Contents

The Yellowstone River Study Unit

Michael L. Gregg and Amy C. Bleier
2016

This Study Unit (SU) is made up of a portion of McKenzie County and one township in Golden Valley County which drain northwestward into the Yellowstone River. The township containing the Yellowstone-Missouri river confluence, partly in Williams County, is also assigned to this SU because most of it drains to the Yellowstone.

Description of the Unit

The total area of the Yellowstone River Study Unit (YRSU) is 765 mi². This area is depicted in Figures 13.1 and 13.1A. Following the figures there is a list of the townships assigned to this SU (Table 13.1). Portions of nine of these townships are in Montana accounting for an adjustment in area calculations.

Physiography

Most of this SU is in the McKenzie Upland physiographic region. It is made up principally of rolling plains except in the badlands and near prominent buttes (Bluemle 1989:24). Glacial gravels occur in upland areas in proximity to the Yellowstone-Missouri confluence. Local relief, which is defined as the maximum difference in elevation within any township-sized area, is 300-500 feet (ibid.).

Exposures of Sentinel Butte and Bullion Creek Formation bedrock outcrop in places in the central and southern portions of the SU. Glacial till dominates upland exposures of parent material in the northern portion of the SU. Most sediment exposed within the small portion of the Yellowstone valley in North Dakota consists of Holocene alluvium.

Drainage

The Yellowstone River rises in northwestern Wyoming and flows northeastward to its confluence with the Missouri River near the North Dakota-Montana state line (Figure 13.2). The total length of the Yellowstone channel is nearly 900 miles averaging a drop of 13 feet per mile from 10,800 feet at its headwaters in the Rocky Mountains to 1,860 feet at the confluence. The very small reach of the Yellowstone within North Dakota has a gradient of less than 1 foot per mile. The total area of the Yellowstone basin is 69,820 mi^2.

Figure 13.1: Map of the Yellowstone River Study Unit.

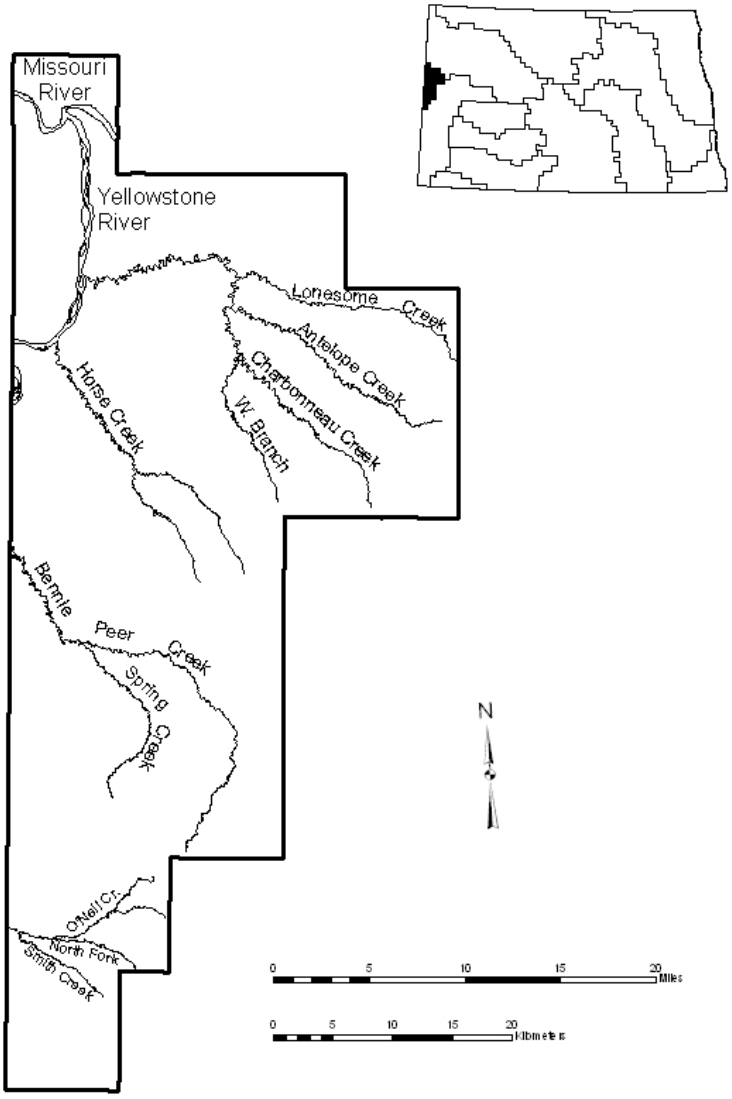


Figure 13.1A: Shaded Relief Map of the Yellowstone River Study Unit.

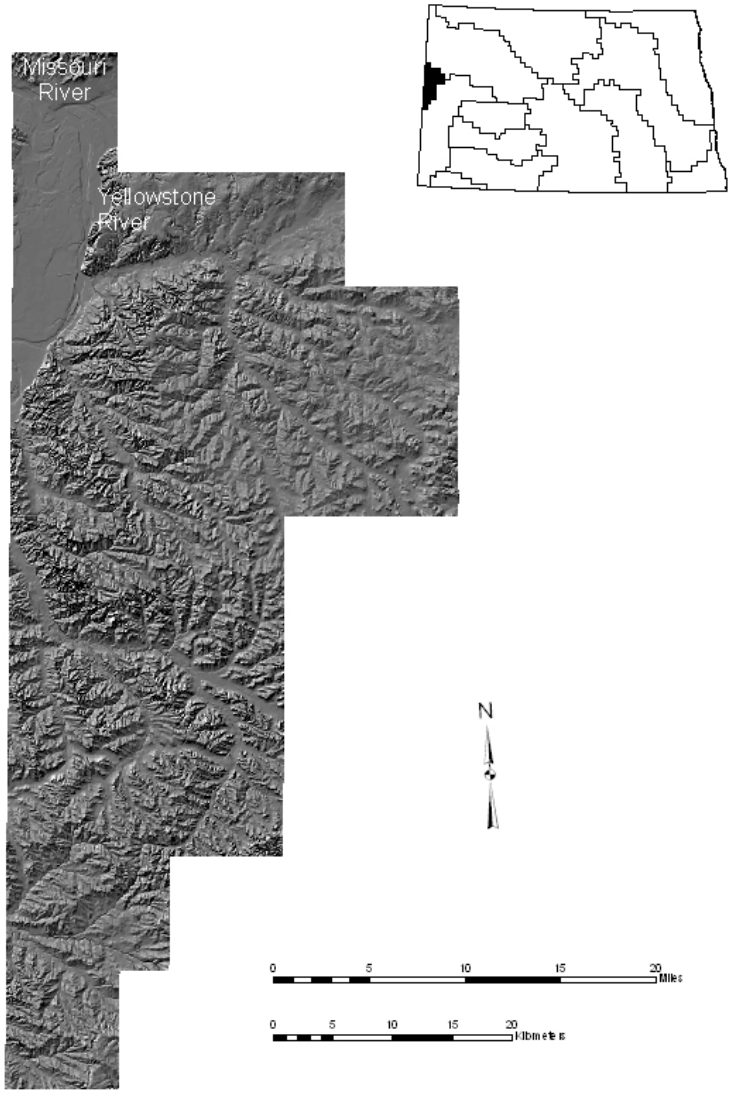
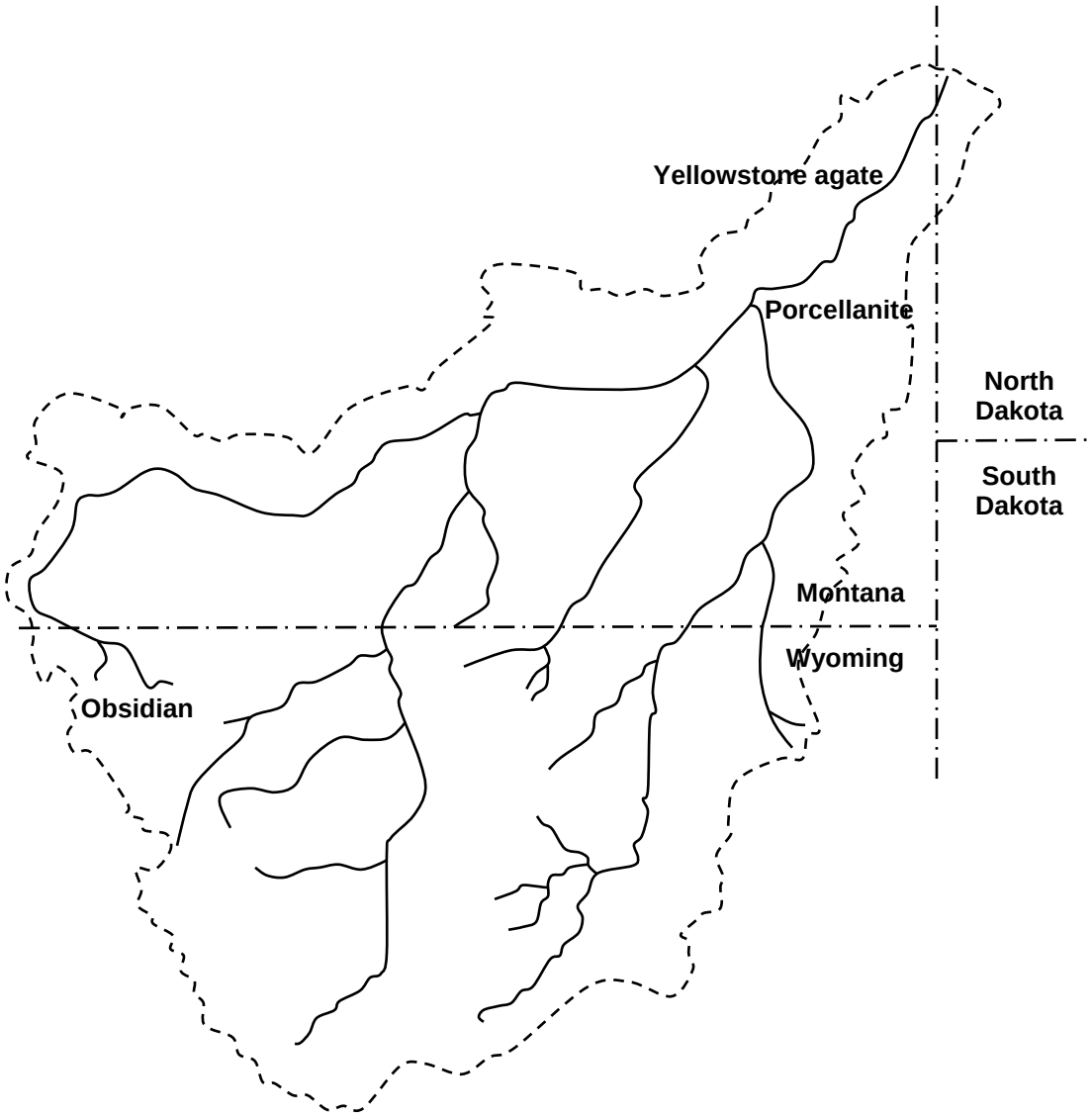


Table 13.1: Townships in the Yellowstone River Study Unit.

TOWNSHIP	RANGE
144	105
145	104
145	105
146	103
146	104
146	105
147	103
147	104
147	105
148	103
148	104
148	105
149	101
149	102
149	103
149	104
150	101
150	102
150	103
150	104
151	102
151	103
151	104
152	104

Figure 13.2: Map of the Yellowstone River drainage basin in Wyoming, Montana, and North Dakota. Major source areas of obsidian, Yellowstone agate, and porcellanite are depicted.



Prominent named tributaries of the Yellowstone which head in the North Dakota portion of the basin are Bennie Pierre Creek, Horse Creek, Sheep Creek, Antelope Creek, Lonesome Creek, and Charbonneau Creek. These are all intermittent streams in the North Dakota portions of their reaches.

Climate

Referring to Jensen (1972), this is one of the warmer parts of the state with an annual mean temperature of about 42° F. The annual mean precipitation is about 14 inches, mostly falling from April through September (ibid.:40-41). The area gets less snow than most of the rest of the state.

Landforms and Soils

The YRSU comprises two general physiographic components: (1) badlands terrain and (2) rolling prairie grasslands. Badlands areas display horizontally bedded clay and silt bedrock exposures which have been sculptured by aeolian and hydrological processes into a variety of heavily dissected landforms such as canyons, ridges and buttes. There are also large expanses of gently rolling short grass prairie. Within the Yellowstone valley, prominent landforms are valley walls, valley wall foot slopes, alluvial fans, river terraces, and floodplain. River bottomland sediments are predominantly Holocene age alluvium and colluvium.

Natural Resources Conservation Service (NRCS) official soil survey resources are available online (NRCS 2016a, b, c). The Web Soil Survey in particular may be useful, as it has replaced the traditional county soil survey books.

- Electronic Field Office Technical Guide: https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/fotg/
- Soil Data Mart: http://sdmdataaccess.nrcs.usda.gov/
- Web Soil Survey: https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/survey/

Flora and Fauna

The SU encompasses portions of two major biotic communities in western North Dakota: mixed grass prairie and floodplain forest. Prominent vegetation in rolling upland grasslands includes grama grass *(Boutleoua* sp.), sage *(Artemisia* sp.), prickly pear *(Opuntia fragilis),* and buckbrush *(Symphoricapro occidentallis).* In more rugged terrain cut by drainages and draws, Rocky Mountain juniper *(Juniperus* sp.), hawthorne *(Crataegus chrysocarpa*), and buffaloberry *(Hepargyrea argentea)* can be found.

Floodplain forest occurs along stretches of bottomland in the Missouri and Yellowstone valleys. Cottonwood *(Populus deltoides),* box elder *(Acer negundo),* and aspen *(Populus tremuloides)* comprise the dominant species. A variety of other grasses, forbs, and shrubs occur as understory vegetation. Edmondson et al. (2014) provide additional vegetation history information relevant to the YRSU.

The prairie grassland biome provides habitat for a number of large and small mammals as well as various species of birds and reptiles. In prehistory, bison *(Bison bison)* were common in the grasslands of the Northern Plains. Other ungulate species known to frequent the Yellowstone basin include pronghorn antelope *(Antilocapra americana)* and bighorn sheep *(Ovis canadensis).* Smaller mammals include the coyote *(Canis latrans)* and the white-tailed jackrabbit *(Lepus townsendii).* Raptors such as the golden eagle *(Aquila chrysactos)* and various species of hawks and owls patrol the skies. The prairie rattler and the bull snake are common in badlands terrain. Forested bottomlands are home to mule deer *(Odocoileus hemionus)* along with several riparian fur bearers such as beaver *(Castor canadensis)* and raccoon *(Procyon lotor).* Various species of fish and freshwater mussels inhabit the Missouri and Yellowstone rivers and their tributaries. Native groups in the basin exploited many of these creatures for food, skins, furs and feathers.

Other Natural Resource Potential

The Yellowstone basin holds a wealth of raw materials of importance to traditional technologies practiced by the various Native groups inhabiting the region. Sources of good quality stones for knapping into tool forms are locally available in the river gravels and as glacial drift lag deposits (Toom 1983c). These include fine-grained materials such as Yellowstone agate, porcellanite, chalcedonies, silicified woods, and cherts. Antelope chert was a stone resource exploited by Paleo-Indian (Paleo) and later Archaic groups in the Yellowstone River and adjacent regions in western North Dakota (Ahler 1994:96). Ubiquitous granitic, basaltic and quartzite materials were utilized as (1) stock material from which to fashion ground stone tools and (2) objects of thermal energy transfer.

Hides, furs and feathers were made into clothing and decorative apparel by Plains Indians (cf. Ewers 1970). Shell and bone were used as stock material for the production of various utilitarian tools and ornaments. Timber resources were exploited for construction materials and for fuel (cf. Loendorf 1978:41).

Overview of Previous Archeological Work

There has been a large amount of work conducted here in light of the small total area of this SU (765 mi^2). The vast majority of the work has been the result of oil and gas exploration and development on lands of the Little Missouri National Grasslands managed by the United States Forest Service (USFS). Floodman (2012) provides a summary of the prehistory including parcels within the YRSU. Also, there have been numerous archeological investigations in and around Fort Union National Historic Site (NHS).

As of 5 August 2015, there were 365 archeological sites and 334 archeological site leads and isolated finds in the North Dakota Cultural Resource Survey (NDCRS) for the YRSU. With an area of 765 $mi^{2,}$ there was one recorded archeological site per 2.1 mi^2.

Recorded cultural/temporal affiliations for archeological resources are considered in Table 13.2. The majority of the sites date to the Plains Archaic period. There are surprisingly few (n=2) documented Paleo sites.

Reviewing the data for feature types and landforms in the YRSU, there is a very high percentage of cultural material scatters (57%), and a noticeably high number of rock feature sites (n=123 or 30%) (Table 13.3).

Table 13.2: Cultural/Temporal Affiliation of Archeological Resources in the Yellowstone River Study Unit, 5 August 2015.

Paleo-Indian	
Plano	1
Post-Plano	1
Total	**2**
Archaic	
Early Large Side-Notched	1
Oxbow	1
McKean/Duncan/Hanna	8
Pelican Lake	9
Unspecified	13
Total	**32**
Woodland	
Sonota/Besant	9
Avonlea	4
Early Woodland	1
Unspecified	1
Total	**15**
Plains Village	
Total	**3**
Plains Nomadic	
Total	**3**
Late Prehistoric	
Total	**16**
Historic	
Hidatsa	1
Unspecified	4
Total	**5**
Unknown	**634**

Table 13.3: Feature Type by Landform for Archeological Sites in the Yellowstone River Study Unit, 5 August 2015.

	Cairn	Conical	CMS	Eagle	Village	Earth	Grave	Hearth	Jump	Mound	ORF	Pit	Quarry	Shelter	Circle	Misc	TOTAL
Beach/River bank			5														5
Butte	1		8	1									1		1		12
Draw	1		2												2		5
Floodplain			4														4
Hill/Knoll/ Bluff	9		62				1	3			7	1	8		13		104
Other			10					1									11
Ridge	20		55		1			4	2	1	10	3	6	1	39		142
Saddle			8												2		10
Spur	2		6				1	1					1		5		16
Terrace	3	1	62		1		1	4		1	3	2	2		4	1	85
Upland Plain		1	10			1						1					13
Valley wall foot slope			9					1					3		1		14
TOTAL	36	2	241	1	2	1	3	14	2	2	20	7	21	1	67	1	421

Conical=Timber Conical Lodge; CMS=Cultural Material Scatter; Eagle=Eagle Trapping Feature; Village=Earthlodge Village; Earth=Earthwork; ORF=Other Rock Feature; Circle=Stone Circle; Misc=Miscellaneous

Inventory Projects

As of 5 August 2015, there were 1,185 cultural resource reports on file for this SU in the Archaeology and Historic Preservation Division (AHP), State Historical Society of North Dakota (SHSND). Approximately 188,270.71 acres have been inventoried.

The manuscript collection reveals that most land has been inventoried for cultural resources preparatory to energy development (Table 13.4). In fact, over 80% of the reports relate to energy. Twelve percent of the inventories involve agricultural practices or natural resources. Transportation projects account for 5% and telecommunications only 0.1% of the inventories.

Table 13.4: Types of Class III Inventory Project Reports and Their Percentage of the Total Project Reports in the Yellowstone River Study Unit, as of 5 August 2015.

Type of Project	Number of Reports	Percentage
Oil & Gas	915	77%
Land use	144	12%
Transportation	53	5%
Electricity	48	4%
Telecommunications	11	<1%*
Other	14	<1%*
Total	1,185	100%

*Telecommunications and Other projects combined actually account for 0.02% of the total.

Formal Test Excavation Projects

From the following list of testing reports (Table 13.5), it appears that 5% of the total number of recorded sites (n=365) in this SU have been tested. The majority of this work was conducted as a result of energy exploration and production development in the Williston Basin.

Table 13.5: Formal Testing Projects in the Yellowstone River Study Unit, 5 August 2015.

Year	First Author	Second Author	Title	Sites Tested	Ms #
1980	Rippeteau, B.		Addendum to Shell 24-4: A Report on Limited Shovel Testing, McKenzie Co., ND	No site number	1871
1980	Rippeteau, B.		Addendum to Shell 22-24 Battery, Testing Report, McKenzie Co., ND	No site number	1875
1980	Rippeteau, B.		Addendum to Shell 21-15-103: Report on Limited Shovel Testing on the Proposed Well Pad, McKenzie Co., ND	32MZ185	1879
1980	Tate, M.		Addendum to Dome Petroleum Company Access to Dome 3-17: Report on Limited Shovel Testing on the Proposed Well Pad, McKenzie Co., ND	32MZ321	2301
1980	Rippeteau, B.		Shell Oil Company 24-4 Addendum Report: A Report on Limited Shovel Testing, McKenzie	No site number	2331

Year	First Author	Second Author	Title	Sites Tested	Ms #
			Co., ND		
1980	Rippeteau, B.		Brownlie, Wallace, Armstrong & Bander 12-23 Addendum Report on Limited Shovel Testing on the Proposed Well Pad, McKenzie Co., ND	No site number	2422
1981	Sheldon, C.	A. Simon	McKenzie Rural Electric Cooperative, Surface Collection & Shovel-Probe Testing at 32MZ269 & 32MZ270	32MZ269, 32MZ270	1852
1981	Rippeteau, B.		Shell Oil Company 34-20-108, Shovel Testing Addendum Report, McKenzie Co., ND	32MZ189	2338
1981	Johnson, C.	A. Simon	Archaeological Test Excavation at the Ulsaker-Indergard Site (32MZ328), McKenzie Co., ND	32MZ328	2470
1982	MacDonald, L.	D. Gallacher et al.	Testing and Evaluation of Cultural Resource Sites 32WI31, 32WI32 & 32WI34, Williams Co., ND	32WI34	2489
1982	Floodman, M.	M. Tate et al.	Archaeological Investigations at Prehistoric Sites 32MZ333 & 32MZ334, McKenzie Co., ND	32MZ333	2831
1982	Borchert, J.	D. Hungerford et al.	Archaeological Investigations of Sites 32MZ333, 32MZ334, & 32MZ573 McKenzie Co., ND	32MZ333	4507
1983	Root, M.	M. Gregg	Archeology of the Northern Border Pipeline, ND: Vol. 3, Test Excavations, McIntosh, Emmons, Morton, Stark, Mercer, Dunn, McKenzie, & Williams Co., ND	32MZ370 32MZ484	3456
1984	Floodman, M.		Tom Brown, Inc., Federal 19-42 Access Road Archaeological Testing at Sites 32MZ46 & 32MZ685, McKenzie Co., ND	32MZ46 32MZ685	3181
1985	Kuehn, D.		A Report on Construction Monitoring and Salvage Excavations at Site 32MZ767, McKenzie Co., ND	32MZ767	3885
1988	Kuehn, D.	J. Borchert et al.	McKenzie Co., Cheney Creek Road Project	32MZ864	4622
1989	Borchert, J.		32MZ864 Cheney Creek Road Evaluative Test Excavation Results	32MZ864	4721
1990	Swenson, F.		Letter Report on the 1988 Test Excavations at Fort Buford (32WI25), Williams Co., ND	32WI25	5234
1998	Floodman, M.		Salvage Excavation at Two Sites on the McKenzie District, Little Missouri National Grasslands, McKenzie Co., ND	32MZ1303	7192
1998	Klinner, D.		Fort Union Trading Post National Historic Site and Landmark, Site 32WI17-24RV50, Fur Press Testing Project	32WI17	7208
1998	Klinner, D.		Fort Union Trading Post National Historic Site-Fur Press Testing Project in Williams Co., ND	32WI17	7287
2000	Klinner, D.		Site 32MZ1304, Archeological Site Evaluation Testing Project, McKenzie Co., ND	32MZ1304	7641
2001	Stadler, S.		Completion of Excavations Related to Waterline Construction, Fort Union Trading Post National Historic Site (FOUS), Williams Co., ND	32WI17	7895
2002	Wermers, G.	D. Klinner	Fort Buford State Historic Site: Excavations to Identify the Corners of an 1870's Barracks &	32WI25	8217

Year	First Author	Second Author	Title	Sites Tested	Ms #
			Associated Kitchen/Mess Hall, Williams Co., ND		
2003	Hunt Jr., W.		1988 Archeological Investigations at Fort Union Trading Post National Historic Site (32WI17), MT-ND	32WI17	8566

A number of different types of sites have been investigated. Borchert et al. (1982) discuss work conducted at three cultural material scatters including the Abraxis site (32MZ333) which became the focus of further excavations. Another three sites were examined in Williams County in the township containing the Yellowstone-Missouri confluence (McDonald et al. 1982).

Excavations at 32MZ333 and 32MZ334 were carried out in 1981 revealing a Sonota/Besant cultural deposit containing the remains of several hearth features and associated artifacts. Chronometric dates obtained from this deposit cluster around 2000 BP. (Beckes and Keyser 1983:Table 3). Diagnostic artifacts from the excavations include a Besant side-notched projectile point (Floodman et al. 1982).

Cultural deposits dating to the Plains Village period were sampled at the Cheney Creek site (32MZ27) (McLean and Newell 1980). This is one of a few campsites of this age that have been investigated along the Upper Missouri River.

Twelve sites were recorded along the ca. 25 kilometers (15 miles) segment of the Northern Border Pipeline transecting a portion of the northern edge of the SU (Root 1983:662, The Missouri Plateau and Badlands Region). Not all of the sites were within the pipeline right-of-way; in several cases, landowners made special requests of the site surveyors to record sites that they knew about outside of the right-of-way. Five stone feature sites and seven cultural material scatters were recorded. These were the types of sites identified most commonly by Loendorf (1978) for western North Dakota in general. Each of the five stone feature sites had stone circles (2, 3, 3, 7, and 10 circles apiece), and some had rock piles in addition. All of the cultural material scatters were fairly small and displayed low artifact densities. All but two were lithic scatters. Two potsherds were found at one of the cultural material scatters, and several bone fragments were found at another. Diagnostic Archaic projectile points were recovered from several of these sites. Two were tested, but salvage excavations were not conducted.

Two sites were formally tested in the segment of the Northern Border Pipeline transecting the northern edge of the SU. Low density artifact deposits associated with two cairns and two stone circles were sampled by hand excavation at 32MZ370 (Root 1983j). No temporally/culturally diagnostic artifacts were recovered. The site represents a temporary camp of unknown prehistoric cultural/temporal affiliation. The Highway site (32MZ474), a cultural material scatter in a tilled field just south of Alexander, was also tested (Root 1983q). Several thin potsherds, a Plains side-notched arrow point, burned bone, and other debris evidenced a Plains Village field camp occupation.

In 1985, Kuehn reported results of small salvage excavations conducted when a hearth feature was observed during construction monitoring. Remains from bison processing were recovered, and several radiocarbon dates were obtained on samples from the feature. The feature was created late in the Plains Village period.

Site 32MZ864 was tested in 1988 in order to evaluate the impact of a proposed road upgrade. Two components (Plains Village and unidentified) within the right-of-way and three components (Avonlea, Pelican Lake, and Plains Village) outside the right-of-way were identified (Borchert 1989:61). Plains Village pottery was recovered from the east and west ends of the site. The collected tools include projectile points identified as Avonlea and Pelican Lake and a probable lanceolate point midsection. Charcoal samples were collected for radiometric dating but the results were not discussed. Magnetic survey conducted at the site revealed that there are potentially five additional buried hearth features (ibid.). Suggestions for future research include examining 1) the change in resource use and technology and 2) settlement patterns through time in western North Dakota.

Located in the McKenzie Ranger District of the Little Missouri National Grasslands, salvage excavations were undertaken at the Klandl Spring site (32MZ1303) in 1996-1997 (Floodman 1998). Originally recorded as a dense cultural material scatter comprised of six site localities, it is situated south of Klandl Spring along a terrace and ridge crest. Archeological sites in the surrounding area date from Paleo through Avonlea periods. The Klandl Spring site consists of chipped stone tools and debitage. Antelope chert outcrops are found on the top of the ridge. Other local raw material types and exposed hearths were present downslope along the draw. Charcoal samples were recovered from two of the hearths. Radiocarbon tests indicate two occupations dating from the Middle Woodland through the Late Woodland period. Further investigations are encouraged because of the comparative information potential of the stratified artifact deposits and little work has been done in the YRSU concerning the Middle Woodland to Late Woodland transition (ibid.).

Stone Circle and Cairn Sites

Over 60 stone circle sites have been identified in this SU (see Table 13.3). Table 13.6 lists the sole stone circle site that has been formally excavated (at least one 1-x-1-m unit). Table 13.6 was developed so these data are readily available for researchers.

Table 13.6: Stone Feature Sites Formally Tested in the Yellowstone River Study Unit, 5 August 2015.

Site Number	Tested Feature Type	Test Unit Location	Cultural Material	Manuscript
32MZ370	Circles	Inside	Yes	3456
	Cairns	Inside	Yes	

Review of the literature reveals the changing research questions addressed over time for stone features. The monograph on stone circle sites in *Plains Anthropologist*

Memoir 19 is a valuable source of information (Davis 1983). Compilations of radiocarbon dates from sites in McLean, Mercer, and Oliver counties can be found in Strait and Peterson (2007:4.6-4.8), in Mclean County (Thomas and Peterson 2010:6.2-6.3) and from Besant/Sonota sites in Deaver and Deaver (1987). A useful discussion of single stone circle site function based on ethnographic accounts is available in Gregg et al. (1983:[3]864-869). An assessment of nomadic settlement-subsistence structure and bison ecology is discussed by Hanson (1983:1342-1417). Additional references for stone features sites can be found in the reference section of the Cultural Heritage Form.

Thirty-six stone cairns have been recorded in YRSU (see Table 13.3). Suggested uses of cairns include markers for events and travel routes, bracing poles for a variety of camp structures, caches, drive lines, or covering a burial.

Major Excavation Projects

All major excavations in the YRSU, with one exception (McLean and Newell 1980), have occurred at Fort Union (32WI17) or Fort Buford (32WI25). Site 32MZ27 was tested in October of 1979. Prior to test excavations, it was thought that the site, on an alluvial terrace above the Yellowstone River, was a prehistoric village (ibid.:1). Test excavations did not yield enough information to determine the site type or cultural/temporal affiliation. At the time of the investigations, the site had been heavily disturbed by agricultural activities and erosion (ibid.:29).

Table 13.7: Major Excavation Projects in the Yellowstone River Study Unit, 5 August 2015.

Year	First Author	Second Author	Title	Site Number	Ms #
1969	Husted, W.		1969 Excavations at Fort Union Trading Post National Historic Site, ND: A Progress Report, Williams Co., ND	32WI17	229
1970	Husted, W.		1970 Excavations at Fort Union Trading Post National Historic Site, Williams CO., ND: A Progress Report	32WI17	6429
1973	Gillio, D.		1972 Excavations at Fort Union Trading Post National Historic Site, Williams Co., ND	32WI17	6430
1980	McLean, G.	A. Newell	Cheney Creek Erosion Control Demonstration Project Contract No. DACW 45-79-M-3973, McKenzie Co., ND	32WI27	2585
1986	Scott, D.	J. Bozell	This Flag-Staff is the Glory of the Fort: Archeological Investigations of the Fort Union Flagpole Remains, Williams Co., ND	32WI17	4039
1988	Hunt, W.	L. Peterson	Fort Union, The 1986 Excavations, Williams Co., ND	32WI17	4502
1990	Peterson, L.	W. Hunt, Jr.	Fort Union Trading Post, Williams Co.: Archeology & Architecture	32WI17	5319
1992	Kuehn, D.	B. Howard et al.	Archaeological Excavations at Fort Buford, 32WI25, Williams Co., ND: Summary of the 1991 Field Season	32WI25	5934
1993	Kuehn, D.	T. Schlinke et al.	Archaeological Excavations at Fort Buford, 32WI25, Williams Co., ND: Summary of the 1991 and 1992 Field Seasons	32WI25	5948
1995	McKibbin, A.	K. Karsmizki et al.	Fort Buford: Report of 1994 Archaeological Investigations, Williams Co., ND	32WI25	6433
2002	Peterson, L.		1988 Archeological Investigations at Fort Union Trading Post National Historic Site (32WI17), MT-ND	32WI17	8148

Year	First Author	Second Author	Title	Site Number	Ms #
			Block 15 Report		
2002	Peterson, L.		1988 Archeological Investigations at Fort Union Trading Post National Historic Site (32WI17), MT-ND Block 16 Report	32WI17	8149
2002	Wermers, G.	D. Klinner	Fort Buford State Historic Site: Excavations to Identify the Corners of an 1870's Barracks & Associated Kitchen/Mess Hall, Williams Co., ND	32WI25	8217
2002	Cabak, M.	M. Groover	1988 Archeological Investigations at Fort Union Trading Post National Historic Site (32WI17), MT-ND Block 18 Report	32WI17	8248
2005	McKibbin, A.	R. Carrillo	Fort Buford State Historic Site (32WI25): Archaeological Investigations for an 1870s Infantry Barracks and Kitchen/Mess Hall Reconstruction, Williams Co., ND	32WI25	10007

Work at Fort Union involved a multi-year salvage/research project sponsored by the Midwest Archeological Center, National Park Service (MWAC). Excavations by MWAC personnel between 1985 and 1988 focused on remains of structural features within the original fort complex. During 1988 and 1989, parts of the fort were reconstructed directly upon the original Fort Union archeological deposit.

The reports on the 1988 investigations at Fort Union were organized by excavation block, including Block 15 (Peterson 2002a), Block 16 (Peterson 2002b), Block 18 (Cabak and Groover 2002), and Block 20 (Thiel 2003). No evidence of a prehistoric component was found at the north end of the west palisade (Block 15). However, flaking debris amid historic debitage, and possible Native American features were found on either side of the west palisade (Block 16). Peterson (2002) suggests this is the result of a historic Native American occupation within Fort Union. Block 18 consisted of the 1833 south palisade, the southwest corner of the 1828 palisade, and the 1850s blacksmith shop. Artifacts and features indicate production by Euro-Americans and Native Americans. Pits and pit-like features with fire-cracked rock were observed in levels dating before 1828 or the Pre-Fort Period (Cabak and Groover 2002). Pits also were present in levels dating to the First Fort Period (1828-1833) (ibid.).

Archeological investigations at Fort Buford are important in reconstructing settlement period interaction on the Northern Plains and because of its prime location (Yellowstone-Missouri confluence). Several excavations have been conducted at Fort Buford. In addition to abundant historic materials, prehistoric artifacts have been found at the site. In 1991 and 1992 field investigation summaries, Kuehn et al. (1992, 1993) noted the recovery of 44 pieces of debitage (KRF, chalcedony, chert, quartzite, obsidian), one scraper, one hammerstone, two projectile points, three body sherds, and one rim sherd. The projectile points are both grey chert Plains side-notched points. The body sherds are smoothed with sand temper. The decorative treatment on the rim sherd is cord impressed suggesting a Plains Village affiliation.

McKibbin et al. (1995) reported a similar artifact assemblage in their investigations at Fort Buford. It consisted of 29 pieces of debitage (KRF, chert), one end scraper, one flake tool, a KRF projectile point fragment, and one bodysherd. The projectile point was the shoulder of a side- or corner-notched point. The authors (ibid.) suggest there was a Native American occupation at the site before Fort Buford was built. The evidence given for this is the differing frequency of Native American artifacts in the upper and lower excavation levels; more flakes were found in the level below the Euro-American one (ibid.). If no pre-fort occupation had existed, investigators would expect to find more Native American artifacts in the level of fort occupation.

Archeologists excavated 40.5 m² of the West Adobe Barracks at Fort Buford (McKibbin and Carrillo 2005). In addition to numerous historic artifacts, the assemblage included eight pieces of debitage, three flake tools, two scrapers, two retouched flakes, one modified bone, and two bodysherds. The chipped stone raw materials were quartzite, KRF, TRSS, and obsidian. The ceramics were undecorated brown ware. These artifacts were concentrated at the southern end of the barracks and passageway. The distribution of prehistoric artifacts was unlike the historic items. Investigators suggest that (1) the prehistoric artifacts indicate no long-term prehistoric occupation and (2) Fort Buford was constructed atop the earlier cultural materials (ibid.).

National Register of Historic Places and National Historical Landmark

In the YRSU, one archeological site is listed in the National Register of Historic Places (NRHP) in 2016. Fort Union Trading Post NHS (32WI17) is designated as a National Historic Landmark and listed in the NRHP. Several testing and major excavations have occurred at the site (see above).

The current list of archeological sites in North Dakota listed in the NRHP is available online. The following links are useful (NPS 2016a, b):

- General information and links to specific information: https://www.nps.gov/nr/
- National Register Information System: https://www.nps.gov/nr/research/

Other Work

The majority of the reports of other work also pertain to the Fort Union Trading Post NHS. These include results of a cultural resource inventory (MWAC 1979), and a proton magnetometry survey (Weymouth 1979 and 1990). Gregory Fox's work (1982) deals with the Garden Coulee site (32WI18), a historic Hidatsa village of the Crow Flies High band within the bounds of the NHS property. Scott et al. (1985) prepared a scope of work for investigations which were subsequently undertaken between 1985 and 1988 at the site. Archeologists with the NPS provide material culture inventories resultant from the 1988 field investigations (De Vore and Hunt 1993, 1994, and 1996; Thiel 1998). Research concerning bone China gorgets found at Fort Union was conducted by Sudderth and Hulvershorn (2000). A geophysical survey was undertaken at the Garden Coulee site in 2002 (Jones and Maki 2003).

Four volumes summarize MWAC inventories of 1988 at Fort Union. The Native American artifact assemblage includes pipes, metal projectile points, and modified bone. The distribution of pipe artifacts indicates that the primary use area was the Indians' and Artisans' House (De Vore and Hunt 1993). Identifiable styles include the Plains/Sioux pipes, elbow pipes, Micmac pipes, and a clay pipe (ibid.:21). The brass and iron projectile points include five plain stemmed points, one notched/serrated stemmed point, three unstemmed triangular points, and 15 stemmed point fragments (ibid.:39-40). Thiel (1998) identifies three alternatives to explain the appearance of modified bone at Fort Union. First, artifacts were manufactured by Euro-American traders and their Native American wives on-site. Second, the goods were imported from the East or Europe. Third, the items resulted from trade with nearby Native American Villagers. Thiel (ibid.) offers a couple of conclusions regarding Native American items. One, those items made off-site include an elk antler saddle part, some of the gaming pieces, a bone arrowpoint, arrow shaft straighteners, and some of the jewelry. This assumption is supported by similar items recovered from Like-A-Fishhook Village and Fort Berthold I and II (ibid.:45). Also, some artifacts are connected to Native American women based on ethnographic information concerning their activities (ibid.:46). Seven burials have been recorded at Fort Union (De Vore and Hunt 1994).

In 1999, archeologists conducted a magnetic gradiometer survey along a Fort Union waterline (Nickel and Hunt 2000). The investigation provided information for future planning at the site. The magnetometer readings revealed 53 anomalies which investigators suggest are archeological features.

Jones and Maki (2003) conducted an electrical resistance survey and a magnetic field gradient survey at the Garden Coulee site. The results of the surveys correlate and suggest that the observed anomalies are cultural.

Paleo-Indian Period

Finds of a few distinctively styled lanceolate projectile points provide the only evidence of this earliest period of Native settlement in the YRSU. Since the SU was not glaciated during Late Wisconsinan times, most of the Paleo complexes previously reported for North Dakota ought to be represented here. However, Paleo sites are few in number (see Table 13.2).

Paleo-Environmental Modeling

The geomorphic modeling of paleo-landscapes within the YRSU during Paleo times is central to understanding past land use and overall site potential. This is especially apparent for the rolling grasslands physiographic zone which today comprises much of the region. An on-going data gap concerns the lack of reported Paleo sites in the SU. Beckes and Keyser (1983:173) raised this question: Is the lack of Paleo sites in the recorded site data base a reflection of a high rate of site destruction through erosion or an actual paucity of past settlement? Results of pedologic and geomorphic studies will provide answers. Cultural deposits of Paleo-age should be expected to occur deeply

buried in the alluvial and colluvial fills of the valleys of the Yellowstone and its tributaries. What was the Yellowstone-Missouri like throughout the course of the Paleo period? When did the confluence locality attain it essentially modern geomorphic form?

Cultural Chronology

Jerde (1981) reported the occurrence of a possible Clovis or Folsom component along with finds of Agate Basin, Eden, and Scottsbluff points from several locations in nearby Sheridan County, Montana. These artifacts were collected from settings associated with an ancestral Missouri River meltwater channel. One of the rare reports of Paleo material from the YRSU concerns a Scottsbluff point from 32WI102 very near the North Dakota-Montana state line (Schneider and Roberson 1981:7). What Paleo complexes are represented by archeological remains in the YRSU?

Settlement Behavior

A variety of landscapes would have been open for Paleo settlement during early Holocene times. Older terrace surfaces of the Yellowstone valley and the surrounding uplands likely would have provided favorable habitats for animal and plant species and hence attracted human settlement in proximity. Schneider and Roberson (1981:7) mention a possible kill location (32WI102) containing bison remains in association with a Scottsbluff projectile point. These materials were reportedly found in a coulee near Fort Union NHS (ibid). Were residential bases most commonly established in the main river valley during Paleo times as they were during later prehistoric periods?

Native Subsistence Practices

The earliest hunter-gatherers likely exploited a broad array of plant and animal resources. The unpublished discovery of mammoth remains in the Powers Lake locality, 60 miles to the northeast, by Dan Aird indicates that remnant Pleistocene megafauna were found in the region. Bison should have been available. How did the floral and faunal resource potential of the YRSU change during the course of the Paleo period?

Technologies

Evidence from other regions of the Northern Plains indicates that stone knapping skills of Paleo craftsman were among the best developed of any cultural tradition identified in the New World (cf. Hayden 1982). Members of these populations also fashioned exquisite implements from bone, antler, ivory, shell, and wood. The earliest Americans also constructed dwellings at residential bases and formulated multi-group communal hunting plans (cf. Prison 1978:149). In what depositional contexts within the YRSU would perishable bone, antler, ivory, shell, and wood artifacts of Paleo age most likely be preserved?

Artifact Styles

Considering the single reported occurrence of a Scottsbluff point from the SU, it is premature to speculate too much concerning dimensions of Paleo artifact style. The points illustrated by Jerde (1981) and Schneider (1982d) from adjacent regions, however, appear to conform to established regional norms of Paleo craftsmanship. What changes in geographic orientation are indicated by Paleo artifact styles of different ages represented at sites within the YRSU?

Regional Interaction

Lithic use patterns reflected in the small sample of Paleo artifacts from western North Dakota and eastern Montana point to a significant reliance on Knife River flint (KRF). But locally available stones such as porcellanite were also used to fashion lanceolate projectile points (cf. Jerde 1981; Schneider 1982d). Antelope chert has been identified in Paleo and Archaic assemblages in western North Dakota (Ahler 1994:96). The availability of good quality local stone resources probably influenced settlement practices (cf. Goodyear 1989). How did the importance of the cobbles of chert, Yellowstone agate, and porcellanite in ancient alluvial gravels adjacent to the Yellowstone River valley vary through the Paleo period? When during the Holocene were gravel beds with large cobbles of these materials accessible in the Yellowstone River valley?

Historic Preservation Goals, Priorities, and Strategies

Identification of Paleo site locations within the Yellowstone and Missouri valleys is crucial to the interpretation of terminal Pleistocene-early Holocene hunter-gatherer land use on a regional scale. These data, coupled with geomorphic information such as the location of river channels and playa lakes during Paleo times will provide some of the information necessary to begin modeling land use and settlement during this period (cf. Bamforth 1988:163-183). Top priorities are to identify sites and model Paleo period environmental conditions.

Plains Archaic Period

Plains Archaic components are the best represented remains presently known from this SU. Early, Middle and Late Plains Archaic complexes such as Hanna, Duncan, and Pelican Lake are present.

Paleo-Environmental Modeling

The environmental conditions of the Altithermal are central to modeling Plains Archaic land use during the Atlantic climatic episode in the lower Yellowstone basin. Also, rapid erosion and deposition which characterize arid times can destroy some sites and bury others (cf. Ferring 1986; Jorstad et al. 1986). Discovery of buried Plains Archaic components may be anticipated within floodplain, terrace, and alluvial fan

landforms built up during the Altithermal. What are the depths of mid-Holocene aeolian deposits in upland settings within the YRSU?

Cultural Chronology

Use of the SU by people with Logan Creek-Mummy Cave material culture is indicated by the find of a heavily patinated Simonsen point just outside the eastern margin of the SU near the headwaters of Cherry Creek (Root 1983w:669, 686). A lightly patinated KRF Oxbow point was recovered as an isolated find near the headwaters of Lonesome Creek (ibid.:668, 682). Which Archaic cultural complexes are represented by sites or isolated finds in the YRSU?

Settlement Behavior

Plains Archaic settlement in the Yellowstone drainage is presently known predominantly from cultural material scatters on terraces, ridges, or other elevated settings (cf. Beckes and Keyser 1983:178-179). This patterning is likely a function of high archeological site visibility in eroded physiographic settings sampled by survey rather than an accurate reflection of prehistoric land use. Floodplains and terraces along the main river and tributary streams should also have been intensively utilized. A brief encampment of Late Archaic age is indicated at 32MZ473 where a low density lithic scatter was found on a terrace between two intermittent streams draining southward to Lonesome Creek in the northern portion of the SU (Root 1983w:667-673). Hunting and lithic raw material procurement were the activities evinced by the small sample of surface collected artifacts from this site. Which settings within the YRSU were selected by Early, Middle, and Late Archaic peoples for siting their residential bases?

Native Subsistence Practices

Subsistence strategies of Middle and Late Plains Archaic groups are thought to have involved a mix of hunting and gathering. This generalization is based on recovered stone tool and bone assemblages from sites not far to the south in the Little Missouri River SU along Cinnamon Creek Ridge (cf. Beckes and Keyser 1983) and campsites such as the Mondrian Tree site (32MZ58) near the mouth of a small tributary valley near the Yellowstone-Missouri confluence immediately to the east (Toom and Gregg 1983). Bison, antelope, deer, and canid remains occur in the Middle and Late Plains Archaic faunal assemblages from these sites. The presence of manos and grinding slab fragments indicate that plant resources were exploited as well (Toom 1983e). How did the floral and faunal composition of the YRSU vary through the millennia of the Early, Middle, and Late Archaic periods?

Technologies

Large quantities of fire-cracked rock are frequently recovered from Plains Archaic components in the region pointing to the importance of stone boiling as a preferred procedure for heat transfer during food preparation and other domestic activities at

campsites (cf. Jorstad et al. 1986; Toom and Baumann 1983). Is there anything distinctive about the ways Plains Archaic peoples utilized hot rocks for thermal energy transfer?

Artifact Styles

Early Plains Archaic materials are not well known in the YRSU. McKean, Yonkee, Hanna, and Duncan point styles are commonly represented in Middle Plains Archaic assemblages and in private collections from sites elsewhere in the basin outside of North Dakota as well as in other nearby regions (cf. Beckes and Keyser 1983:177-178; Toom 1983b). A variety of corner-notched point styles, commonly identified as Pelican Lake, occur in dated Late Plains Archaic components from ridgetop and bottomland settings in the adjacent Little Missouri basin (Beckes and Keyser 1983:188; Jorstad et al. 1986; Toom 1983b). Besides projectile points, what other distinctively styled artifacts might appear in Archaic components in the YRSU?

Regional Interaction

Diagnostic projectile points styles recognized in the Yellowstone basin suggest interactions primarily within the Northern Plains during the Plains Archaic. Locally available raw materials including Yellowstone agate and porcellanite were heavily utilized (see Figure 13.2). A location such as the Missouri-Yellowstone confluence presents an interesting setting for studying regional interaction because two of the major transportation arteries of the Northern Plains come together here. What sorts of Plains Archaic sites would be most likely to hold nonlocal artifacts indicative of regional interaction, and where would such sites have been situated?

Historic Preservation Goals, Priorities, and Strategies

The identification of diagnostic Early Plains Archaic materials in the SU remains a high priority. Only through the excavation and careful analysis of dated assemblages from the Plains Archaic periods will the rudiments of the adaptive strategies and material cultures of Plains Archaic groups become known.

Plains Woodland Period

The Plains Woodland periods are represented principally by components assigned to the Besant/Sonota complex. Late Plains Woodland Avonlea components also are represented and Mortlach components may be anticipated.

Paleo-Environmental Modeling

Immediately atop the divide between Sheep Creek which drains to the Yellowstone and the North Branch of Bowline Creek which drains to the Little Missouri are 32MZ333 and 32MZ334. These two sites were partially excavated prior to oil well developments by Abraxas Petroleum (Floodman et al. 1982). Pollen analysis of samples from a 2,000 year old Besant deposit in a paleosol suggested to the investigators that “the

present environment of hardwood draws and sagebrush/grass covered ridges provides a reasonable model for the general Besant environment" (ibid.:180). However, the landscape is modeled to have had less relief at the time of occupation than today. The channels of ephemeral streams around the sites have downcut some 6-7 meters during the past 2,000 years (ibid.). What was the duration of mesic climatic conditions during the Middle Plains Woodland period, and do these represent the most favorable conditions for human occupation in the YRSU during the entire 1,500-year span of the Woodland periods?

Cultural Chronology

A Sonota/Besant cultural zone at 32MZ333 on the divide between Sheep Creek and the North Branch of Bowline Creek yielded materials radiocarbon dated 2041±124 BP and 1890±65 BP (Floodman et al. 1982:178-179). The Besant cultural affiliation was based on the recovery of a Besant side-notched point and a few thick potsherds. Another Besant point was found at 32WI34 (Schneider and Roberson 1981:37-38). Avonlea points have been found at four sparse cultural material scatters in McKenzie County (32MZ864, 32MZ1288, 32MZ1300, and 32MZ1422). What other Plains Woodland complexes are represented by sites in the YRSU?

Settlement Behavior

The excavated portion of the Sonota/Besant deposit at 32MZ333 yielded stone tools, flaking debris from tool production and tool repair, bone from food processing, and hearths and potsherds indicative of food preparation (Floodman et al. 1982:186). This artifact assemblage in conjunction with the site setting in an elevated unsheltered area gives the impression of a field camp or hunting camp type of settlement rather than a residential base or special purpose location. Did the mesic cycles with the Sub-Atlantic climatic episode prompt or enable more intensive use of the interior portions of the YRSU? May field camp settlements be taken as evidence for mesic local conditions at the time of settlement?

Native Subsistence Practices

Remains of bison bone in the ca. 2,000 year old Sonota/Besant artifact deposit at 32MZ333 follows true to form for most Sonota/Besant components: bison were killed and butchered routinely. The cultural florescence of ca. 2,000 years ago appears to have correlated with the most persistently mesic climatic conditions of the entire Holocene epoch. Under such conditions, the grasslands would have flourished and regional biomass would have been high. Most resources would have been relatively abundant under such conditions. Sites occupied under these conditions should contain evidence of diverse subsistence resources. Fine-mesh waterscreen recovery and flotation should be employed routinely to recover traces of floral and faunal remains representing Woodland subsistence resources in the YRSU.

Technologies

A small sample of nine body sherds was recovered during excavations at 32MZ333 and probably derives from the ca. 2,000 year-old Sonota/Besant component (Floodman et al. 1982). Temper was crushed granite. Exterior surface treatments were smoothed-over cordmarked. Thicknesses ranged from 7.9-9.7 millimeters. What other types of Woodland ceramics might be anticipated at sites in the YRSU?

Stoneworking technologies evidenced in the Sonota/Besant component at 32MZ333 include the production of chipped bifacial forms for use as projectile tips and hafted cutting tools. Unpatterned and expedient flake tool forms are well-represented (Floodman et al. 1982:76). Knife River flint was the stone of preference for making chipped stone tools at the Abraxis site. This pattern of lithic use among Middle Plains Woodland groups has been reported elsewhere on the Northern Plains (cf. Clark 1984; Gregg and Picha 1989). What other chipped stone technologies or lithic raw material utilization patterns are diagnostic of Woodland complexes in the YRSU?

Artifact Styles

The recovery of a Besant side-notched dart point from a cultural horizon dated to about 2,000 years ago at 32MZ333 indicates that this point style was utilized in the YRSU by Middle Plains Woodland groups as it was elsewhere in the Yellowstone basin. What other chipped stone tool styles are indicative of Woodland components in the SU?

Regional Interaction

Middle Plains Woodland regional interaction is indicated by several lines of evidence. The recovery of obsidian flaking debris (n=45) at 32MZ333, presumably from sources in the northern Rockies, points to direct or indirect contact with people in the Rocky Mountain West (cf. Floodman et al. 1982:Appendix 7.2). Is obsidian more common at sites in the Missouri-Yellowstone confluence locality than elsewhere in North Dakota?

Historic Preservation Goals, Priorities, and Strategies

An inventory effort to identify earthen mound sites in the YRSU remains to be undertaken. The occurrence of this previously unrecorded site type in the basin would expand its known geographic distribution westward from the Garrison SU (cf. Artz 1985a). A high priority is to identify the variety of Plains Woodland complexes represented by components in the YRSU. Comprehensive inventory of unsurveyed portions of the ridge systems with intact Holocene soils is necessary.

Plains Village Period

The lower Yellowstone valley appears to have been little utilized by Plains Villagers as a core area within which residential base settlements were established. But

this form of use does not seem to have been typical in the Garrison region or upstream from it. The Garrison region of the Middle Missouri subarea, the uppermost segment of the Missouri valley identified by Lehmer as having a unique archeological sequence, terminates in the Missouri-Yellowstone confluence locality (Lehmer 1971:29).

Paleo-Environmental Modeling

Climatic conditions during the Plains Village period in the Yellowstone basin are suspected to have generally paralleled those downriver in the Garrison and Upper Knife-Heart regions. Garden crops should have become better adapted to local climatic conditions through time, although a shortened growing season may have resulted in less predictable crop yields (cf. Schneider 1988). Pollen, phytolith, and pedologic studies should be conducted at Plains Village archeological sites along the lower Yellowstone to refine the paleo-environmental model for this period in the YRSU.

Cultural Chronology

Because the YRSU is located outside the geographic limits of most prehistoric Plains Village core areas, ideas concerning cultural development in the region are not detailed well (cf. Syms 1977:5-8). Early Plains Village groups may have occupied territories extending upriver to the Missouri-Yellowstone confluence. A Plains Village cultural chronology for this SU may be initially modeled after that for the upper Knife-Heart region downriver. Excavation findings which deviate from that chronological model can be used to refine the local chronology.

Materials from a hearth feature at 32MZ767 were radiocarbon dated 240±60 and 260±60 RCYBP (Kuehn 1985), but the only artifacts encountered other than bone and charcoal were a few pieces of flaking debris. With such recent radiocarbon dates, it would be necessary to obtain an artifact sample from the deposit to enable identifying the cultural affiliation of the archeological deposit.

Settlement Behavior

Plains Village settlement behavior is not well known in the YRSU. Components assigned to the Plains Village period include the Scraper site (32WI34) near Fort Union Trading Post NHS (Schneider and Roberson 1981:34), the Cheney Creek site (32MZ27) (McLean and Newell 1980), the Highway site (32MZ484) (Root 1983g), and 32MZ767 (Kuehn 1985, Ms #3885). A short distance to the east of the northeastern border of the SU is the Mondrian Tree site (32MZ58) (Toom and Gregg 1983). None of these are earthlodge residential base settlements. However, the remains of Plains Village residential sites are known from properties such as the Nollmeyer and Hagen sites upriver in Montana (Ann Johnson 1982; Mulloy 1942).

Ethnohistoric information collected by Wilson (1924) indicates Plains Village groups such as the Hidatsas exploited the Yellowstone basin during seasonal bison hunts. The bison processing feature documented by Kuehn (1985) at 32MZ767 may have been

used by Villagers. More evidence documenting long-term Plains Village utilization of the SU is expected as research progresses. We can hypothesize that settlement behavior during times when there were fortified residential bases along the lower Yellowstone would have differed from times when there were not such residential bases. How did use of the SU and other portions of the lower Yellowstone basin vary through the years of the Plains Village period?

Native Subsistence Practices

The subsistence economies of Villagers in the Yellowstone basin should have been generally similar to hunter-gatherer-gardener strategies practiced by other Plains Village groups in the Middle Missouri subarea. Favorable climatic conditions during the Neo-Atlantic climatic episode probably would have permitted the establishment of semi-permanent settlements with adjacent garden plots (cf. Wilson 1917). To date, however, subsistence remains from Plains Village period sites in the YRSU have shed light only on hunting activities and processing of meat and hides. Support for hypotheses concerning subsistence practices can only be addressed with additional data collected from controlled excavations at sites in the SU.

Technologies

Ceramic and chipped stone technologies represented by Plains Village sites in hinterland areas should be represented in the village sites along the Missouri River. Small samples of Plains Village pottery have been found at 32WI25, 32WI34, 32MZ27, and 32MZ484, but they are too small to formulate much in the way of substantive inferences or generalizations. One thing that can be expected at Plains Village field camps is that ceramic vessels will be smaller on the average than at village sites (cf. Craig Johnson 1983).

The occurrence of check stamped sherds in ceramic collections attributed to the Mortlach complex may indicate cultural linkages between Mortlach and the Scattered Village complex identified downriver in the upper Knife-Heart region (cf. Lovick and Ahler 1982; Schneider and Kinney 1978). The chipped stone toolmaking practices of people with Scattered Village material culture in the Knife-Heart region involved the use of greater amounts of a clear/gray chalcedony (perhaps Miocene flint from the Little Missouri River SU) than those of peoples of any other Plains Village culture known from the Middle Missouri subarea (cf. Ahler and Mehrer 1984). What technological attributes can be used to distinguish between Mortlach and Plains Village components, both of which can be expected in the YRSU?

Artifact Styles

What are some chipped stone artifact styles that can be used to identify Plains Village components at small lithic scatters which might otherwise be classified generically as late prehistoric? Large, thin, bifacially flaked, unilateral cutting tools that were set in bison rib hafts are one possible example. Patterned flake end scrapers with

bifacially prepared haft elements may be another. It is possible there may be several types of tools made from bipolar flakes that will be found to characterize some Plains Village assemblages based on the intensity of bipolar core reduction evidenced at some KRF workshop sites in the primary source area. At the Lynch Knife River Flint Quarry National Historic Landmark (32DU526), there are pitted boulder anvil stones surrounded by bipolar core reduction debris with a density of greater than 10,000 pieces of chipped stone flaking debris per square meter per 10 cm level.

Regional Interaction

Plains Village groups were active participants in long-distance trade relations prior to Euro-American contact and the inception of the Fur Trade (Wood 1972, 1980). Seasonal bison hunting forays north and west of the Village core areas would undoubtedly have put Plains Villagers in contact with other Northern Plains groups. Further research is needed to identify the effects of this social interaction on Village and non-Village cultural developments.

The Highway site (32MZ484) just south of Alexander, mostly destroyed in the early 1980s by highway construction and the Northern Border pipeline installation, is a probable Plains Village field camp which yielded a flake of obsidian (Root 1983q). Recovery of this artifact indicates that evidence of regional interaction in the form of exotic nonlocal stones may be expected to occur at temporarily occupied sites in the interiors of North Dakota drainage basins as well as at the villages along the Missouri and Yellowstone rivers. One advantage of discovery of exotic artifacts at small sites is that small sites often afford excellent potential to assign artifacts to a particular component and to precisely identify and date that component. At some of the village sites, multiple components are represented, and it often is difficult to attribute individual artifacts to specific components. Is there more obsidian in Plains Village sites postdating the Crow-Hidatsa split than in sites predating the split?

Historic Preservation Goals, Priorities, and Strategies

A top priority is to increase knowledge of the different kinds of Plains Village settlements which can be expected to occur in various settings with the YRSU. This problem can be approached by focusing more effort on dating and more specifically classifying “late prehistoric” components in the process of identifying historic properties.

Equestrian/Fur Trade Period

The Equestrian Period spans a century (ca. AD 1780 to 1880) which witnessed the advent of the Fur Trade and reliance upon horses for transportation in the Yellowstone region (cf. Secoy 1953; Wishart 1979; Wood and Thiessen 1985). The smallpox epidemics of 1780-81 and 1834 decimated native Plains Village populations in the Middle Missouri subarea. Neighboring equestrian groups also suffered population losses (cf. Denig 1961:71).

Environmental Modeling

The journals and paintings of early explorers and fur traders (e.g., Lewis and Clark, Maximillian, Catlin, and Denig) are a source of environmental information concerning the Upper Missouri and Yellowstone basins during the 19th century. Similar information is available for adjacent areas to the north (cf. Ball 1984). Historic records should be used to build an accurate record of environmental conditions in the confluence locality during the Equestrian period.

Settlement Behavior

Temporary campsites marked by the remains of stone circle features and cultural material scatters are among the best represented site types in the SU. Some of these are bound to date to the Equestrian period. The erection of a fur post in 1828 (later named Fort Union Trading Post) near the Yellowstone-Missouri confluence provided a local source of Euro-American trade goods to various native groups with extensive territorial connections throughout the Northern Plains and into the Rocky Mountains. Fort Buford, a US military installation constructed a short distance downstream in 1866, took over trading operations until the mid-1880s when the fur and hide trades with the Indians ended.

Temporary camps and more permanent villages of tribal groups such as the Assiniboine and the Hidatsa should be expected in the valley bottomlands and uplands surrounding these major trading centers. Gregory Fox (1982) has reported on the Garden Coulee site (32WI18), a village attributed to a band of Hidatsa led by Crow Flies High. James Howard (1977:22-228) identified a Plains Ojibwa (Bunji) burial location at 32WI101 in the SU. The identification of other tribal affiliations based solely on archeological remains has not met with much success (cf. Johnson 1979; Taylor 1979). However, historic records should be scoured with an eye toward identifying sites attributable to particular tribes. This is a topic well suited to collaborative efforts between tribal historians and archeologists.

Native Subsistence Practices

Subsistence strategies of equestrian groups and historic Plains Village peoples in the YRSU focused on pursuits of the hunt, foraging, and some gardening (cf. Denig 1961; Fox 1982:64-66). Bison remained the principal meat source until herds were killed off by the Euro-American invaders in the 1880s. Analysis of larger samples of faunal and floral remains from post-contact sites will serve to broaden knowledge concerning native subsistence practices during this period.

Technologies

Traditional native technologies during the Equestrian period underwent rapid transformations with the arrival of Euro-American trade goods in ever increasing frequencies. The paintings of Bodmer and Catlin depict some of these changes in

weaponry, domestic items, and ornamentation. Historic documents could be utilized to create an accurate history of Native American technological change during the Equestrian period in the confluence locality.

Artifact Styles

Fox (1982) has discussed difficulties in attempting to assign ethnic/tribal affiliation to 19th century artifact assemblages based solely on aspects of material culture. Again, historic drawings and paintings should be studied in an attempt to identify tribally-specific styles which might be represented in archeological deposits.

Regional Interaction

The erection of Fort Union in 1828 signaled the beginning of the local trade period in the region (cf. Ray 1978; Swagerty 1988; Thiessen 1987). Increased contact between Native Americans and Euro-Americans as well as intertribal aggregations occurred at the fort. The quantity of trade goods available to these groups should have increased dramatically. Groups and tribes that came to Fort Union to trade included the Blackfeet and Assiniboine (Denig 1961). Modified elk and mountain goat faunal remains (e.g., teeth, horn, and antler) are known from the historical period in Montana. What sorts of native-made goods might be anticipated as indicators of regional interaction in archeological deposits of the Equestrian period in the YRSU?

Historic Preservation Goals, Priorities, and Strategies

The preservation of historically significant cultural properties such as Fort Union Trading Post NHS and Fort Buford State Historic Site are laudable. The historical significance of these sites reaches beyond the national level to a world heritage level. The Yellowstone-Missouri confluence locality had been a key location along a primary travel route between different Native American worlds for thousands of years. The movement of Euro-American trading post followed by military post settlement into this location marked the beginning of the end of band and tribal level, hunter-gatherer lifeway dominance in the Northwestern Plains. Major archeological initiative in this locality merit joint planning between tribal historians and archeologists.

Research of regional interaction during this time will help refine estimations of the age of post-contact components in the SU. For example, intertribal exchange occurred at American Fur Company posts such as Fort Union and Fort Clark and military posts such as Fort Buford (Casler 2007). The YRSU encompassed territory used by the Crow, Hidatsa, and Mandan for pursuits such as eagle trapping (Bowers 1965:Map 1). What other resources in the YRSU were tapped during the Equestrian/Fur Trade period?