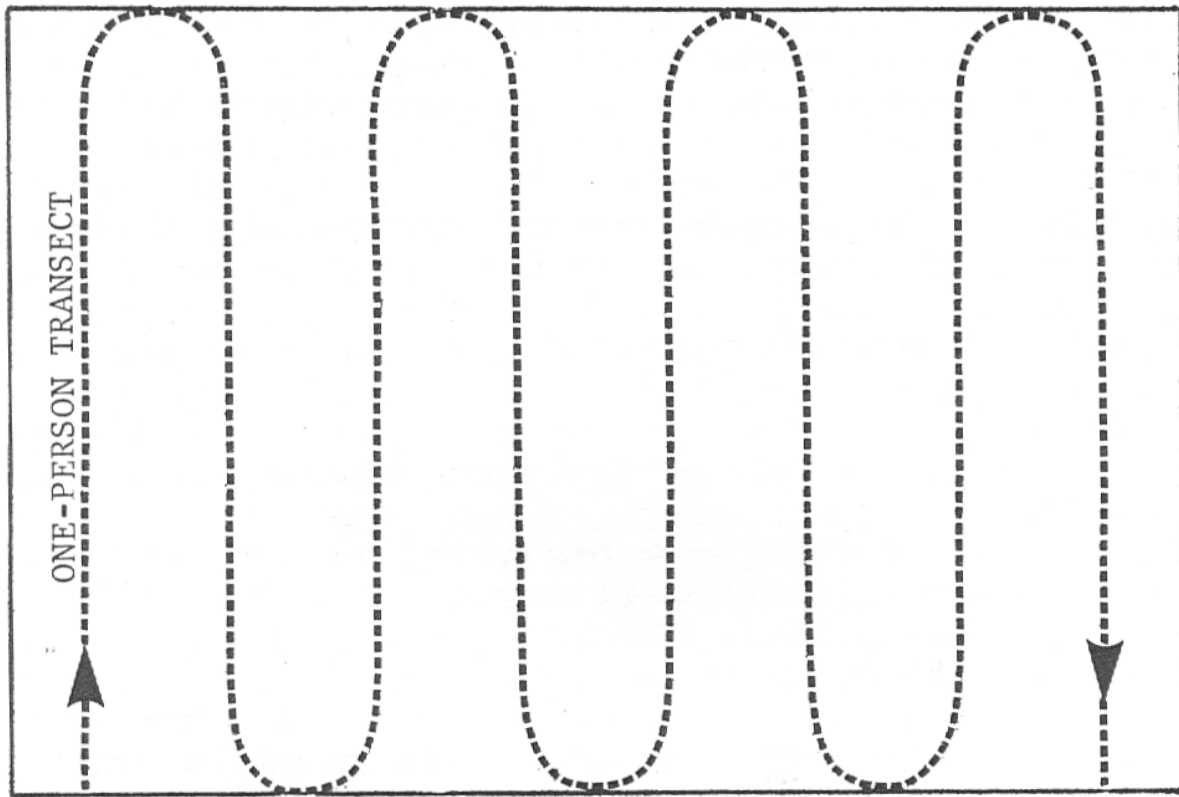


Figure 5: Surveying Featureless or Cultivated Terrain

### 3.2.3 Surveying along Stream or River Margins

Watercourses may also be surveyed by walking regularly spaced transects parallel to the stream banks, or in zig-zag patterns (Figure 7). Occasionally, transects placed perpendicular to the watercourse may be employed. In either case, ensure that eroding stream banks, floodplains, terraces, and other prominent features are examined.

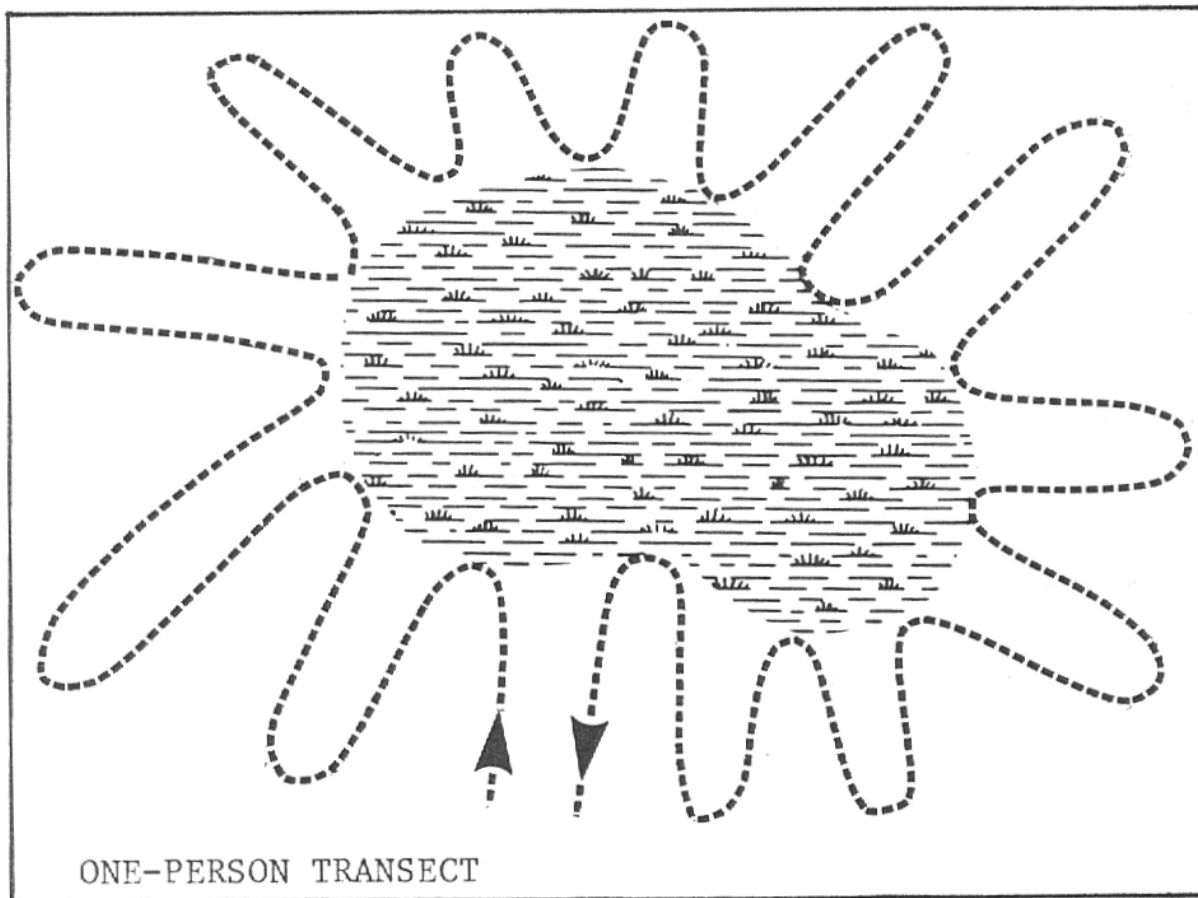


Figure 6: Surveying Slough and Small Lake Margins

### 3.2.4 Surveying in Coulees

While parallel transects or zig-zag patterns can again be used, an irregular transect may be more suitable (Figure 8). Pay particular attention to the upper coulee margins and coulee bottoms. Also examine the sides of coulees if the slope is not too severe.



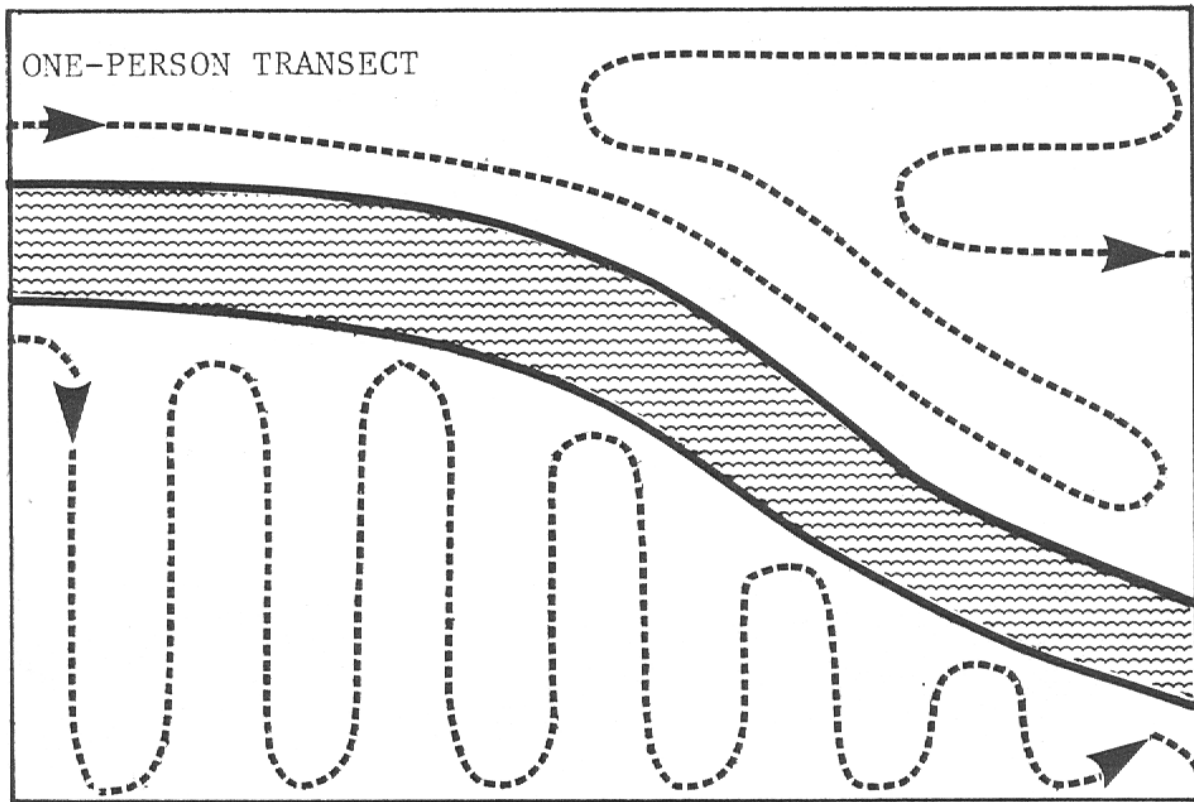


Figure 7: Surveying Stream and River Margins

### 3.2.5 Surveying Blowouts

Wind-eroded surfaces (or blowouts) are usually best surveyed using regularly spaced, parallel transects (Figure 9).

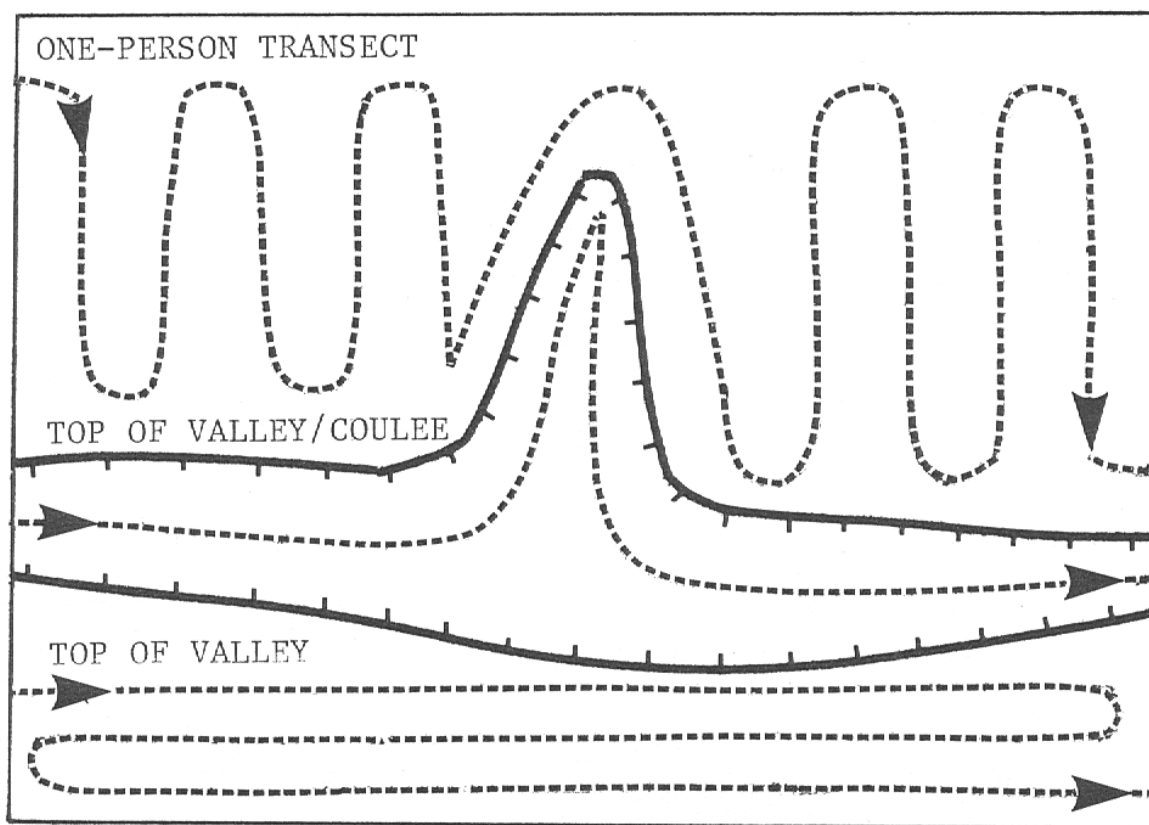


Figure 8: Surveying Coulees

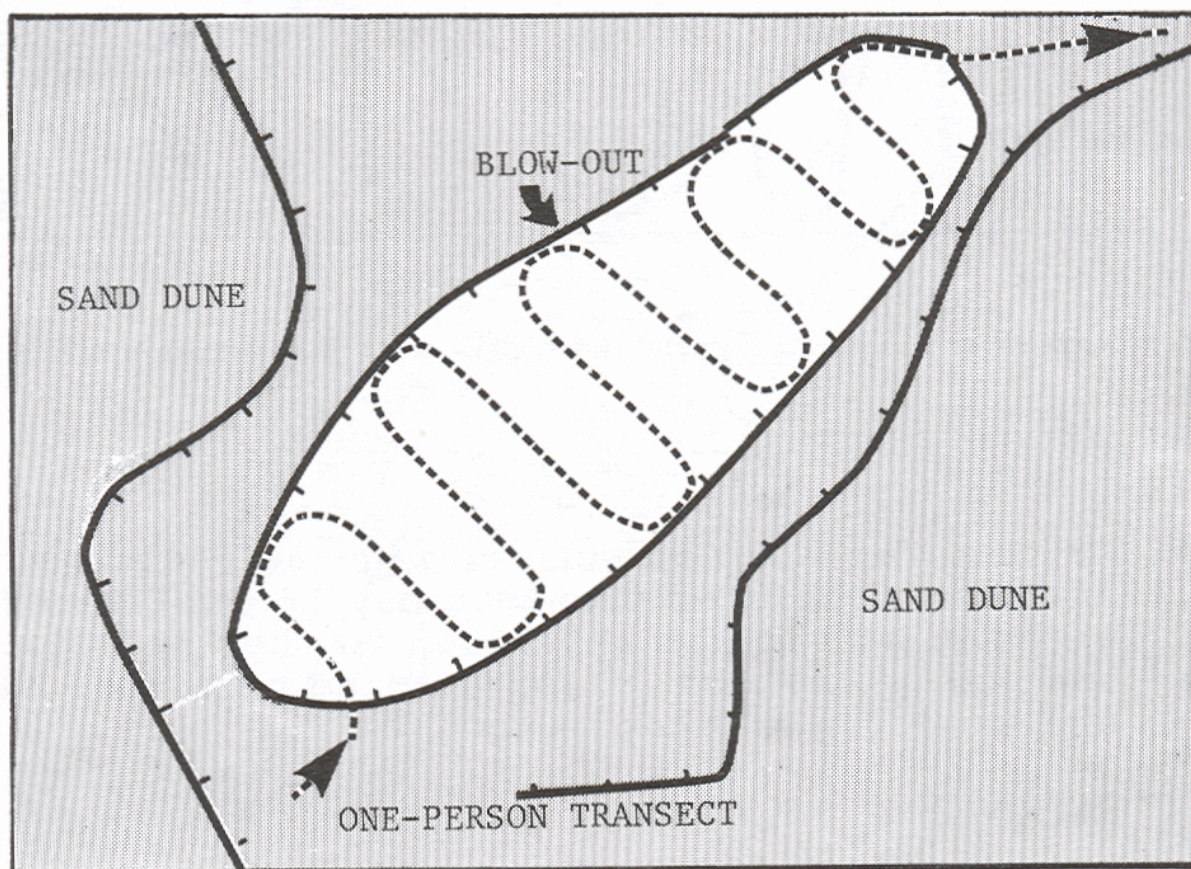


Figure 9: Surveying Blowouts

## **4.0 SITE RECORDING AND MAPPING**

### **4.1 *Site Recording***

Once a site is found, its location, structure, contents, and condition must be recorded. These and other data are vital for proper resource management and research. The Saskatchewan Archaeological Resource Record (SARR) is the standard form for recording this information. Requirements and procedures for completing SARRs are detailed in the Guide to the Saskatchewan Archaeological Resource Record (available from ARMS or from the website).

#### **4.1.1 Materials and Equipment**

The materials and equipment recommended for site recording include: appropriate NTS 1:50,000 scale maps and/or township photomaps, a compass, a 30 or 50 metre measuring tape, some survey stakes and flagging tape, several SARR's, and the SARR Guide. A camera is also recommended.

#### **4.1.2 Using a Compass**

A compass is an instrument used to measure horizontal direction or "bearings". Archaeologists use a compass when more sophisticated instruments, such as a survey transit, are unavailable or impractical, and where great accuracy is not required. A compass is most often used for preliminary site mapping, for mapping surface features, or for laying out survey transects, baselines, and grids. All avocational field archaeologists should be familiar with its use.

Although there are several types of compasses, all have a ring, graduated in degrees, and a magnetic needle that turns on a pivot in the centre of the ring (Figure 10). The north end of the needle will point to the magnetic north pole, which is located slightly east of True North. A "compass bearing" is the angle, measured in degrees, between two imaginary lines extending from the centre of the compass: one towards magnetic north and the other towards the target. The bearing is read clockwise from magnetic north. Some compasses can be adjusted to give readings in degrees from True North. To avoid confusion use only magnetic bearings for site recording and reporting purposes. Also note that the magnetic needle can be affected by metal objects or electrical fields. Errors can result if the compass is held too near such things as vehicles, metal tools, power lines, or even electric watches.

## Archaeological Site Survey

For archaeological field work, a sighting compass is recommended. ARMS uses the **Silva Ranger, Type 15T**. This model has a graduated ring that can be turned, and a black "orienting arrow" which is outlined on the baseplate and moves in unison with the ring. There is also a flip-up cover with a v-shaped notch for more accurate sightings (Figure 10).

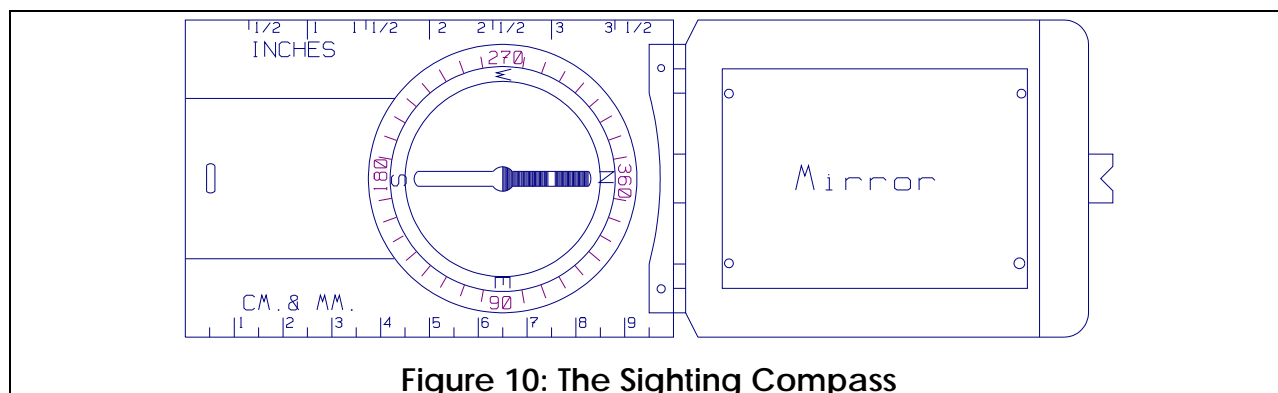


Figure 10: The Sighting Compass

To take a bearing, ensure the orienting arrow is aligned with the 360 degree mark on the graduated ring. If it is not, it can be adjusted with a small screw located on the ring. Next, hold the compass over your position, making sure it is level so the needle is able to swing freely. Hold the compass at eye level and sight through the notch to the target. While holding the compass body still, turn only the ring so the north end of the orienting arrow aligns with the north end of the magnetic needle. (There is a mirror on the inside of the cover to permit this to be done while holding the compass at eye level.) The bearing **from the compass to the target** is read from the ring where it aligns with the white index mark at the top of the compass (where the cover hinges). The reading at the index mark on the opposite side of the compass is the bearing **from the sighted target to the compass**.

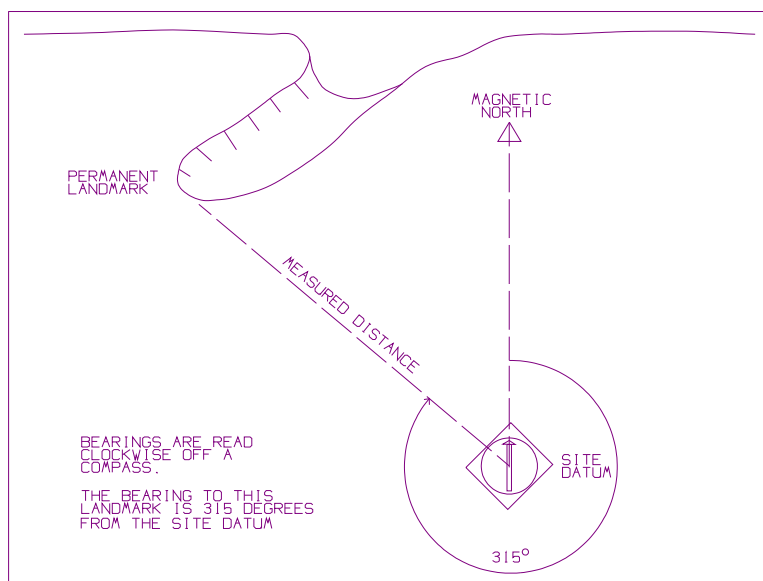
Taking accurate compass bearings and distance measurements in the field is extremely important. The instructions that come with a compass will further explain its use.

### 4.1.3 Recording Site Locations

After locating an archaeological site, plot its position as accurately as possible on the topographic and/or township photomap. Next, record the site area in relation to permanent and recognizable landmarks (e.g. the mouth of a coulee, the top of a hill, a large glacial erratic, a paved road at a known distance from a main intersection or town, the intersection of two roads, a legal survey marker, the intersection of two section lines, etc.). Wherever possible, avoid structures which are not permanent fixtures on the landscape.

Choose a spot in the estimated centre of the site and take a compass bearing from this point (the "site datum") to one or more landmarks, and measure the distance to each (Figure 11). A tape measure should be used, although pacing is also acceptable provided the length of the stride is recorded.

Fill in as much information on the SARR as possible (see Appendix III for the minimum data requirements). If photographs of the site are taken, ensure to record the photographer's position and direction of the view.



**Figure 11: Taking A Bearing With A Compass**

## **4.2 Site and Feature Mapping**

Site and feature maps can aid in the analysis, interpretation, and management of archaeological sites. Site maps provide a visual record of the arrangement of surface features and their relationship to the landscape. They are also extremely useful for determining the extent of impact from proposed land development, and for relocating the site in the future.

### **4.2.1 Materials and Equipment**

The equipment needed for site mapping will include a compass, a 30 or 50 metre tape measure, survey pins or stakes, flagging tape, note paper, and clipboard. Additional equipment, described in Section 4.2.3, is needed for feature mapping.

## 4.2.2 Site Mapping

A preliminary site map is a plan of the site area showing the spatial arrangement of cultural features, including any surface artifact concentrations, and the location of prominent topographic features such as hills, sloughs or valleys. Nearby roads, fences, and buildings should also be included. If an artifact collection grid (Section 4.0) has been established, draw its location or orientation on the map as well. The degree of map detail will depend on the nature and objectives of the archaeological project.

First, determine the site boundaries using one of the survey methods described in Section 3.2. Using the survey stakes, flag all observed surface features and artifact concentrations, usually in their centres. Record the compass bearing and distance **from** the "site datum" **to** each flag, noting the feature number.

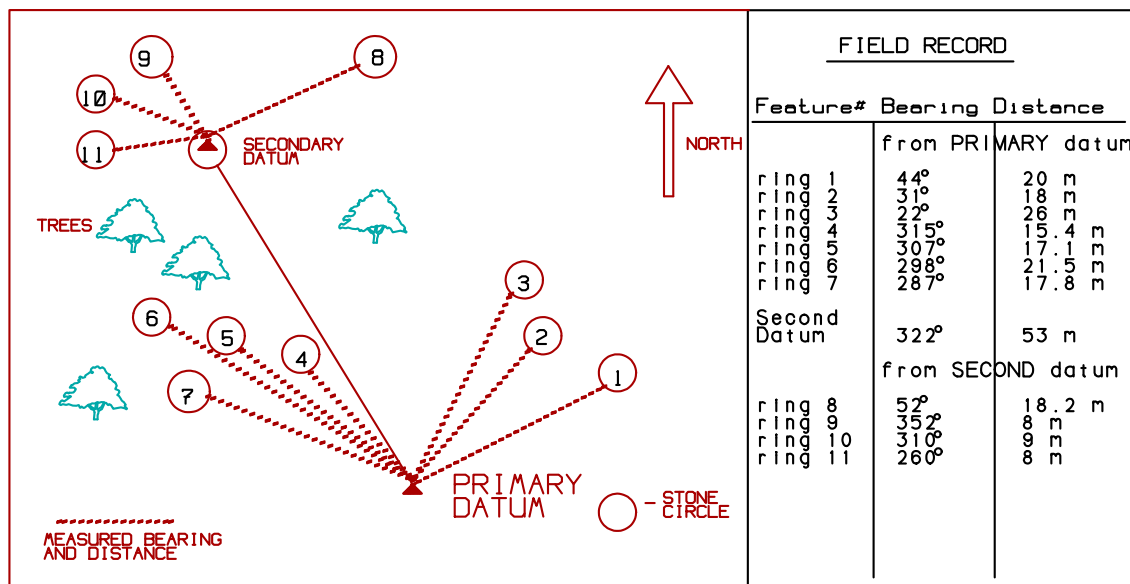


Figure 12: Site Mapping Using Multiple Datums

If large distances are involved, a secondary site datum may be required as a reference point for some measurements. Choose a convenient second location from which to map the site. Mark it with a pin or stake and record its distance and bearing from the first (primary) site datum (Figure 12). A feature that has already been mapped could serve as an appropriate secondary datum. For very large sites, several additional datum points may be required. Site datums are extremely important for mapping sites and features, and as reference points for surface artifact recording and collecting (see Section 5.0). Datums must be easily relocated, if necessary.



The site map, drawn to scale, can be drafted later using a protractor and a ruler. It is important, therefore, that the field measurements be as accurate as possible. A sketch map produced in the field showing the approximate arrangement of features will be helpful in preparing the final map. All survey stakes and flagging are normally removed after site mapping is completed.

### **4.2.3 Feature Mapping**

Stone rings and cairns are the most frequently encountered surface features in Saskatchewan and are relatively easy to map in detail. Other stone features, such as effigies and medicine wheels, are more complex and more difficult to map accurately.

The goal of feature mapping is to record as much structural information as possible. Consistency is necessary to permit reliable comparisons to be made both within and between sites. Two methods are commonly used to map surface stone features. A modified version of the "**Tipi Quik**" method (Dau, 1981; Quigg and Brumley, 1982) enables fast and accurate mapping of stone circles, while the conventional "**grid**" method is generally used to map artifact scatters, rock cairns, effigies and other large or complex structures.

#### 4.2.3.1 Tipi Quik Method

The following equipment is needed: a Tipi Quik board, a five metre or longer tape measure, a compass, five spikes, a clipboard, a ruler, a Stone Circle Mapping form and/or a Stone Circle Data Recording form (Appendix IV), and a felt tip marker or chalk.

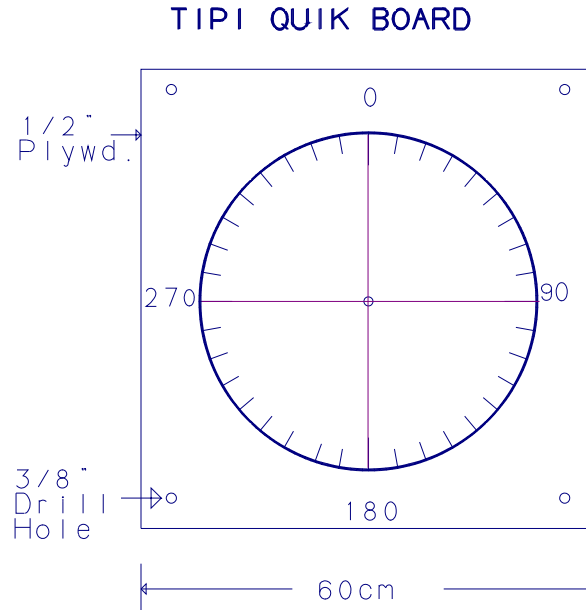
To make a Tipi Quik board, cut a 60 cm x 60 cm square of half-inch plywood or other suitable board. Using a drafting compass, or tracing around a round object, draw a large circle on the board. With a protractor and ruler mark off 360 degree increments around the circle. For ease of reading, make the mark for every fifth degree slightly longer and label every tenth degree. Draw a line from the 360 degree mark to the 180 degree mark, and from the 90 degree mark to the 270 degree mark. Next, drill a hole through the board in each corner and in the centre of the circle (Figure 13).

Place the board inside the stone circle with the centre of the mapping circle directly over the feature datum (usually the approximate centre of the feature). Align the board to magnetic north by placing the compass directly over the centre of the mapping circle and positioning the board so that the 360 degree



mark on the mapping circle aligns with the north end of the compass needle. Next, place a nail in each corner to hold the board in place. Put another nail in the centre hole, leaving the head sufficiently exposed to act as an anchor for the end of the tape measure.

Stone circles are mapped on the basis of compass bearings and distance measures in much the same manner as surface features on a site are mapped. The Stone Circle Mapping form enables the feature to be mapped or drawn, one rock at a time, in the field.

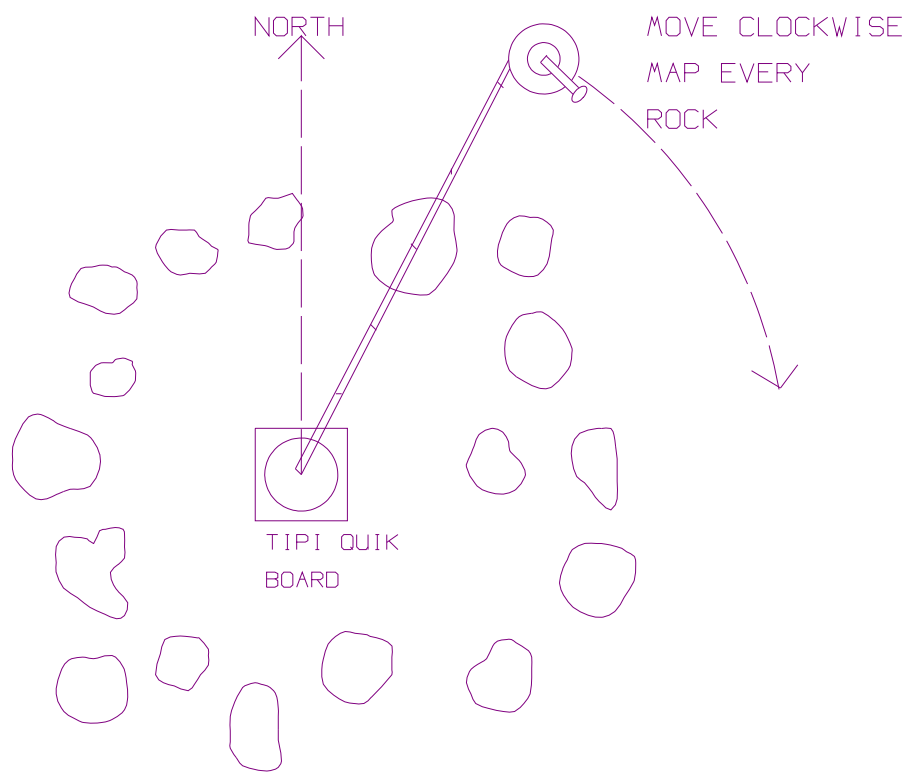


**Figure 13: The "Tipi Quik" Mapping Board**

To begin mapping, hook the tape measure on the centre nail of the tipi quik board. Starting at magnetic north, extend the tape to the estimated centre of the first rock in the ring (Figure 14) and record the distance and compass bearing. The distance is read directly from the tape measure. The bearing is read from the mapping circle where the tape measure intersects it. The same edge or side of the tape measure must be used throughout, otherwise some error will result. Select a suitable scale and, with a ruler, plot the centre point of each rock on the Stone Circle Mapping form. Next, sketch the individual shape of the ring rock.

Move around the circle, rock by rock, until you arrive back at the starting point. It may be helpful to number each rock with chalk as you proceed in order to avoid confusing rocks to be mapped with those already mapped. Also map any rocks located inside the feature. A judgment will often have to be made whether or not to map rocks outside but near the ring. Record the scale used on the mapping form, as well as the site and feature number, and the recording date. If time does not permit drawing a map in the field, the feature plan can be drawn

later from the bearing and distance readings recorded on a Stone Circle Data Recording form.



**Figure 14: Using the "Tipi Quik" Mapping Board**

Depending on the purpose of the mapping project, the weight of the ring rocks and how deeply they are buried may be important. These data may assist site analysis and interpretation, for example, by discerning single or multiple site occupations. As these procedures involve some site destruction they should be planned in consultation with RM-A.

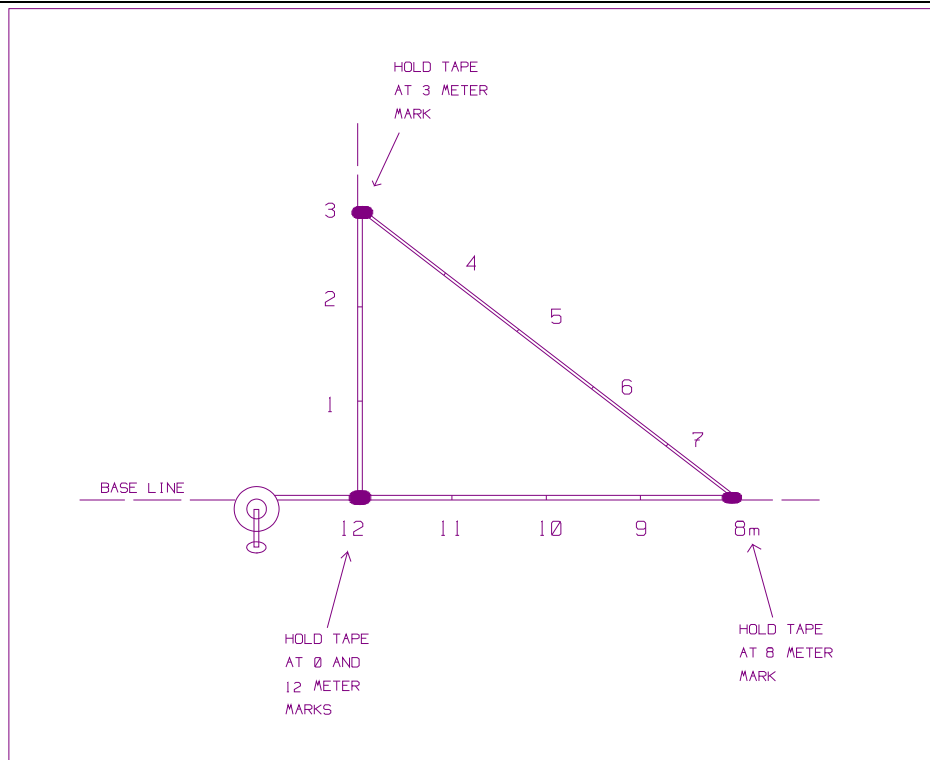
When a site contains several stone circles, it may not be possible, at least initially, to map each feature in detail. In this case, the minimum data recorded should include inside and outside feature diameters, the number of surface rocks, and observations on feature condition, gaps or rock clusters along the ring margin, associated features (e.g. interior cairns) or artifacts, and so on. This information can be conveniently entered on a Stone Circle Data Recording form, and should be recorded even if the feature has been fully mapped.

Cairns and other complex features are generally mapped to scale on graph paper using a grid system for reference. The grid, which can be laid out over the feature with string, should be square and oriented to magnetic north. The size of the grid required depends on the size of the feature to be mapped. For example, to map a cairn measuring 75 cm x 50 cm, a one metre square divided into quarters is adequate.

In some cases, it is possible to "eye-ball" the right angles of the grid with a compass and tape measure. However, since grids are frequently used in archaeology for site mapping, surface collection and excavation, knowing how to set up a grid properly is important. One method is based on the "Pythagorean Theorem" which states that in a right-angle triangle, the square of the hypotenuse (the longest side) equals the sum of the squares of the other two sides. This method, commonly referred to as the **"3-4-5" method** (Figure 15), serves to establish the first right angle or corner on which the remainder of the grid is based. For simplicity, Table 1 provides a look up for 3-4-5 method grid sizes. So, for example, using the table if you were creating a grid that was 4x4 m, the diagonal, from the table would be 5.66 m.

The easiest method of establishing a right angle using this approach is as follows. An assistant is usually required.

- 1) Place a spike in the ground near the feature to be mapped. This point will represent the first corner of the grid system. Place a second spike precisely three metres north of the first.
- 2) Have one person hold both the zero and the 12 metre marks of the same tape measure on the first (or corner) spike.
- 3) Have a second person loop the tape measure around the second spike (3 m north) and, holding the tape measure at the eight metre mark, pull the tape taut. A third spike is placed securely in the ground at this point. The three spikes mark one corner (i.e. the southwest corner) and the start of two sides of the grid system. The north/south side is three metres in length and the east/west side is four metres long. To establish the opposite corner (i.e. the northeast corner), thereby closing off the grid, find that point exactly four metres east of the second spike and three metres north of the third spike using two tape measures. The grid can be expanded by extending the sides in an eastward and northward direction. Once these baselines are established, the grid should be marked off or divided into one metre square (or smaller) grid units using spikes connected with string.



**Figure 15: Using the "3-4-5 Grid" Method**

An alternative method of establishing a mapping grid is to construct a portable one square metre grid. This grid can be used to map smaller features, including dense artifact clusters, or as the basis for establishing a larger grid.

**Table 1: 3-4-5 Method Look-Up Table**

	1	2	3	4	5	6	7	8	9	10
1	1.41									
2	2.24	2.83								
3	3.16	3.61	4.24							
4	4.12	4.47	5.00	5.66						
5	5.10	5.39	5.83	6.40	7.07					
6	6.08	6.32	6.71	7.21	7.81	8.49				
7	7.08	7.28	7.62	8.06	8.60	9.22	9.90			
8	8.06	8.25	8.54	8.94	9.43	10.00	10.63	11.31		
9	9.06	9.22	9.49	9.85	10.30	10.82	11.40	12.04	12.73	
10	10.05	10.20	10.44	10.77	11.18	11.66	12.21	12.81	13.45	14.14

## Archaeological Site Survey

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After establishing the mapping grid, make a scale drawing of it on graph paper and sketch in the feature rocks. If greater accuracy is needed, a five metre tape can be used to measure rock locations in relation to the grid lines. The feature datum should also be marked on the feature plan.

In addition to mapping the feature, record other relevant observations, such as the feature's height or depth, the number of tiers of rocks, or the presence of associated artifacts and features.

If time does not permit a detailed map to be drawn, record the feature's dimensions and orientation (e.g. 1.25 m north/south; .75 m east/west), the number of visible stones, and any other comments or observations.

While these mapping procedures may seem complicated at first, they become easier with practice. Mapping and collection grids, in particular, are basic elements of field archaeology. Being able to use them accurately will greatly enhance the value of your recovered data.

## 5.0 SURFACE ARTIFACT RECORDING AND COLLECTING

### 5.1 *Artifact Recording*

Unless detailed artifact analysis and reporting is planned, or unless site destruction is imminent, artifacts should be recorded or mapped in the field rather than collected. Systematic artifact descriptions will provide sufficient data for preliminary site evaluation and interpretation, while leaving the site intact for future research. Artifact recording, like collecting, requires some understanding of artifact classification and cataloguing procedures (Section 6.1.3).

#### 5.1.1 Materials and Equipment

The following equipment is recommended for recording and mapping artifacts: a compass, two 30 metre tape measures, a five metre tape, survey stakes, pins or spikes, flagging tape, a felt tip marker, note paper and a clip-board, and Non-Collected Artifact Recording forms. A camera should be used to document diagnostic artifacts and other notable specimens.

#### 5.1.2 *Recording Artifact Provenience*

Before describing artifacts, it is necessary to record their precise location (or "provenience") within the site. Provenience information provides critical data on the spatial relationships among artifacts for use in various archaeological analyses. Therefore, do not move artifacts until their provenience has been accurately recorded.

One of several methods for recording artifact provenience may be used depending on the number and density of artifacts present. For small, low-density artifact scatters, or when only certain artifact types are to be recorded/collected, the "**bearing-distance plot**" is the most convenient method. For large sites containing numerous artifacts, a "**baseline and grid**" method is more suitable.

##### 5.1.2.1 Bearing-Distance Plot

This is essentially the same technique used in site mapping. Locate and flag individual artifacts and artifact concentrations. Determine artifact provenience (in this case, point provenience) by taking a compass bearing **from the site datum to**

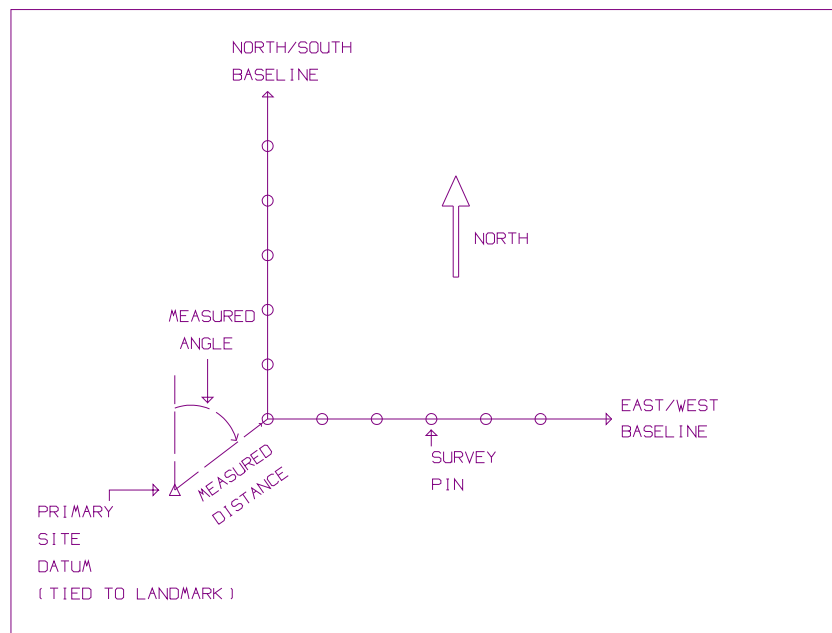
**the artifact**, then measuring the distance. Record these measurements in a notebook and mark the artifact's location on a sketch map of the site.

If artifacts are being recorded/collected from a previously reported site, relocate the original site datum, or establish a new datum remembering to "tie" it to a permanent landmark with a bearing and distance measurement.

#### 5.1.2.2 Baseline and Grid

This method involves establishing a grid over the site. Record artifact provenience in terms of grid co-ordinates, determined in relation to the north/south and east/west "baselines" of the grid system (Figure 16).

Following the procedures in Section 4.2.3, establish the main reference point for the grid (e.g. the southwest corner) and tie it into the site datum. Next, establish both the north/south and east/west grid baselines.



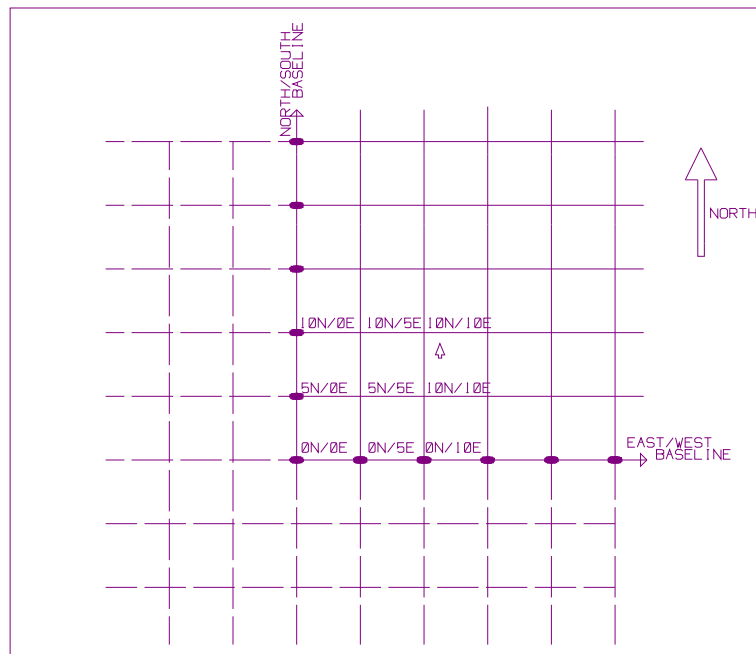
**Figure 16: Basic Grid Setup**

The size of the individual artifact recording/collection (grid) unit must now be determined. Two metre or five metre grid squares are commonly used for sites on cultivated surfaces where considerable vertical and some horizontal artifact displacement has occurred. For sites located in "blowouts", where some vertical and little or no horizontal displacement has occurred, much finer provenience, including point provenience, is warranted.

If five metre squares are to be used, place survey stakes along both baselines and label them as follows: ON/OE, 5N/OE, 10N/OE, and so on along the

## Surface Artifact Recording and Collecting

north/south baseline; and 0N/OE, 0N/5E, 0N/10E, and so on along the east/west baseline. Establish the remaining grid units (e.g. 5N/5E, 10N/5E, 5N/10E and so on) in the manner described earlier (Section 4.2.3) until the entire recording/collecting area has been encompassed by the grid (Figure 17).

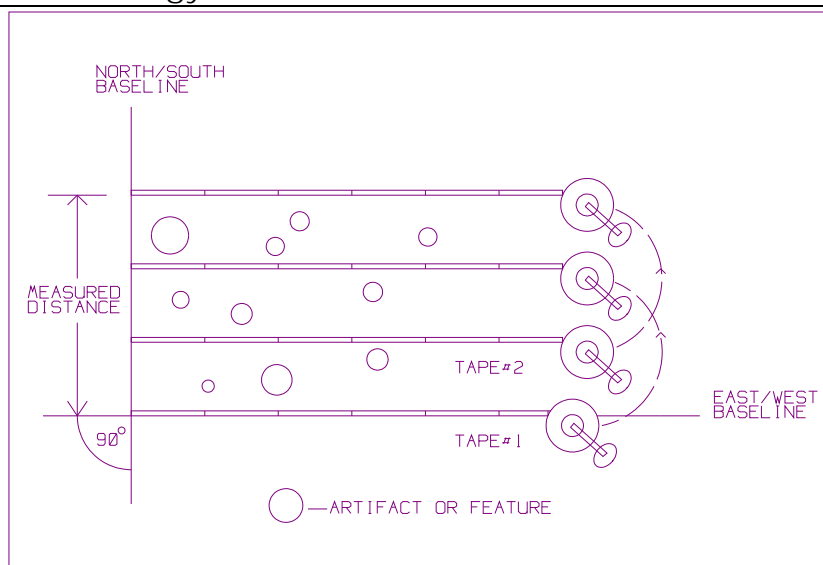


**Figure 17: Numbering A Grid**

With the grid in place, the provenience of any artifact on the site can be readily determined. Provenience can be recorded as the grid square in which the artifact is situated, as a quarter of the grid square, or as a specific point within the grid square. For example, the provenience of the projectile point in Figure 17 could be recorded as 5-10N/10-15E (the grid square lying five to 10 metres north and 10 to 15 metres east of 0N/0E); or NW of 5-10N/10-15E (the northwest quarter of the same grid square); or 7.75N/12.25E (the point exactly 7.75 metres north and 12.25 metres east of 0N/0E). The latter approach is commonly used to record diagnostic artifacts, such as projectile points, and other important items. The most suitable approach or level of accuracy will depend on the nature of the site and the objectives of the investigation.

In some cases, it may be appropriate to use an abbreviated form of the baseline and grid method. After establishing the grid baselines, extend a tape measure parallel to one of the baselines (e.g. the east/west baseline), thereby forming a series of squares whose numbers can be read directly off the tape (Figure 18). If one row of squares is insufficient, a second tape measure can be laid out parallel to the first. Successive rows of grid squares can be established simply by moving each tape measure, in leap-frog fashion, across the site area.





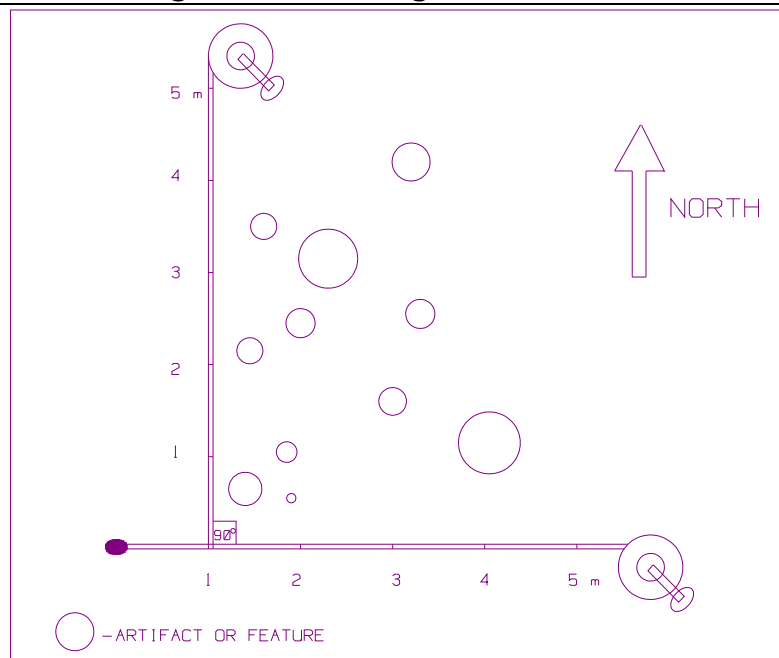
**Figure 18: A Grid Using Two Measuring Tapes**

A single baseline can also be used for quickly recording a small number of artifacts. Lay out a tape measure near the artifacts. Tie this baseline into the site datum and record its compass bearing or orientation. The baseline should be oriented north/south or east/west, wherever possible. Using a second tape measure, measure the distance (at 90 degrees) to the artifact from the baseline (Figure 19). Artifact provenience is recorded as the distance along the baseline, and the distance (at a right angle) off the baseline.

### 5.1.3 Describing Artifacts

Once an artifact's provenience has been determined, record the artifact itself. The Non-Collected Artifact Recording form (Appendix V) is provided for this purpose. Enter the Borden number if one has been assigned to the site, or use a temporary field designation. Include the site name when applicable, as well as the recording date and your name. Be sure to record the artifact's provenience, using one of the methods described above. If photographs have been taken, record the photo number(s).

In the space provided for artifact description, specify the artifact type, dimensions, material, and other noteworthy attributes. For pottery, relevant information should include decoration present and whether the sherd is from the body, neck or rim of the vessel (see Section 6.1.4).



**Figure 19: Using a Single Baseline for Recording Artifact Locations**

A sketch of the artifact (actual size if possible) is also useful. Clearly note the scale used. Finally, include brief observations on any artifacts or features found nearby.

## 5.2 *Artifact Collecting*

Artifacts are collected to obtain a representative sample for inventory or site assessment purposes, or to salvage specimens which might otherwise be disturbed or lost. In either case, some level of artifact description and analysis must be performed. Collecting for collecting's sake is not a valid reason for disturbing an archaeological site.

### 5.2.1 Materials and Equipment

In addition to the equipment used for artifact recording, collection bags and a means of labelling them are needed. "zip-lock" bags or plastic baby bottle liners work well. An indelible marker and/or index cards may be used for labelling.

### 5.2.2 Collecting Design and Methods

The kind and size of the artifact collection to be made must be determined at the outset. If there are only a few artifacts on the site, it may be appropriate to

collect all of them. Alternatively, it may be appropriate to collect only diagnostic artifacts or formed tools especially where there is concern that the artifacts may be lost to unauthorized collectors. If small numbers of artifacts are to be collected, provenience is best recorded by bearing-distance plots. If numerous artifacts will be collected, a collection grid should be established.

The recovery of a "representative sample" of artifacts should be considered from sites with a large amount of surface material. If the sample is selected randomly, it will constitute an accurate reflection of what can be expected from the site as a whole.

To select a random sample, make a scale drawing of the collection grid on graph paper and assign a number to each square. If there are 100 units in the grid, and you want a 10 per cent sample, you will collect all the artifacts lying within 10 randomly selected squares. Use a table of random numbers (Appendix II) to choose the collection units, or select by lottery as previously described for sampling survey areas.

After recording its provenience, bag the artifact. If provenience has been recorded by square, all the material from one square may be placed in the same bag (although separating lithic, ceramics and faunal material will prevent artifact damage and save time when cataloguing). If provenience is recorded as a quadrant of a grid square (e.g. NW quarter), bag all material from a single "quad". Individual bags are required for artifacts whose locations were recorded by point provenience. Formed tools and diagnostic ceramics (e.g. rimsherds) should also be bagged separately to avoid damage.

It is important to label artifact bags correctly. Labelling information includes the site's Borden number or field designation, provenience (e.g. grid square or point provenience), date, and the collector's name. The bags can be labelled by writing directly on them or by enclosing a card containing the pertinent information. If writing directly on bags, use an indelible marker. If using a card, ensure it does not become separated from the bag, or irreplaceable information will be lost.

## **6.0 ARTIFACT CATALOGUING AND STORAGE**

### **6.1 *Artifact Cataloguing***

Cataloguing is a crucial part of the artifact collecting process. All artifacts collected from a site must be identified and assigned a catalogue number. In most cases, the number is applied directly on the artifact. Additional information (e.g. artifact provenience and description, number of specimens, date recorded, and recorder's name) is entered on a catalogue form. If possible, the artifact's weight and raw material type is also recorded. Artifact catalogues serve as a permanent record of a site's content and are used for detailed analyses.

#### **6.1.1 Material and Equipment**

The materials needed for cataloguing include catalogue sheets (Appendix VI), a nibbed pen and ink (or an ultra-fine felt pen with indelible ink), white 'Liquid Paper' correction fluid, and nail polish. A weigh scale is also recommended.

#### **6.1.2 Cleaning Artifacts**

Before artifacts are catalogued they should be cleaned to facilitate identification and to expose a surface on which to place the catalogue number.

Gently brush the dirt off each artifact using a toothbrush and water. Ceramics and bone tend to be very fragile and may require particular care. Use a dry, soft brush or a slightly wet brush to clean ceramics as they tend to disintegrate if immersed in water. Bone may be temporarily immersed in water.

#### **6.1.3 Basic Cataloguing Procedures**

Each site must be catalogued separately. The following procedures should be followed:

1. If a grid was used to collect the artifacts, then separate the artifacts according to grid units. If a grid was not used, then organize the artifacts in some logical order according to their provenience. Artifacts should also be separated into prehistoric and historic categories. (In archaeological excavations, artifacts are also separated by excavation unit and level.)

2. Separate prehistoric artifacts into lithic, faunal and ceramic material, and historic artifacts into metal, glass, ceramic, faunal, and perishable material.

3. When cataloguing, follow a consistent pattern. For example, for each unit, catalogue all projectile points first, then the other tools, and then flakes/debitage. Next, separate each class of artifacts in each unit by the type of raw material. When the lithic artifacts are completed, catalogue the ceramics, then the faunal material, and so on. An orderly approach will facilitate finding specific items in the catalogue record.

4. The catalogue number can be written directly on the artifact, or on a card which is inserted in the artifact bag. If a card is used, ensure it does not become separated from the artifact.

A catalogue number consists of the Borden number (e.g. EgNa-1) and the artifact catalogue number (e.g. 21). The complete catalogue number is written as EgNa-1:21.

If you are updating a previously recorded site, it is important to know if artifacts were previously collected. If the last catalogue number is not indicated on the SARR, or if there is any uncertainty whether there have been previous collections, contact ARMS.

5. As each artifact is catalogued, write down its number on the catalogue form, as well as the artifact's provenience and description or type, the number of artifacts per bag, and, if possible, its weight and raw material type (Figure 20).

**CATALOGUE SHEET**

Project Name: Fox Hills Survey + Collection Permit #: 90-81 Borden Number: EgNa-1

Catalogue #	Description	Weight	Provenience	Date	Recorder
EgNa-1:1	1 Pelican Lake point - Swan River chert	2.4 g	Unit 5 (7.75 <sup>N</sup> /12.25 <sup>E</sup> )	July 3, 1990	J. Smith
EgNa-1:2	1 unidentified point - chert	2.0 g	Unit 5 (6.0 <sup>N</sup> /14.0 <sup>E</sup> )	"	"
EgNa-1:3	1 biface - chert	2.6 g	Unit 6 (8.5 <sup>N</sup> /16.0 <sup>E</sup> )	"	"
EgNa-1:4	5 flakes - Knife River flint	1.4 g	Unit 6 (5.0 <sup>N</sup> /15.0 <sup>E</sup> )	"	"
EgNa-1:5	2 flakes - Swan River chert	0.3 g	Unit 6 (5.0 <sup>N</sup> /15.0 <sup>E</sup> )	"	"

Figure 20: Artifact Catalogue Sheet

### 6.1.3.1 Numbering on Artifacts

Select an inconspicuous spot on the artifact's surface for the catalogue number. The number should not obscure artifact edges or other features that may be the subject of analysis. On ceramics, the number is best placed on the inside, again avoiding any decoration or other notable features. If the artifact is light in color and black ink will show up easily, apply a patch of clear nail polish as an undercoat. If the artifact is relatively dark, apply a patch of white liquid paper on which to write the artifact number.

When the nail polish or liquid paper has dried, apply the artifact catalogue number. Let this dry and then apply a coat of clear nail polish as a sealant.

### 6.1.3.2 Numbering on Catalogue Cards

Catalogue cards (Figure 21) should be completed and placed in the artifact bag, and the bag fastened securely.

Catalogue Number:
Provenience:
Artifact Type:
Date Recorded:
Recorder's Name:

**Figure 21: Artifact Catalogue Card**

## **6.1.4 Cataloguing Prehistoric Artifacts**

Follow these procedures when cataloguing prehistoric artifacts.

### 6.1.4.1 Lithic Artifacts

Describe lithic artifacts according to their basic artifact type (Appendix VII). Try to separate the same type of artifacts on the basis of their raw material; for example, Swan River chert flakes should be separated from quartzite flakes. For additional information on raw material identification, see Johnson (1986). Flakes of

a similar material type with the same (grid) provenience can be assigned a single catalogue number; however, note the number of specimens in the group. If it is not possible to separate flakes from the same grid unit according to material type, they may still be catalogued under one number, although this is less desirable. Tools should always have their own catalogue number. If a scale is available, weigh each artifact or common group of artifacts. (Table 1 describes this process.)

**Table 2: Steps in Cataloguing Lithic Artifacts**

1. Sort artifacts according to provenience/collection unit
2. Sort artifacts by type (i.e. points, endscrapers, bifaces, flakes, etc.).
3. Sort lakes into raw material type.
4. Assign individual catalogue numbers to points and other recognizable tools, and groups of similar artifacts.
5. Enter artifact number, artifact type, provenience, and, where possible, the raw material type and weight on the artifact catalogue record for that site.

#### 6.1.4.2 Ceramic Artifacts

Ceramics should be separated into sherds (greater than one cm in size) or sherdlets (less than one cm in size). Sherds, in turn, should be separated into identifiable and unidentifiable categories. Identifiable sherds should be described according to vessel part (i.e. lip, rim, lip/rim, neck, rim/neck, shoulder, neck/shoulder, body, shoulder/body, base, body/base). Also, record any decoration on the sherds (Appendix VIII).

All unidentifiable sherds from the same grid unit may be assigned one catalogue number. The same procedure should be followed for sherdlets. Again, if a scale is available, weigh each ceramic fragment or group of fragments. (Table 2 describes this process.)

**Table 3: Steps in Cataloguing Ceramic Artifacts**

1. Sort artifacts according to provenience/collection unit.
2. Sort material into sherds and sherdlets.
3. Sort sherds into identifiable and non-identifiable vessel parts.
4. Assign catalogue numbers to all identifiable vessel sherds and groups of non-identifiable sherds and sherdlets.
5. Enter artifact number, ceramic type or description, decorative elements, provenience, and weight (optional) on the catalogue record for that site.

### 6.1.4.3 Faunal Remains

Faunal material may be classified as burned or unburned. These may be further separated into identifiable or unidentifiable. If the material is identifiable, try to identify the skeletal element (e.g. mandible, vertebrae, femur, etc.) and, if possible, the general type of animal (i.e. fish; bird; small, medium, or large mammal).

Separate all unidentifiable burned bone from unburned bone and assign each group a single catalogue number. Identifiable burned and unburned bone should also be catalogued separately. If possible, weigh all bone. (Table 3 describes this process.)

**Table 4: Steps in Cataloguing Faunal**

1. Sort material according to provenience/collection unit
2. Sort material into burned and unburned bone, shell, etc.
3. Sort into small mammal (e.g. rabbit), medium mammal (e.g. dog), large mammal (e.g. bison), bird, fish, or reptile. Where possible, identify the species of animal.
4. Sort further by skeletal element (i.e. skull, teeth, ribs, vertebrae, long bones, etc.).
5. Assign individual catalogue number to all identifiable bone elements and groups of unidentifiable burned and unburned bone.

### 6.1.5 Cataloguing Historic Artifacts

Generalized information sources for historic artifact identification and cataloguing are not readily available. One source of information, however, is the Artifact Analysis Manual for Historic Archaeology edited by Dana-Mae Grainger. This document may be obtained by contacting:

Canadian Parks Service (Western and Northern Service Centre)  
145 McDermot Avenue  
Winnipeg, Manitoba  
R3B 0R9  
Tel: (204) 983-6802  
Fax: (204) 983-8187

In addition, one may also contact ARMS for more information. Procedures for cataloguing historic artifacts are similar to those for prehistoric material. The following general artifact material categories are most commonly used:



6.1.5.1 Glass

Where possible, identify the type of glass (e.g. window glass, bottle glass, glass jars and glass vessels, etc.). Otherwise, record as unidentifiable glass on the catalogue record. Catalogue separately any specimens showing a manufacturer's mark. Note also the color of the glass, and whether the fragment is from the base, body, neck, or rim of a container.

6.1.5.2 Ceramics

Record the type of ceramic vessel (e.g. crock, plate, cup), the pattern type, and the maker's mark, if present.

6.1.5.3 Metal

If possible, record the type of metal artifact. Also, note the type of metal (e.g. iron, steel, tin, brass, copper, gold, silver, pewter, etc.), and, if possible, the weight of the item.

6.1.5.4 Perishables

For perishable material (e.g. leather, cloth, wood, shell, etc.), record the type of object and material.

6.1.5.5 Faunal Remains

Follow the same procedure here as for prehistoric faunal material.

## **6.2 *Artifact Storage***

After cataloguing, store the artifacts in plastic "zip-lock" bags or cloth bags. The Borden number and provenience should be written on the bag in indelible ink, or on a card placed in the bag. Storing artifacts from the same unit together will make it easier to find specific items. Store the entire artifact collection in a sturdy box, with heavy material on the bottom and fragile items on the top.

If the collection is being kept in a private residence, ensure the storage area is free of moisture. If the collection will be forwarded to a museum, contact the repository to discuss their storage and shipping requirements.

## **7.0 PERMIT APPLICATIONS AND REPORTING**

### ***7.1 Avocational Permit Application***

Under Section 67 of The Heritage Property Act, an investigation permit is required to conduct an archaeological survey, surface collection or excavation. Anyone wishing to undertake these activities must first complete an Avocational Archaeological (Type B) Permit Application (Appendix IX). The application has been re-designed to reflect the various field and laboratory methods presented in this manual. It is also designed to simplify the application and approval process by minimizing description of proposed project objectives and methods. Permit applicants should make sure the form is completed as accurately and completely as possible.

### ***7.2 Avocational Permit Report Forms***

Integral to any field investigation is an accurate accounting of the methods used, the results obtained and the conclusions drawn. Indeed, accurate reporting is perhaps the most important aspect of any archaeological project. Field work reporting contributes both to the overall body of archaeological knowledge and to the planning and design of future research and resource management studies.

To streamline and simplify the avocational reporting process, a four-page permit report form is available (Appendix X). The report form follows directly from the permit application, and enables the permit holder to report most field activities, except detailed site assessment and excavation, on a single form. There are six components to the report form, as follows:

#### **1. Activities Undertaken**

In this section, identify the general types of field work conducted during the permit period by checking one or more activities. Do not check an activity which was planned but not carried out.

#### **2. Location(s)**

List actual study areas here by legal description or location. For each location, also indicate the nature of the activity involved (e.g. survey, mapping, collecting), and, if appropriate, the site Borden number.

### **3. Research Objectives**

Provide a brief discussion of the purpose and objectives of the permitted field project. This section will usually be the same as reported on the permit application. However, any subsequent changes in the project's purpose or scope should be clearly noted.

### **4. Field Methods**

This section is designed to allow quick recording of the methods used for site survey, site recording and mapping, feature mapping, and artifact recording/collecting. Examine each category carefully and check only those procedures that were carried out. For each field activity, note any specific details in the additional space provided. Attach additional pages, should more space be required.

#### **Site Survey**

If a survey was conducted, identify the particular methods used, including the interval between survey transects in metres. Note the number of surveyors involved, any survey constraints, sample size (if appropriate), and any other pertinent information or observations under "Additional Details".

#### **Site Recording and Mapping**

In this section, note the procedures used to record and/or map archaeological sites. New SARRs and SARR updates are normally submitted to HRU for processing and Borden number assignment prior to report preparation. If not already submitted with the completed SARRs, any detailed site maps should be appended to the permit report.

#### **Feature Mapping**

Indicate the methods used to map archaeological features in this area. If methods other than those described in this manual were used, describe these under "Additional Details". Again, copies of any detailed feature plans should be appended to the report.

#### **Artifact Recording and Collecting**

Describe the procedures used to record and/or collect artifacts in the field. If artifacts were collected, completed catalogue records should accompany the report.

**5. Artifact Curation**

Details concerning the location of any newly collected artifacts should be presented here. Storage of artifact collections at private residences is acceptable provided appropriate curatorial methods are employed.

**6. Conclusions and Recommendations**

In this section, discuss any conclusions that can be drawn from your results (e.g. undisturbed portions of the site may be present in the adjacent pasture; more than one cultural complex is represented in the artifact scatter; discrete clustering of features within the site may suggest multiple occupations; ceramic artifacts occur only in the northern half of the site; etc.). Also, make any recommendations you feel are appropriate for research or resource management purposes (e.g. survey adjacent cultivated field; conduct additional collections to obtain a larger artifact sample; record additional, more detailed feature data; continue periodic site monitoring to record and, if necessary, salvage-collect diagnostic artifacts exposed by erosion; etc.).

Ensure that the permit holder's name, address, and permit number appear on the first page of the report form.

### ***7.3 Advanced Avocational Reporting***

Avocational archaeologists are not restricted to the level of reporting contained on the permit report form. Those wishing to elaborate on any aspect of their field program, particularly in the area of methods, results, conclusions, and recommendations are encouraged to append additional pages to the report form.

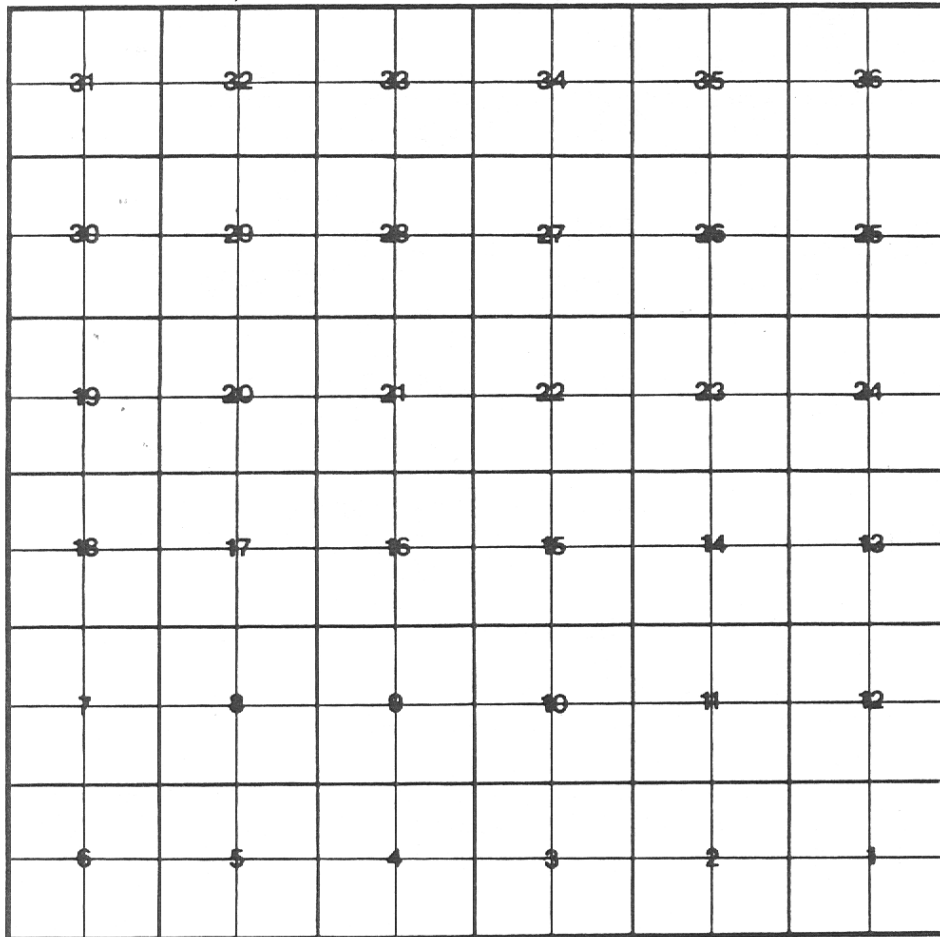
Alternatively, guidelines for preparing an advanced Type B permit report (Appendix XI) are also available. These provide an outline for a conventional research report, which normally includes a summary, table of contents, introduction, study area description, methods section, results and analysis, and conclusions and recommendations. The report format is similar to that employed by professional archaeologists, and provides an open-ended format to allow for additional detail.

### Suggested Readings and References Cited

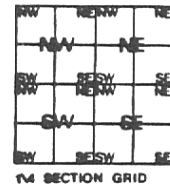
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## **Appendix I: Township Grid Overlay**

# 1:50,000 TOWNSHIP GRID OVERLAY



(Not To Scale)



## Appendix II: Table of Random Numbers



## Table of Random Numbers

*Example:* Suppose you have 50 grid units and want to take a 10 per cent sample (i.e. 5 units). Start anywhere on the table. For the sake of this example, begin at the top of the fourth column from the left. Looking at the last two digits of the five digit numbers, move down the column until five units falling between one and 50 are encountered. The five units would be: 23, 40, 18 (84 is skipped because it does not fall between one and 50), 7 and 14.

Remember, you may begin anywhere on the table and move in any direction.

68856	77183	12729	47523	11407	92034	34871	43198	78106	58499
61093	20418	28816	36440	51258	39047	23401	85722	65228	58948
21723	66208	62868	39984	83647	37760	04041	42019	69034	60243
48610	24915	37750	93518	56438	48536	49656	97451	87388	72746
64616	31904	01324	57407	42494	56740	58110	62384	43153	31822
17607	47538	26456	17014	39681	72734	52266	72180	84193	97835
80446	57181	11008	82703	70860	31883	79988	87203	83372	56147
50996	71198	77844	89838	83897	94550	14139	92818	38553	17124
52122	24951	74828	98782	51655	46100	52585	99388	72601	16128
31687	78805	74824	94900	71997	96896	18188	42276	33379	13524
62554	18123	75696	88554	67788	82301	58812	81848	93751	94676
42589	53269	00307	15109	86890	62680	47320	03465	51580	69946
94653	19606	96522	34929	02169	23397	81578	17492	29731	74699
66612	77500	37203	33377	11488	74814	84448	59294	76068	69299
31329	12312	20215	20817	37710	52296	03794	89233	63453	39109
86668	34408	68422	32613	28699	16207	12481	92673	89751	94493
55492	79151	29687	29129	57319	51911	08371	79978	77825	70815
85665	06904	76874	95728	21434	69770	14328	86513	75540	28439
50052	03032	07847	42775	43907	05149	78217	72640	55759	52728
46515	77898	45469	05632	72603	18413	72901	23723	16345	54047
97919	66866	37605	44664	80385	94923	96244	50127	80164	67758
52127	30300	57117	45234	65117	45045	71109	87215	95077	54226
82003	53563	01871	17707	49663	04142	45361	95350	33950	98815
85412	47019	94729	97446	81885	32577	91863	59897	94646	11888
85216	46033	83556	44814	34649	15716	08479	91220	00028	28809
29279	10967	41215	45176	05818	63920	18073	24681	97961	09942
90466	27186	65570	08896	18256	12555	68508	20645	61308	40650
66639	05053	79484	71336	19826	21983	32648	64476	87933	31298
80663	79933	30822	92862	83393	77569	08358	66537	00700	17249
80402	12188	92448	58836	06819	89677	18500	62193	47472	58867
38719	87183	62224	79622	12969	93669	10938	11806	01114	41516
53478	15281	63015	90585	49707	49911	58537	00741	59488	75559
47543	31847	42685	52088	89896	43765	59160	39361	45460	96360
68778	97243	74097	49494	31401	85596	35671	63031	06892	64283
90046	96834	55115	93168	97084	10767	35934	32114	16648	64692
09211	40984	08603	18473	34809	79642	32812	31973	72593	07950
49137	65056	82425	85773	17442	77585	24169	72973	97590	29422
57687	29414	49444	80432	42844	14959	32869	90478	39502	89471
07726	19422	07525	12814	33880	27129	06775	44850	71194	73461
97118	45443	79530	18281	38414	74457	18753	21454	90529	91755
48725	42842	13324	57199	29310	42309	66664	30654	20370	79717
10412	71982	81771	14931	04430	41047	73373	07813	08583	97712
55042	18227	82734	01841	86640	06036	86745	13296	28030	31103
80480	91941	39076	53292	23803	97639	79641	32465	76576	90253
09589	28487	98663	29648	88782	01219	49927	75685	77083	10627
10766	84905	27159	38309	66946	19473	60108	10880	51629	20011
11492	79351	34679	46382	41174	03586	75959	58448	09018	43449
35333	16073	74887	58803	72663	79121	98643	09510	47812	07456
40152	55435	20645	60936	59275	56440	51024	99430	15876	72389
98812	82800	69818	63145	23874	70908	80964	88572	86072	23619
09179	08532	45269	00794	14325	82889	61329	62299	56265	71506
94115	67995	94863	34247	03490	77746	89981	30975	49318	51416
01484	21553	91462	48868	89235	65844	89785	29964	13096	23711
04151	54569	32932	55019	94422	82545	08605	19630	70462	73756
99978	77407	42135	88065	66915	88214	19303	85336	69280	11914
11830	25431	66935	08370	79579	68214	19744	37446	82413	73549
87570	59005	80196	01298	30276	32910	32792	11325	07726	19024
00062	63492	79783	77212	41871	17665	06310	67335	18082	33705
47170	49257	88558	71475	62227	82842	13162	90840	11344	27953
51758	51663	54385	44453	64209	13806	51212	92205	10378	37133

(from Fladmark, 1978)

## **Appendix III: Avocational SARR Form**



## Saskatchewan Archaeological Resource Record Avocational Version

Site Name: \_\_\_\_\_ Observed ☐ Borden Number \_\_\_\_\_  
Site Type: \_\_\_\_\_ Mapped ☐ \_\_\_\_\_  
Permit Number \_\_\_\_\_  
Affiliation: \_\_\_\_\_

### LOCATION

1. NTS Map Reference #: \_\_\_\_\_
2. UTM Grid Coordinates: \_\_\_\_\_ E \_\_\_\_\_ N \_\_\_\_\_ NAD \_\_\_\_\_
3. Legal Description: \_\_\_\_\_ of \_\_\_\_\_ Sec \_\_\_\_\_ Twp \_\_\_\_\_ Rge \_\_\_\_\_ W \_\_\_\_\_ M
4. Rural Municipality of: \_\_\_\_\_ No. \_\_\_\_\_
5. Geographical Coordinates: \_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ " N. Lat. \_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ " W. Long
6. Land Ownership: Private ☐ Provincial Crown ☐ Federal Crown ☐  
Owner: \_\_\_\_\_  
Lessee: \_\_\_\_\_

### SITE DESCRIPTION

7. Dimensions: length \_\_\_\_\_ m width \_\_\_\_\_ m measured ☐ estimated ☐
8. Features: \_\_\_\_\_  
\_\_\_\_\_
9. Artifacts/Other Material: (a) observed \_\_\_\_\_  
\_\_\_\_\_  
(b) collected \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Last Catalogue # \_\_\_\_\_  
(c) collection stored at: \_\_\_\_\_
10. Other Observations: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### SITE ENVIRONMENT

11. Vegetation Zone: grassland ☐ parkland ☐ boreal forest ☐
12. Soil Texture: boulders ☐ cobbles ☐ gravel ☐ Sand ☐ loam ☐ silt ☐ clay ☐  
other \_\_\_\_\_ other observations \_\_\_\_\_
13. Site Environment Description: \_\_\_\_\_  
\_\_\_\_\_



Borden No. \_\_\_\_\_

**14. Water Source** lake ☐ river ☐ stream ☐ slough/pond ☐ spring ☐ other ☐  
modifier: active ☐ seasonal ☐ name: \_\_\_\_\_  
distance: \_\_\_\_\_ m direction: \_\_\_\_\_ **15. Elevation:** \_\_\_\_\_ m (asl)

**16. Other Observations:** \_\_\_\_\_

### SUPPLEMENTARY INFORMATION

**17. Other Artifact Collections:** \_\_\_\_\_

\_\_\_\_\_ Keeper: \_\_\_\_\_

**18. Photo Record:** type \_\_\_\_\_ # photos \_\_\_\_\_ stored at: \_\_\_\_\_

### RESOURCE MANAGEMENT

**19. Condition:** cultivated ☐ partially cultivated ☐ uncultivated ☐  
other disturbances \_\_\_\_\_  
\_\_\_\_\_ % site intact \_\_\_\_\_

**20. Informant:** \_\_\_\_\_

**21. Recorded by:** \_\_\_\_\_ Date \_\_\_\_\_ Permit # \_\_\_\_\_  
\_\_\_\_\_

### OTHER REMARKS

**22.** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### ACCESS

**23.** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Borden No.

Scale: 1 cm = m

Site Sketch Map ↓

1:50000 NTS Map Inset ↓

LEGEND

Other Symbols:

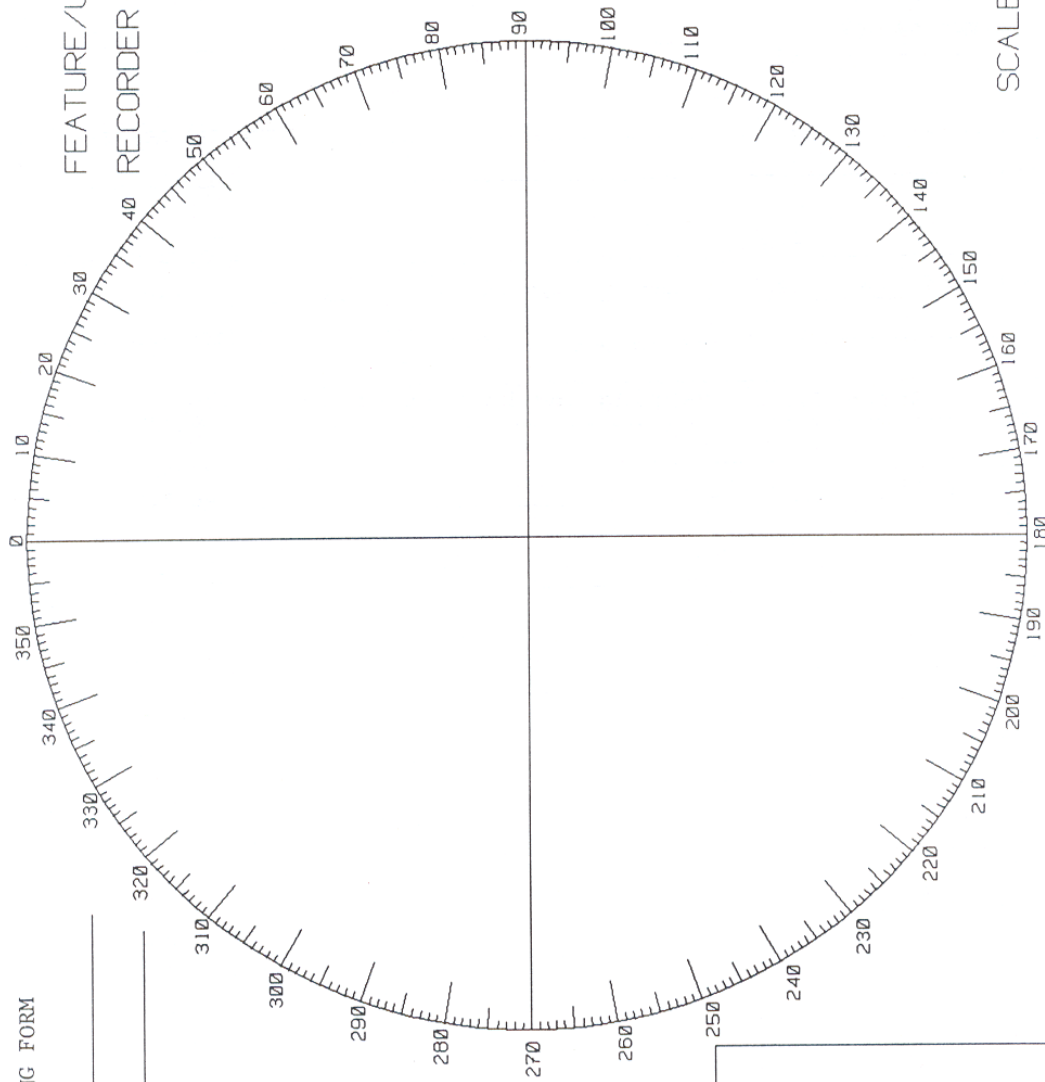
- site boundary
- building
- roads
- trail
- railway
- fence
- break in slope
- waterways

☐ TRUE    ☐ MAGNETIC    ☐ GRID

## **Appendix IV: Stone Circle Mapping and Data Recording Forms**

STONE CIRCLE MAPPING FORM

SITE: \_\_\_\_\_ FEATURE/UNIT: \_\_\_\_\_  
 DATE: \_\_\_\_\_ RECORDER: \_\_\_\_\_



SCALE: \_\_\_\_\_

LEGEND

ROCK

○

surface

below

●

FLAKE

B

BONE

X

FCR

TOOLS by #

(see notes)



# STONE CIRCLE DATA RECORDING FORM

SITE: \_\_\_\_\_ FEATURE #: \_\_\_\_\_ DATE: \_\_\_\_\_ RECORDER: \_\_\_\_\_

DIAMETER (m):                      N-S                      E-W                      NE-SW                      NW-SE

inside: \_\_\_\_\_

outside: \_\_\_\_\_

SEGMENT:                      0° - 90°                      90° - 180°                      180° - 270°                      270° - 360°

stone count                      \_\_\_\_\_

average burial (cm)                      \_\_\_\_\_

average weight (kg)                      \_\_\_\_\_

Stone #	Bearing (o)	Distance (m)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		

Stone #	Bearing (o)	Distance (m)
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		

Stone #	Bearing (o)	Distance (m)
29		
30		
31		
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		
42		

Stone #	Bearing (o)	Distance (m)
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
53		
54		
55		
56		
57		
58		
59		

Stone #	Bearing (o)	Distance (m)
60		
61		
62		
63		
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		
76		

Stone #	Bearing (o)	Distance (m)
77		
78		
79		
80		
81		
82		
83		
84		
85		
86		
87		
88		
89		
90		
91		
92		
93		

use additional forms  
if needed

=====

COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## **Appendix V: Non-Collected Artifact Recording Form**

**NON-COLLECTED ARTIFACT RECORD**

<b>Borden #</b> _____	<b>Sketch</b>
<b>Site Name</b> _____	
<b>Artifact #</b> _____	
<b>Provenience</b> _____	
<b>Photo #</b> _____	
<b>Date</b> _____	
<b>Recorder</b> _____	
<b>Description of Artifact:</b>	
<b>Associated Archaeological Materials:</b>	
<b>Borden #</b> _____	<b>Sketch</b>
<b>Site Name</b> _____	
<b>Artifact #</b> _____	
<b>Provenience</b> _____	
<b>Photo #</b> _____	
<b>Date</b> _____	
<b>Recorder</b> _____	
<b>Description of Artifact:</b>	
<b>Associated Archaeological Materials:</b>	

## **Appendix VI: Artifact Catalogue Sheet**

Project Name: \_\_\_\_\_ Permit #: \_\_\_\_\_ Borden Number: \_\_\_\_\_

[illegible]

## **Appendix VII: Lithic Artifact Types**

## LITHIC DESCRIPTION

Lithic artifacts are the remains or results of stone materials used by prehistoric peoples. As a large percentage of our knowledge of the cultural history of these people is derived from the analysis of lithic materials, a systematic approach to artifact description is essential.

A basic description of lithic artifacts begins with separation of materials into those used as tools and the by-products of tool production (flakes/debitage).

LITHIC ARTIFACTS	
TOOLS	FLAKES

Tools are identified as lithic materials which are modified for some intended use. Initial tool classification is based on the manufacturing method. Typical classifications include; flaked, ground/pecked, and unmodified. Flaked stone tools are those derived from percussion or pressure applied to the raw material. Ground/pecked stone tools are created by grinding and/or pecking the lithic material to produce the required form. Unmodified stone tools, those used in their natural state, include some hammerstones and crude choppers.

STONE TOOLS		
FLAKED	GROUND/PECKED	UNMODIFIED

Flaked stone tools are common in archaeological sites in Saskatchewan. These tools are further classified on the basis of their morphology or appearance. Typical flaked stone tool types include bifaces, unifaces, core-based, and modified flakes. A biface is an artifact that has had flakes removed from both sides of the working edge (e.g. knives, points, drills). A uniface is a stone tool which has been flaked on one surface only (e.g. endscrapers, sidescrapers, spokeshaves, awls, perforators). A core tool is based on a reduced "core" of material that is either unmodified, bifacially or unifacially flaked (e.g. choppers). Tools fashioned from flakes may also be unifacial or bifacial in nature. Modified flake tools are often recognized by the presence of retouching (very fine flaking) along a working edge.

FLAKED STONE TOOLS			
BIFACE	UNIFACE	CORE	MODIFIED FLAKE

For further discussion, see "Artifacts" by J. Wilson in Tracking Ancient Hunters (Epp and Dyck, 1983) and others.



**Appendix VIII:      Ceramic Decorative Elements  
and Surface Treatments**

## DECORATIVE ELEMENTS

bossed:	raised protrusions or "bumps" on vessel exterior resulting from punctates made on the interior surface of the vessel
brushed/combed:	specialized incised or trailed lines made with a brush or comb-like object
check-stamped:	a specialized dentate formed by paddling the exterior of the vessel with a specially formed tool leaving a regularly spaced, checkerboard or multiple diamond pattern
cord-wrapped:	repetitive impressions made with a small cylindrical object (often a stick) wrapped with a small cord
cord-impressed:	impression of a single cord (sometimes with tied knots) on the vessel surface
dentate:	a broad tool impression resulting in a regularly spaced design with impressions that are wider than they are deep
grooved\trailed:	a shallow line usually made by a blunt or rounded object producing an impression wider than it is deep
incised:	a shallow line usually made by a sharp object producing an impression deeper than it is wide
pinched:	"crimping" of the vessel lip with a tool or with fingers, usually at regularly spaced intervals
punctate:	a singular tool impression made in the vessel exterior which is deeper than it is wide (and which may result in a "boss" on the interior surface)

## SURFACE TREATMENTS

cord-wrapped paddle:	the vessel surface is impressed by a paddle or smooth tool wrapped with numerous strands of cords, resulting in an irregular and rough cord impression
fabric-impressed:	the application of a woven fabric to the vessel surface (there are various styles and weaving designs)
net-impressed:	a net is placed on the vessel surface, which gives a design that is more "open" than fabric-impressed (knots are generally characteristic of this surface treatment)
smooth:	the vessel surface is purposely smoothed using tools or fingers
smoothed cord-wrapped paddle:	the vessel surface is smoothed after the application of the cord-wrapped paddle.

For further discussion and illustration see, for example, Canadian Prehistoric Pottery: A Tentative Systemization Of Decoration Analysis by R. Marois (1984) in the National Museum of Man, Mercury Series (No. 127). A Handbook of Minnesota Prehistoric Ceramics edited by S. Afinson (1979), and published by the Minnesota Archaeological Society, may also be of assistance.

## **Appendix IX: Avocational Archaeological Permit Application Form**



## Avocational Archaeology Permit Application

### Permit Applicant:

Given Name Initial(s) Surname

Address City/Village/Town

Province Postal Code Telephone

e-mail

### 1. Activities and Locations

*I plan to do the following activities under this permit:*

\_\_\_\_\_ Survey \_\_\_\_\_ Mapping at a known site  
\_\_\_\_\_ Surface collection of artifacts \_\_\_\_\_ Mapping at a new site

*The location(s) I plan to work at are as follows:*

LSD \_\_\_\_\_ Section \_\_\_\_\_ Township \_\_\_\_\_ Range \_\_\_\_\_ W \_\_\_\_\_ M  
LSD \_\_\_\_\_ Section \_\_\_\_\_ Township \_\_\_\_\_ Range \_\_\_\_\_ W \_\_\_\_\_ M  
LSD \_\_\_\_\_ Section \_\_\_\_\_ Township \_\_\_\_\_ Range \_\_\_\_\_ W \_\_\_\_\_ M  
LSD \_\_\_\_\_ Section \_\_\_\_\_ Township \_\_\_\_\_ Range \_\_\_\_\_ W \_\_\_\_\_ M  
LSD \_\_\_\_\_ Section \_\_\_\_\_ Township \_\_\_\_\_ Range \_\_\_\_\_ W \_\_\_\_\_ M  
LSD \_\_\_\_\_ Section \_\_\_\_\_ Township \_\_\_\_\_ Range \_\_\_\_\_ W \_\_\_\_\_ M

(attach additional sheets, as needed)

*These known sites are located in the area in which I intend to work:*

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## 2.0 Proposed Field Methods

*In order to do the activities at the locations outlined above I intend to:*

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*My field assistants (if any) will be:*

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## 3.0 Artifact Curation

*If I collect any artifacts during the course of fieldwork, they will be stored at:*

- ☐ Store at my residence
- ☐ Store at local museum (Name: \_\_\_\_\_)
- ☐ Store at Royal Saskatchewan Museum
- ☐ Other (please attach description)

## 4.0 Project Schedule

Anticipated date of fieldwork commencement \_\_\_\_\_

Anticipated date of fieldwork conclusion \_\_\_\_\_

I hereby certify that I understand my obligations under *The Heritage Property Act* and its regulations and any policies or term and conditions passed and imposed pursuant to that Act.

I also certify that I have sufficient resources to carry out the fieldwork described, including fieldwork, analysis and reporting.

I agree to abide by all reporting requirements and any deadlines set by the Heritage Resources Branch in order to fulfill the terms of this permit.

Dated this \_\_\_\_\_ day of the month of \_\_\_\_\_ in the year \_\_\_\_\_

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Applicant

---

Sponsor (if applicable)

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Witness Name (printed)

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Witness Signature

## **Appendix X: Avocational Archaeological Permit Report Form**



## Avocational Archaeology Permit Report

Permit Number: \_\_\_\_ - \_\_\_\_

Permit Holder Name

Initial(s)

Surname

Address

City/Village/Town

Province

Postal Code

Telephone

e-mail

### 1. Activities Undertaken and Locations

*I engaged in the following activities under this permit:*

\_\_\_\_ Survey

\_\_\_\_ Mapping at a known site

\_\_\_\_ Surface Collection of artifacts

\_\_\_\_ Mapping at a new site

*The location(s) I worked at are as follows:*

LSD \_\_\_\_ Section \_\_\_\_ Township \_\_\_\_ Range \_\_\_\_ W \_\_\_\_ M

LSD \_\_\_\_ Section \_\_\_\_ Township \_\_\_\_ Range \_\_\_\_ W \_\_\_\_ M

LSD \_\_\_\_ Section \_\_\_\_ Township \_\_\_\_ Range \_\_\_\_ W \_\_\_\_ M

LSD \_\_\_\_ Section \_\_\_\_ Township \_\_\_\_ Range \_\_\_\_ W \_\_\_\_ M

LSD \_\_\_\_ Section \_\_\_\_ Township \_\_\_\_ Range \_\_\_\_ W \_\_\_\_ M

LSD \_\_\_\_ Section \_\_\_\_ Township \_\_\_\_ Range \_\_\_\_ W \_\_\_\_ M

(attach additional sheets, as needed)

*These known sites were located in the area in which I worked:*

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*These new sites were identified in the area in which I worked:*

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## 2.0 Field Methods Details

*Comment in this section as to how fieldwork was done (e.g. how was survey done, did you set up a datum and if so how, etc.):*

[illegible]

### 3.0 Site Information

*Give details on the type and nature of all sites discovered, and any information about sites that were visited.*

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

#### **4.0 Environmental Description of Site(s)**

*List the sites that were visited/discovered and describe their local environment (e.g. local landscape, distance to water).*

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#### **5.0 Features Identified**

*List the sites visited and any features that were identified and mapped (please attach any drawings/photos of features):*

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#### **6.0 Artifacts Observed/Collected**

*List the number, type and properties (including site) for any artifacts observed and/or collected during the course of fieldwork,*

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**7.0 Site Conditions:**

*Give any information about potential disturbances to sites visited/discovered under this permit – whether past, current or future.*

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**8.0 Site Access**

*Give information on how to get to any new sites, with directions as detailed as possible.*

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**9.0 The following materials are included with this report (as applicable):**

- ☐ A photocopy of the portion of the 1:50000 NTS map showing areas that were surveyed, that have new sites which were mapped or collected.
- ☐ Completed avocational SARR form(s)
- ☐ Any maps of sites/features
- ☐ Catalogue sheets
- ☐ Photographs of sites/features/artifacts
- ☐ a photographic record

---

Signature of Permit Holder

Date

## **Appendix XI: Advanced Type B Research Report Guidelines**

## **ADVANCED TYPE B RESEARCH REPORT GUIDELINES (SITE SURVEY AND SURFACE COLLECTION)**

### **1. Title Page**

- title (include type of project and study area)
- permit number
- author and author's address
- date of report

### **2. Acknowledgements**

- acknowledge field and lab crew and other individuals who helped, sponsored, or authorized the project (i.e. Land Owners)

### **3. Summary**

- summarize (on one page or less) the project's objectives, results, conclusions and recommendations

### **4. Table of Contents**

- use headings from this outline

### **5. List of Figures**

- itemize and show page numbers for all sketches, maps, photos, etc. (eg. Figure 1: GfMx-1 Site Plan.....20)

### **6. List of Tables**

- itemize and show page numbers for all tables and charts

### **7. Introduction**

- identify the who, what, when, where and why of project
- summarize the history of the project (how and why it came about)
- describe the organization of the report

### **8. Description of Study Area**

- identify the geographical area of the study area

- describe the local environment and topography
- briefly summarize any previous archaeological work in the area or at the site

## **9. Objectives and Methods**

- if not noted in Introduction, specify the objectives
- and scope of the project
- describe in a clear and orderly manner, the survey
- methods and, if appropriate, the equipment used
- similarly, describe methods for collecting artifacts
- (optional) describe constraints on site survey or access which may assist future investigators

## **10. Results and Analysis**

- list (by Borden number) and describe each site located during the survey
- list and describe artifacts collected at each site
- note any other significant observations made at the sites (e.g. presence and amount of bone and fire-broken rock, artifact quantity and distribution, raw material types)

## **11. Conclusions and Discussion**

- discuss what was learned from this research and what new questions were prompted from the findings

## **12. Recommendations**

- for each site, note whether further research, preservation, etc. is required or desirable
- if possible, recommend future research objectives and methods at the site or the area as a whole

## **13. References**

- include a bibliography of all references cited in the report

## **14. Appendices (one for each of the following)**

- copies of site forms (SARRs)
- catalogue sheets
- anything else which might be useful and does not appear or belong in the body of the report