

The Cannonball River Study Unit	2.1
Description of the Cannonball Study Unit	2.1
Physiography.....	2.5
Drainage	2.5
Climate.....	2.6
Landforms and Soils.....	2.6
Flora and Fauna	2.6
Other Natural Resource Potential.....	2.7
Overview of Previous Archeological Work	2.7
Inventory Projects	2.7
Test Excavation Projects	2.21
NRHP and NDSHSR	2.23
Major Excavation Projects	2.24
Other Work.....	2.24
Paleo-Indian Period	2.25
Paleo-Environmental Modeling.....	2.25
Cultural Chronology	2.25
Settlement Behavior	2.26
Native Subsistence Practices.....	2.26
Technologies.....	2.26
Artifact Styles	2.27
Regional Interaction.....	2.27
Historic Preservation Goals, Priorities, and Strategies	2.28
Plains Archaic Period.....	2.28
Paleo-Environmental Modeling.....	2.28
Cultural Chronology	2.28
Settlement Behavior	2.29
Native Subsistence Practices.....	2.29
Technologies.....	2.29
Artifact Styles	2.29
Regional Interaction.....	2.29
Historic Preservation Goals, Priorities, and Strategies	2.29
Plains Woodland Period	2.30
Paleo-Environmental Modeling.....	2.30
Cultural Chronology	2.30
Settlement Behavior	2.31
Native Subsistence Practices.....	2.31
Technologies.....	2.31
Artifact Styles	2.32
Regional Interaction.....	2.32
Historic Preservation Goals, Priorities, and Strategies	2.32
Plains Village Period	2.33
Paleo-Environmental Modeling.....	2.33
Cultural Chronology	2.33
Settlement Behavior	2.34
Native Subsistence Practices.....	2.34
Technologies.....	2.35

Artifact Styles	2.35
Regional Interaction.....	2.36
Historic Preservation Goals, Priorities, and Strategies	2.36
Equestrian/Fur Trade Period	2.36
Paleo-Environmental Modeling.....	2.36
Cultural Chronology	2.36
Settlement Behavior	2.37
Native Subsistence Practices.....	2.37
Technologies.....	2.37
Artifact Styles	2.37
Regional Interaction.....	2.37
Historic Preservation Goals, Priorities, and Strategies	2.37
Figure 2.1: Map of the Cannonball River Study Unit.....	2.2
Figure 2.1A: Shaded relief map of the Cannonball River Study Unit.....	2.3
Table 2.1: Townships in the Cannonball River Study Unit.....	2.4
Table 2.2: Feature Type by Landform for Archeological Sites in the Cannonball River Study Unit, 13-Sept-2007.....	2.8
Table 2.3: Cultural/Temporal Affiliation of Archeological Resources in the Cannonball River Study Unit, 13-Sept-2007.....	2.10
Table 2.4: Inventory Projects in the Cannonball River Study Unit, 5-Sept-2007.	2.11
Table 2.5: Test Excavation Projects in the Cannonball River Study Unit, 5-Sept- 2007	2.21
Table 2.6: Other Work in the Cannonball River Study Unit, 5-Sept-2007.	2.25

The Cannonball River Study Unit

Michael L. Gregg and Amy Bleier
2008

The Cannonball River Study Unit (CRSU), like other large parts of western North Dakota, is a land of prominent buttes. From west to east, the major named buttes are White Butte, West Rainy Butte, East Rainy Butte, Whetstone Buttes, Wolf Buttes, Tepee Buttes (there is another Tepee Buttes in the northern portion of the Little Missouri River Study Unit), Rocky Ridge, Twin Buttes (not the Twin Buttes on the Fort Berthold Indian Reservation in the Garrison Study Unit), Square Butte (there is also Square Buttes in Oliver County), Cedar Butte, Pretty Rock Butte, and Dogtooth Butte. The western, windward edges of most of these buttes were good places to trap eagles.

Description of the Cannonball Study Unit

The CRSU covers 4,171 mi². The maps (Figures 2.1 and 2.1A) on the following pages illustrate the configuration of the area and several of the principal tributaries. Portions of Adams, Bowman, Grant, Hettinger, Morton, Sioux, and Slope counties are involved. The river itself lies entirely within North Dakota, but portions of its tributaries in the southern portion of the drainage basin are in South Dakota. Following the maps is a complete list of all townships in the Study Unit (Table 2.1).

The Standing Rock Sioux Tribe assumed State Historic Preservation Officer functions in Sioux County effective on August 14, 1996 (National Park Service letter dated September 11, 1996 to James E. Sperry of the SHSND). The functions assumed by the tribe in Sioux County include:

- Conduct a survey and maintain an inventory of historic properties
- Review Federal undertakings pursuant to Section 106
- Carry out comprehensive historic preservation planning
- Conduct educational activities
- Advise and assist Federal and State agencies and local governments

Since that date (August 14, 1996), any projects in Sioux County were directed to:

Tribal Historic Preservation Officer
Standing Rock Sioux Tribe
PO Box D
Fort Yates ND 58538

There are 460 mi² of Sioux County within the Cannonball River Study Unit. Information in the CRSU provides information currently housed at the SHSND up to September of 2007. The SHSND, however has not received site forms or cultural

Figure 2.1: Map of the Cannonball River Study Unit.

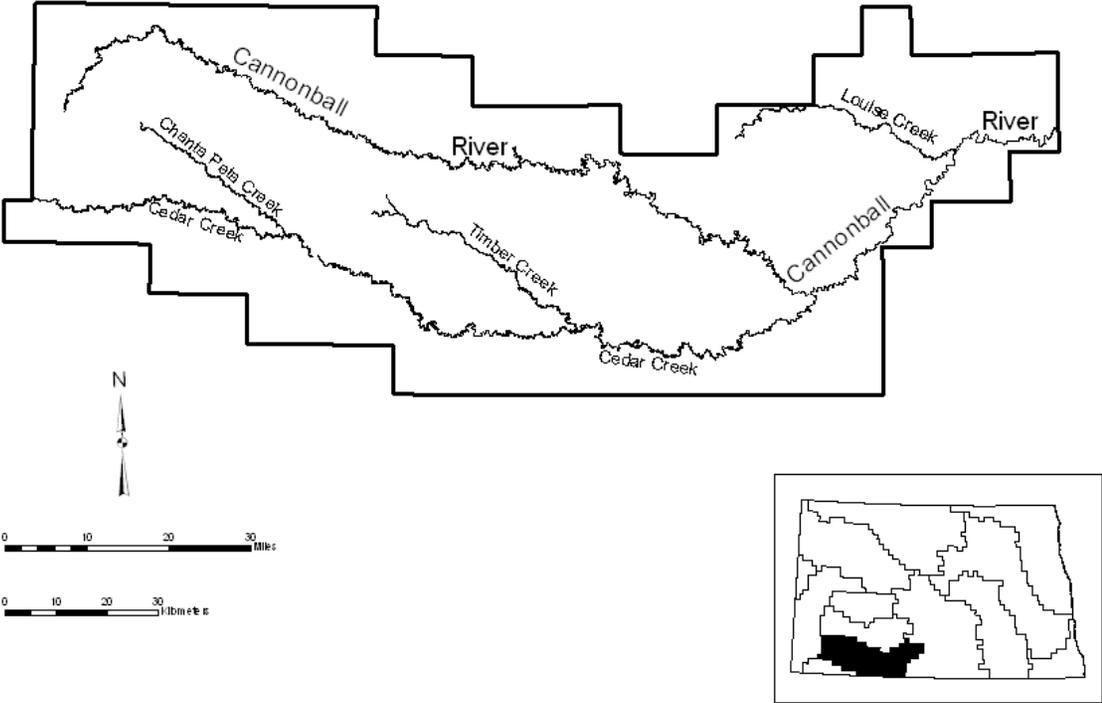


Figure 2.1A: Shaded relief map of the Cannonball River Study Unit.

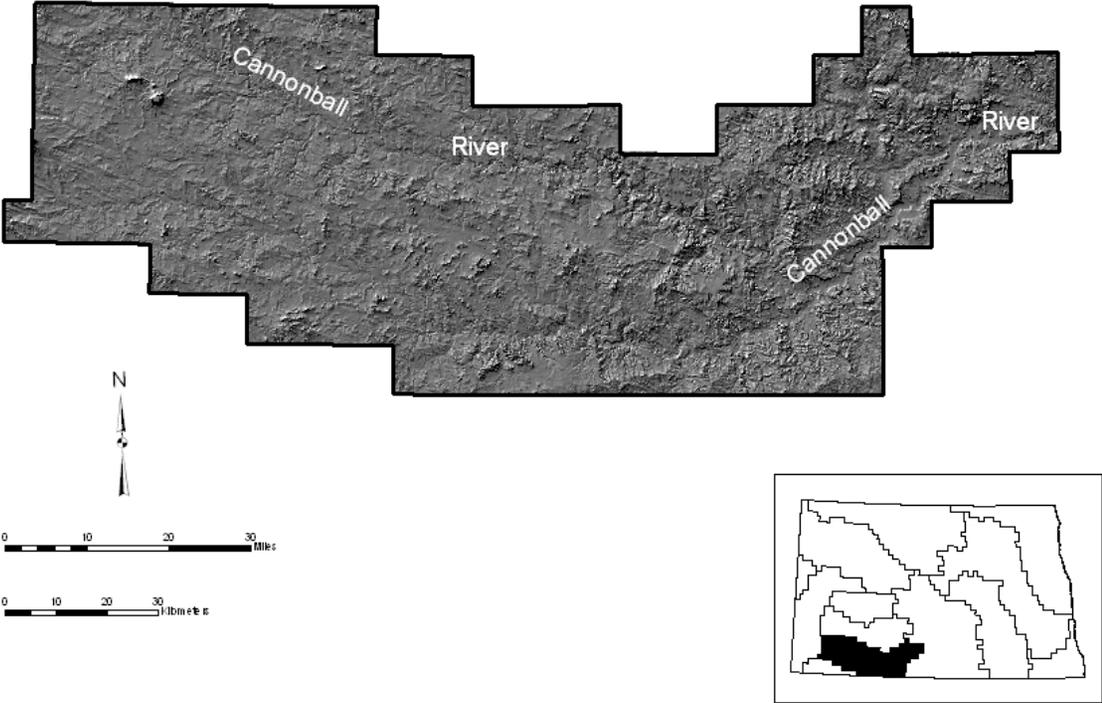


Table 2.1: Townships in the Cannonball River Study Unit.

TOWNSHIP	RANGE
129	84
129	85
129	86
129	87
129	88
129	89
129	90
129	91
129	92
129	93
130	84
130	85
130	86
130	87
130	88
130	89
130	90
130	91
130	92
130	93
130	94
130	95
130	96
131	84
131	85
131	86
131	87
131	88
131	89
131	90
131	91
131	92
131	93
131	94
131	95
131	96
131	97
131	98
132	83
132	84

TOWNSHIP	RANGE
132	85
132	86
132	87
132	88
132	89
132	90
132	91
132	92
132	93
132	94
132	95
132	96
132	97
132	98
132	99
132	100
132	101
133	81
133	82
133	83
133	84
133	85
133	86
133	87
133	88
133	89
133	90
133	91
133	92
133	93
133	94
133	95
133	96
133	97
133	98
133	99
133	100
134	80
134	81
134	82

TOWNSHIP	RANGE
134	83
134	84
134	85
134	86
134	89
134	90
134	91
134	92
134	93
134	94
134	95
134	96
134	97
134	98
134	99
134	100
135	80
135	81
135	82
135	83
135	84
135	92
135	93
135	94
135	95
135	96
135	97
135	98
135	99
135	100
136	83
136	94
136	95
136	96
136	97
136	98
136	99
136	100

resource reports that are conducted in Sioux County since the National Park Service approved Standing Rock as the Tribal Historic Preservation Office. Thus, any information from August 1996 to the present pertaining to Sioux County is not included in this chapter.

Physiography

The upper part of the Cannonball River basin is a rugged dissected plateau with many buttes including the highest point in North Dakota, White Butte, at an elevation of 3,506 ft. This butte is on the divide between the Cannonball River and Little Missouri River study units. Most of the basin is rolling prairie. Included here are portions of the Knife River Upland and Missouri Slope Upland (Bluemle 1989). The Russian Springs Escarpment cuts across the eastern portion (ibid.).

Exposures of sandstone and knappable stone such as Rainy Buttes silicified wood (RBSW), silcrete (including Tongue River silicified sediment or TRSS), and great varieties of agatized wood can be found in many places throughout the Study Unit. Silcrete, chalcedony, and quartzite are common in the Whetstone Buttes locality (Artz et al. 1987:6.1). Tongue River silicified sediment and other North Dakota silcretes are considered in detail from a geological perspective by Wehrfritz (1978). There are extensive eroded exposures of the stratum of geologic origin of TRSS, rather than the Rhame bed marking the contact between the Slope and Bullion Creek formations. Tongue River silicified sediment grades from fine-grained (silicified sediment crystal facets barely visible), smooth material with no fossil inclusions or vugs to coarse-grained material full of plant fossil inclusions and other faults. Smooth TRSS can be flaked with a well-controlled conchoidal fracture, while the coarse material is barely knappable. Colors range from light gray to yellowing-brown unheated. The light gray smooth TRSS is sometimes distinctively mottled. Colors change to pink and red when thermally altered (D. Anderson 1978; R. Fox 1979). This material was important for toolmaking throughout most of prehistory across much of the Northern Plains including all of North Dakota (cf. Ahler 1977b; D. Anderson 1978; C. Johnson 1984; Keyser and Pagan 1987; Porter 1962).

Elevated landforms in the western part of the basin are often capped with sandstone while those in the eastern part are capped with sandstone or TRSS (Fox 1979). Bedrock exposure overhangs of these resistant materials sometimes formed rockshelter settings which were temporarily occupied during prehistory.

Drainage

The Cannonball River is 295 miles long, including its meanderings, with an elevation of about 3,000 ft in its headwaters area and an elevation of about 1,620 ft at its confluence with the Missouri River (NDSPB, 1937:Volume 5). The valley of the Cannonball River varies in width from 0.25-1.5 miles. The valley drops about 8 ft per mile while the meandering river channel drops about 4 ft per

mile. From west to east, named tributaries include Philbrick Creek, Coal Bank Creek, Indian Creek, Thirtymile Creek, Cedar Creek, Louise Creek, and Chantapeta Creek. Cedar Creek is a permanent tributary nearly the size of the Cannonball itself. Named tributaries to it, from west to east, are another Chantapeta Creek, Timber Creek, and Hay Creek. Most of the tributary stream channels drop about 10 ft per mile (NDSPB 1937:Volume 5).

Climate

The average annual precipitation is about 15 inches, 10 inches of this falling during the growing season, May through September. The eastern portion of the Study Unit shares the distinction of having the highest annual mean temperature with the southeastern and southwestern corners of the state (Jensen 1971:Figure 2).

Landforms and Soils

Soils are developed primarily from sediments originating in the Slope, Bullion Creek, and Sentinel Butte formations (cf. Clayton 1980). Natural Resources Conservation Service (NRCS) official soil survey resources are available on the internet (NRCS 2007a, 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:

<http://www.nrcs.usda.gov/technical/efotg/>

Soil Data Mart: <http://soildatamart.nrcs.usda.gov>

Web Soil Survey: <http://websoilsurvey.nrcs.usda.gov/app/>

Flora and Fauna

Most of the area is grassland, but there are some trees in riparian zones along the lower reaches of the Cannonball River and some tributaries. The grassland is representative of the “grama-needle and thread grass ecosystem” of the mixed grass prairie environmental region (S. Brown et al. 1983:73-76). Bison, elk, mule deer, pronghorn antelope, wolf, coyote, jack-rabbit, prairie dog, badger, golden eagle, and the prairie chicken were all adapted to this ecosystem (ibid.:81-82). Stands of trees also grow adjacent to springs issuing from the sides of some of the buttes. Indian breadroot (*Psoralea esculenta*), a favored native food, is common on the prairie. Cottonwoods (*Populus deltoides*) are found near water. American elm (*Ulmus americana*), box elder (*Acer negundo*), green ash (*Fraxinus pennsylvanicus*), juneberry (*Amelanchier alnifolia*), chokecherry (*Prunus virginiana*), and buffaloberry (*Shepherdia argentea*) grow in some of the draws and coulees.

Other Natural Resource Potential

Most of the streams are nearly dry in summer, except after rainstorms, but springs are found on the valley side slopes and on the sides of buttes in places (NDSPB 1937:Volume 5). Spring locations are small spots of biotic diversity which should have been regularly exploited by hunter-gatherers.

Rainy Buttes silicified wood is a distinctive dark reddish brown cryptocrystalline stone with good conchoidal fracture characteristics. The only known source area for this material is in the vicinity of East and West Rainy Buttes at the headwaters of Coal Bank Creek and Chantapeta Creek in eastern Slope County. Gravel deposits with RBSW can be found on hills and low rises for miles around the Rainy Buttes, and evidence for prehistoric procurement and workshop activities is common in these gravelly areas (cf. Artz et al. 1987:5.3). The location of this source area became known to North Dakota archeology relatively recently (Loendorf et al. 1984). Prior to that time, the material was identified as “waxy brown chert” (e.g., Ahler and Weston 1981:121; Toom 1983b:10.45). The most distinguishing characteristic of the stone is its high density and specific gravity due to high iron content. It may have been necessary to consider the high density of this material in its applications, particularly when it was used for projectile points.

Overview of Previous Archeological Work

There has been a fair amount of archeological work in this Study Unit, almost none of it funded for research purposes alone. Looking down the lists of projects that have been reported, most of the work has been conducted in compliance with federal regulations pertaining to reservoir construction, oil and gas exploration, pipeline and power transmission line construction, strip mining for lignite, and construction of roads, wastewater treatment facilities, and cellular communication towers. Practically nothing would be known about the archeology of this Study Unit were it not for the federal cultural resources legislation and regulations requiring consideration of historic properties in planning federally funded, licensed, or permitted projects.

Inventory Projects

As of 13 September 2007, there were 296 archeological sites and 334 archeological site leads and isolated finds in the state site data file for the CRSU. With its 4,171 mi² area, there is one site recorded for each 14.1 mi², the lowest density in any of the western North Dakota study units. The paucity of recorded sites seems to be a reflection primarily of the relative amount of inventory work that has been conducted here in comparison with other western study units.

Tables 2.2 and 2.3 summarize data coded on the site forms for feature types by landform and recorded site cultural temporal affiliation, respectively. Stone circles and other rock features are well-represented in the basin. Many

Table 2.2: Feature Type by Landform for Archeological Sites in the Cannonball River Study Unit, 13-Sept-2007.

	Cultural Material Scatter	Earthlodge Village	Grave	Hearth	Jump	Other Rock Features	Pit	Quarry or Mine	Rock Art	Rock Shelter	Stone Circle	Misc.	Total
Beach or riverbank	6		1	2									9
Draw	5								1				6
Upland plain	23				1	2					1		27
Floodplain	4												4
Hill - Knoll - Bluff	91			1		20		3			15		130
Ridge	28			2		4			1		9		44
Saddle	5					2					1		8
Sandbar	1												1
Spur	1					1							2
Swale	2												2
Terrace	65	1		5		9	2	2			13	1	98
Butte	5			1		1		1	1		2		11
Foot slope	14		3			3		2		1	3		26
Other	5					2					2		9
Total	255	1	4	11	1	44	2	8	3	1	46	1	377

stone circles are undoubtedly Plains Village, and some may be from late prehistoric Northwestern Plains hunter-gatherers traveling to and from the horticultural villages along the Missouri River. One of the three rock art sites is Medicine Rock (32GT129), a state historic site and listed on the National Register of Historic Places (NRHP) (Snortland-Coles and Loendorf 1987). The few quarry/mine sites are procurement/workshops on hills and terraces where TRSS and agatized wood resources are concentrated and exposed on the surface.

Upland landform site settings predominate in the sample, but riverbank, floodplain, and terrace alluvial settings are also well represented. This is the case in part due to the great antiquity of some of the terraces. The identification of Plains Archaic sites on terraces is evidence for this antiquity. While relatively few sites are coded as Paleo-Indian, Plains Archaic, and Besant/Sonota Middle Plains Woodland, it's probably not a reflection of significant numbers of properties of these cultural/temporal affiliations in the Study Unit (Table 2.3).

Referring to the list of inventory projects (Table 2.4), the first report deals with a survey of the proposed Cannonball Reservoir in 1949, (Wheeler 1949) which resulted in the recordation of five stone circle sites (R. Fox 1979). The next survey (Cole 1967a) covered only a half-section on the ground and resulted in documentation of just two lithic scatters. Surveys reported by Franke in 1974 and 1975 recorded additional stone circles and a possible mound site (Fox 1979). Work began in earnest in the late 1970s. Thereafter, a variety of different kinds of surveys were conducted, primarily small locations, but including (1) several significant transects such as the Northern Border and Southwest Pipeline right-of-ways; (2) a few large area Class III intensive surveys for proposed coal strip mine areas; and (3) a sampling survey of Coal Study Areas (CSAs) for the Bureau of Land Management (BLM) (Metcalf et al. 1988).

Fox (1979) surveyed a 2,785 hectares (6,880 acre) prospective strip mine location immediately west of New Leipzig in southwestern Grant County for Knife River Coal. Site surveyors walked transects spaced 50 m apart. With 33 prehistoric sites inventoried, the site density is 1 site per 200 acres or 45 per 14.1 mi². Recalling that the overall density of recorded sites for this Study Unit is one per 14.1 mi², the intensive survey of this one block area recorded a site density approximately 45 times greater than that presently represented in the site data files. More than half of the 33 sites were evaluated as having sufficient information potential to warrant mapping and testing.

The Northern Border Pipeline right-of-way transected less than 15 km of the northeastern corner of the CRSU. Four sites and six isolated finds were recorded (Root, Kordecki, Billeck et al. 1983:1000-1004). Two of the sites were sparse lithic scatters on ridges (32MO85 and 32MO86), and two were solitary stone circles: one at the base of a knoll (32MO94) and the other on a hilltop (32MO62). None of the sites yielded temporally diagnostic artifacts or other evidence of cultural/temporal affiliation. All shovel probes at the four sites were negative, but the stone circle at 32MO94 was slated for testing anyway, mainly

Table 2.3: Cultural/Temporal Affiliation of Archeological Resources in the Cannonball River Study Unit, 13-Sept-2007.

Paleo-Indian	
Unspecified	2
Folsom	1
Plano	2
Total	5
Archaic	
Unspecified	9
Early Large Side-Notched	2
McKean/Duncan/Hanna	7
Pelican Lake	4
Total	22
Woodland	
Unspecified	14
Besant/Sonota	8
Late Woodland	3
Avonlea	2
Total	27
Plains Village	
Total	7
Plains Nomadic	
Total	5
Historic	
Unspecified	3
Cheyenne	1
Sioux	1
Euro-American	1
Total	6
Unknown	3,315

because it was nearly centered in the pipeline right-of-way and would be totally destroyed by construction. Subsequent intensive shovel probing and test excavation produced artifacts and revised the initial assessment of site content based on cursory shovel probing (see Test Excavation Projects section below).

The Southwest Pipeline survey covered 113 mi (181 km) of right-of-way and 9 special facility locations in the CRSU recording about 40 sites (Artz et al. 1987; Gregg et al. 1985). Site density was greatest near Mott where the pipeline is near the Cannonball River. In the “low-relief” upland south and west of the river, sites were “few in number and widely dispersed” (Artz et al. 1987:9.11). Sites evincing lithic procurement and workshop activities predominated in the sample. Property types were mostly cultural material scatters and stone feature sites.

From 1994 to 2002, more inventories were conducted for the Southwest Pipeline. These include dozens of miles of proposed linear routes and small project blocks for ancillary facilities (Klinner 1995b, 1996, 1999a, b, 2000a, b; Klinner et al. 1997; Kordecki 1995; Larson et al. 1998; Wermers 2000a, b, c, 2002, 2003). Over 40 archeological sites were recorded and numerous previously recorded sites reevaluated during that time. The majority of archaeological sites consist of lithic scatters, stone circles, and cairns. Further work has been recommended for sites deemed by investigators as potentially significant and eligible for listing in the NRHP.

The BLM’s sampling survey of western North Dakota Coal Study Areas (CSAs) covered 40 sample units (each 160 acres) in the Bowman-Gascoyne, Mott, and Elgin-New Leipzig CSAs in the upper and middle reaches of the Cannonball River basin (Metcalf et al. 1988). Surveyor spacing was 30 m, and no subsurface probing was conducted. Twenty-five prehistoric archeological sites were recorded yielding a density of one site per 256 acres. Property types were predominantly (1) stone feature sites with one to eight stone circles per site and (2) light density lithic scatters. No ceramic sites were identified.

Table 2.4: Inventory Projects in the Cannonball River Study Unit, 5-Sept-2007.

Year	First Author	Second Author	Title	Ms #
1949	Wheeler, R.		Preliminary Appraisal of the Archeological Resources of Cannonball Reservoir, Grant Co., ND	13
1967	Cole, K.		A Survey of the Archeological Resources of the Mott Watershed, Hettinger Co., ND	164
1974	Franke, N.		Report of the Archaeological & Historic Site Survey of the Indian Creek Recreation Dam, Project #38-00474 Hettinger Co., ND	155
1977	Lahren, L.		Extensive Cultural Resource Evaluations on Selected Drill Site Locations in the National Grasslands of North & South Dakota, Slope, Billing, & Stark Co., ND	124
1977	Loscheider, M.		Cenex Oil Well Site and Access Road (FUCE 5-4); Tenneco Oil Well Site 31; Tenneco Oil Well Site 35; and Hilliard Oil Company Site Surveys, Slope Co. & Billings Co., ND	210
1978	Keyser, J.		Consolidated Telephone Cooperative Underground Cable Survey, Slope Co., ND	407

Year	First Author	Second Author	Title	Ms #
1978	Loendorf, L.		Preliminary Report on the Archaeological Investigations of 110 Site Locations, Little Missouri Grasslands, Custer National Forest, Western ND	299
1979	Allen, W.		Mor-Gran-Sou Buried Electric Cable Custer N. F. Survey, Sioux Co., ND	688
1979	Allen, W.		Shelterbelt and Pipeline Medora Dist. Survey, Slope Co., ND	703
1979	Fox, R.		Antelope Valley Station 500 kV Transmission Right of Way Survey Report, Morton Co., ND	787
1979	Fox, R.		Knife River Coal New Leipzig Coal Mine Properties Survey, Grant Co., ND	683
1979	Loendorf, L.	A. Simon	Cultural Resource Survey, Miles City - New Underwood 230 kV Line, Adams, Bowman, Slope, & Golden Valley Co., ND	2227
1979	Simon, A.	L. Loendorf	Cultural Resource Survey of the Proposed Mott Lagoon Expansion Project, Hettinger Co., ND	1001
1979	Woolworth Research Association		Report on a Cultural Resources Survey of the Stanton & Preferred Transmission Line Corridors in ND and SD, Basin Electric Cooperative, Bismarck, ND, Vol. 2-ND Sites in Emmons, Morton, & Mercer Counties	2600
1980	Simon, A.		Skyline Oil Survey of Well Location & Access Route, Hettinger Co., ND	1730
1981	Borchert, J.	S. Montgomery et al.	A Class III Intensive Inventory of the Morton Co. BRO-30(6) in Morton Co., ND	2263
1981	Moore, G.		Cultural Resources Inventory, Medora Grazing Association 07-04-81, Slope Co., ND	1798
1981	Moore, G.		Cultural Resources Inventory, Medora Grazing Association 07-06-81, Slope Co., ND	1846
1981	Moore, G.		Cultural Resources Inventory, Medora Grazing Association 07-09-81, Slope Co., ND	1831
1981	Pearson, J.	A. Simon	A Class III Intensive Inventory of the BRO-21(5) Bridge Improvement Project in Hettinger Co., ND	2967
1981	Root, M.		Archeological Site Survey and Testing Along the Northern Border Pipeline, ND: Annual Progress Report, 1980, McKenzie, Mercer, Dunn, Stark, Morton, Emmons, McIntosh, & Williams Counties	2564
1982	Borchert, J.		Shell Oil Co. Saltwater Disposal Pipeline in Section 1-T136N-R100W, Slope Co., ND	2158
1982	Keim, K.	A. Simon	Grant Co. Cannonball Road & Bridge Improvement	2718
1982	Klein, A.		New Leipzig AML Project, Grant Co., ND	2890
1982	Montgomery, S.	W. Fricke	A Class III Intensive Inventory for the Proposed Grant Co. Road Improvements, Grant Co., ND	3022
1982	Moore, G.		Cultural Resources Inventory, Slope Co., ND, Little Missouri Grazing Association Richard Miller Reseeding Project	1967
1983	Phillips, B.		Cultural Resource Surveys: Billings Microwave System in Golden Valley, Morton, Oliver, Mercer, Slope, Stark, & Billings Co., ND	3347
1983	Root, M.	M. Gregg	Archeology of the Northern Border Pipeline, ND: Vol. 2, Pts. 1-3 Survey and Background Information, McIntosh, Emmons, Morton, Stark, Mercer, Dunn, McKenzie, & Williams Co., ND	3455
1983	Wilson, R.	F. Kirby	An Intensive Archeological Inventory of Urlacher AML Project, North of New England, Hettinger Co., ND	2846
1984	Bass, S.		Grant Co. Lands Base Adjustment, 84-MT030-32 (A).	3791
1984	Bass, S.		Morton Co. Lands Base Adjustment, 84-MT030-31.	3790
1984	Bass, S.		South Mott Coal Lease Survey, Hettinger Co., ND	3402
1984	Burge, T.		Grand River-Buried Powerline, Sioux Co., ND	3483
1984	Campbell, J.		Little Missouri Grazing Association Hanson Brothers Allotment, Slope Co., ND	3494

Year	First Author	Second Author	Title	Ms #
1984	Fox, G.		A Class III Cultural Resource Inventory of the Proposed Gupman Coal Mine, Access Road, & Adjacent Buffer Zones, Adams Co., ND	3256
1984	Gnabasik, V.		USAF Support Facilities Site, Dickinson, Stark Co., ND and Operations Site, Hettinger Co., ND, Cultural Resources Survey.	3825
1984	Kuehn, D.		A Class III Intensive Inventory of the New Leipzig Step I Sewage Lagoon Facility, Grant Co., ND	3276
1985	Borchert, J.		Cultural Resource Survey, HPA, Inc., Dance USA 22-5 Location and Access, Slope Co., ND	3637
1985	Borchert, J.		Cultural Resource Survey, HPA, Inc., Originally Proposed Dance USA 32-5 Location & Access, Slope Co., ND	3638
1985	Floodman, M.		Stauffer Oil and Gas, Inc. #1-12 Federal, Slope Co., ND	3701
1985	Gregg, M.	C. Kordecki et al.	Southwest Pipeline Archeology: Initial Survey of Selected Tracts, Adams, Bowman, Hettinger, Grant, Stark, Billings, Golden Valley, Dunn, & Mercer Co., ND	3554
1985	Rom, L.		Hanson Brothers Pipeline, Slope Co., ND	3817
1985	Rood, R.		Maier Allotment Pipeline, Sioux Co., ND	3969
1985	Rood, R.		Slope Co. Road Improvements.	3968
1985	Rood, R.		Tomac Allotment Water Pipeline, Sioux Co., ND	3970
1985	Schweigert, K.		A Cultural Resource Survey of an Abandoned Mine Tipple Near Havelock, Hettinger Co., ND	3942
1986	Hurt, R.		LMGA #07-14-86-Peterson Dam Redevelopment, Slope Co., ND	4224
1986	LaPoint, H.		South Third Creek Road Barrow Pit, Slope Co., ND	4217
1986	Matthew, K.		Muderloh Allotment (Dam Construction), Sioux Co., ND	4111
1986	Matthew, K.		South Community Dugout Pond for Stock Water, Sioux Co., ND	4112
1986	Schweigert, K.	R. Persinger	A Cultural Resource Investigation of the Wruck AML Site, Hettinger Co., ND	4175
1987	Artz, J.	C. Haury et al.	Southwest Pipeline Archeology: An Intensive Survey for Cultural Resources in Ten Counties of Southwestern ND, Adams, Bowman, Hettinger, Grant, Stark, Billings, Morton, Golden Valley, Dunn, & Mercer	4247
1987	Borchert, J.		Cultural Resource Survey of a Slope Co. Road Improvement Project Slope Co., ND	4306
1987	Penny, D.	T. Larson et al.	A Cultural Resource Inventory of the Right Bank of Lake Oahe in Morton & Sioux Counties, ND	4228
1987	Rood, R.		Adobe Wall 10-12 Oil Well & Access, Slope Co., ND	4402
1988	Banks, K.		A Cultural Resources Inventory of Two Farm Breakouts, Standing Rock Agency, Corson Co., SD & Sioux Co., ND	4489
1988	Blikre, L.	D. Kuehn	North Fork Cedar Creek Bridge 151-21 Replacement Cultural Resource Inventory, Slope Co., ND	4475
1988	Borchert, J.	D. Kuehn	Rocky Fritz Spring Developments Cultural Resource Inventory Slope & Billings Counties, ND	4699
1988	Metcalf, M.	A. McKibbin et al.	A Class II Cultural Resource Survey of Five Coal Study Areas, Williams, Divide, Hettinger, Slope, Bowman, Grant, and Adams Counties, Western ND	4557
1988	Moore, L.	D. Kuehn	Cultural Resources Inventory of the Gladstone to Regent Road Developments Hettinger Co. CDE-0112(801)211	4618
1988	Persinger, R.	J. Whitehurst et al.	A Class III Cultural Resource Inventory of a Proposed 46 kV Transmission Line in Stark and Hettinger Counties, ND	4667
1988	Smith, G.		Adams and Grant Co. Land Adjustment Inventory: A Class III Cultural Resource Survey on Two Isolated Tracts of Public Land	4672
1989	Borchert, J.		Hettinger Co. ½ Mile Road Improvement to Regent Hettinger and Stark Counties, ND	4814

Year	First Author	Second Author	Title	Ms #
1989	LaPoint, H.		Knisipel & Johnson Dugouts, Sioux Co., ND	4999
1990	Borchert, J.		Slope Co. Road Improvement Section 2, T136N, R99W Cultural Resource Inventory	5297
1990	Christensen, R.		Consolidated Telephone Cooperative's South Area Fiber Optic Cable Route in Adams, Hettinger & Stark Counties ND Cultural Resource Damage Assessment	5314
1990	Christensen, R.		Proposed Access Routes to Axem Adobe Wall #7-12: Class III Cultural Resource Inventory in Section 12, T136N, R100W, Slope Co., ND	5392
1990	Klinner, D.	J. Borchert	Proposed Slope Co. Gravel Pit A Class III Cultural Resource Inventory	5111
1990	Klinner, D.	J. Borchert	Slope Co. Road Improvement Class III Cultural Resource Inventory Slope Co., ND	5112
1990	Kurtz, W.		Hanson Brothers Water Well 07-03-90, Slope Co., ND	5378
1990	Peterson, L.	J. Borchert	Slope Co. Road Improvement Class III Cultural Resource Inventory	5148
1991	Blikre, L.	J. Foster et al.	Highway 6 in Morton Co., Cultural Resource Inventory Project No. F-1-006()042	5651
1991	Borchert, J.	L. Blikre	Slope Co. Road Improvements Cultural Resource Inventory	5699
1991	Burbidge, G.	G. Wermers et al.	Regent Exchange, Consolidated Telephone Fiber Optic Line Cultural Resource Inventory, Hettinger Co., ND	5346
1991	Christensen, R.		West River Telephone's Fiber Optic Line in Sioux Co., ND & Corson Co., SD: An Intensive Cultural Resource Inventory of Select Tracts	5442
1991	Foster, J.	J. Borchert	Leaf On Hill Creek Bridge & Road Improvement, Sioux Co., ND	5616
1991	Kurtz, W.		North Community Allotment Range Water Pipeline & Stocktanks, Sioux Co., ND	5383
1991	Lueck, E.	R. Winham	Cultural Resources Reconnaissance of the Porcupine Pipeline Route, Sioux Co., ND Location Standing Rock Indian Reservation Sioux Co., Missouri River Drainage Basin & Letter Addendum BIA Permit # AAO-302/SR/91	5705
1991	McCarthy, M.		Grant Co. Land Adjustment Inventory: A Class III Cultural Resource Inventory on Four Isolated Tracts of Public Land	5511
1991	Stine, E.		Tribal Rangeland Redevelopment Program: A Class III Cultural Resource Investigation on Standing Rock Indian Reservation in Sioux Co., ND & Corson Co., South Dakota	5826
1991	Wermers, G.	K. Karsmizki et al.	Fritz Mine Reclamation Class III Cultural Resource Inventory Slope Co., ND	5552
1991	Wermers, G.	J. Borchert	Slope Co. Road Improvements Class III Cultural Resource Inventory	5700
1992	Foster, J.		Hettinger Co. Road Improvement Project No. SC-2112(51) Class III Cultural Resource Inventory	5882
1992	Johnson, L.	M. Hufstetler et al.	Historic Bridges in ND	5920
1992	Kinney, J.	T. Larson et al.	Results of the 1991-1992 Class III Cultural Resource Inventory of Selected Bureau of Land Management Tracts, Divide, McHenry, Williams, Pierce, McKenzie, Ward, Benson, Grant, Sheridan, & McLean Co., ND Vols. I & II	5904
1992	McCarthy, M.		Grant Co. Land Adjustment Inventory A Class III Cultural Resource Survey on One Isolated Lot Public Land	5857
1992	Stine, E.		Tribal Rangeland Redevelopment Program 92: A Class III Cultural Resource Investigation of the Proposed Comeau Well Location on the Standing Rock Indian Reservation in Sioux Co., ND	5820
1993	Kurtz, W.		A Cultural Resource Inventory Report for the Schaeffer Land Exchange in Slope Co., ND	6191

Year	First Author	Second Author	Title	Ms #
1993	Lueck, E.		Cultural Resources Investigation of Proposed Rural Water Pipeline Routes on the Standing Rock Reservation, Sioux Co., ND	6137
1993	Stine, E.		Meyer Gravel Pits A Class III Cultural Resource Inventory, Morton & Grant Counties, ND	5996
1993	Stine, E.		Tribal Rangeland Redevelopment Program 92: A Class III Cultural Resource Investigation of the Proposed Murphy Windmill Development on the Standing Rock Indian Reservation in Sioux Co., ND	6004
1994	Borchert, J.	G. Wermers	Hillview Wildlife Development Area Cultural Resources Inventory, Hettinger Co., ND	6353
1994	Klinner, D.		Schwartz Construction Borrow Pit BRO-2106(53) Hettinger Co., ND	6343
1994	Kulevsky, A.		American Contracting's Chanta Peta Gravel Pit & Access Road: A Class III Cultural Resource Inventory in Morton Co., ND	6208
1994	Kulevsky, A.		American Contracting's Two Knolls Gravel Pit & Access Road: A Class III Cultural Resource Inventory in Morton Co., ND	6210
1994	Kulevsky, A.		Fisher Sand & Gravel a Stockpile Location: Class III Cultural Resource Inventory in Slope Co., ND	6294
1994	Kulevsky, A.		Onyx's Zearly Gravel Pit: A Class III Cultural Resource Inventory in Morton Co., ND	6320
1995	Borchert, J.		ND Department of Transportation Material Source Projects Cultural Resource Review 1989-1994	6509
1995	Borchert, J.		ND Department of Transportation Safety Project Cultural Resource Review 1992-1994	6449
1995	Klinner, D.		Federal Aid Project Number SC-2129(52): Results of the Class III Cultural Resources Inventory Conducted for Hettinger Co., ND in Section 2, T133N, R93W.	6517
1995	Klinner, D.		Grant and Sioux Counties Bridge Replacement Project: Results of a Class III Cultural Resources Inventory, Section 30, 31, T132N, R83W, Grant and Sioux Counties, ND	6518
1995	Klinner, D.		Results of the Class III Cultural Resources Inventory for the Aggregate Construction, Inc. Gravel Pit in Section 12, T135N, R97W, Hettinger Co., ND	6460
1995	Klinner, D.	G. Wermers	Results of the Erickson Road Improvement Class III Cultural Resources Inventory Slope Co., ND	6567
1995	Klinner, D.		Slope Co. Bridge Replacement in Section 1 & 12, T133N, R99W, Slope Co., ND: Results of the Class III Cultural Resources Inventory	6443
1995	Klinner, D.		Southwest Pipeline Phase II Cultural Resources Inventory of Reroute Segments in Dunn, Hettinger, and Stark Counties, ND: New Hradec, Belfield, & New England Service Areas (Construction Segments 7-1B, 7-2, and 2-5A)	6650
1995	Kordecki, C.		Southwest Pipeline Phase II Cultural Resources Inventory of Selected Segments, Hettinger, Slope, & Stark Counties, ND: Belfield and New England Service Areas (Construction Segments 7-2 & 2-5A)	6448
1995	Kulevsky, A.		Finley Engineering/West River Telecommunication's St. Anthony Exchange Buried Cable: A Class II and III Cultural Resource Inventory in Morton Co., ND	6483
1995	Kulevsky, A.		Weisz & Sons Elgin Borrow Pit: A Class III Cultural Resource Inventory in Grant Co., ND	6608
1995	Snortland, J.		Chris Christmann Rural Abandoned Mine Project Class III Cultural Resources Survey Adams Co., ND	6427
1995	Wermers, G.	D. Klinner	Slope Co. Bridge Replacement & Road Improvement Class III Cultural Resources Inventory, Slope Co., ND	6526
1996	Borchert, J.		State Optioned Sioux & Morton Counties Gravel Pit, Class III Cultural Resource Inventory.	6839

Year	First Author	Second Author	Title	Ms #
1996	Klinner, D.		Grant and Sioux Counties Bridge Replacement & Borrow Area: Results of the Class III Cultural Resources Inventories	6848
1996	Klinner, D.		Leith Road Improvement Project, Grant Co.: Results of a Class III Cultural Resources Inventory	6828
1996	Klinner, D.		Southwest Pipeline Phase II Cultural Resources Inventory of the Bucyrus Tank Alignment and Reevaluation of 13 Previously Recorded Sites, Adams Co., ND	6651
1996	Kulevsky, A.		West River's Selfridge Exchange: A Class II & Class III Cultural Resource Inventory in Grant & Sioux Counties, ND	6662
1996	Kurtz, W.		Erickson Powerline Project in Section 19, T136N, R100W, Slope Co., ND	6785
1996	Kurtz, W.		ND Portion of the Grand River Cooperative Grazing Association Land Exchange II, in Section 17, T129N, R89W, Sioux Co., ND	6789
1996	Kurtz, W.		Two Homestead Sites Safety Concern in Section 22, T136N, R99W, Slope Co., ND	6790
1996	Oison, B.		Ten Broek Gravel Quarry Cultural Resource Inventory, Sioux Co., ND	6810
1996	Stine, E.		West River's Solen Telephone Exchange: A Class II and III Cultural Resource Inventory in Morton & Sioux Counties, ND	6646
1997	Borchert, J.		Safety Project Cultural Resource Review 1996	6880
1997	Klinner, D.		Hettinger Co. Road & Creek Crossing Improvements in Sections 26 and 27, T134N, R95W	7051
1997	Klinner, D.		ND533 - Consolidated Telephone Cooperative, South Heart Exchange Cable Improvements in Stark, Billings, and Slope Counties, ND	6953
1997	Klinner, D.		Schwartz Construction, Inc. Borrow Pit in Section 2, T133N, R93W, Hettinger Co., ND	6995
1997	Klinner, D.		Slope Co. Bridge 44-145-06 Replacement Project in Sections 33 and 34, T136N, R99W	7066
1997	Klinner, D.	G. Wermers et al.	Southwest Pipeline Phase II Cultural Resources Investigations in Portions of the Jung Lake, Scranton, & Bucyrus Service Areas, Hettinger, Adams, & Slope Counties, ND (Construction Segments 2-4A and 7-3) Parts I & II	6873
1997	Lewis, R.		Alfred Wagendorf Wetland 97PLP322, Hettinger Co., ND	6929
1997	Lewis, R.		White Lake Dugouts 97ILO001, Slope Co., ND	6934
1997	Pool, K.		Fisher Sand and Gravel's Proposed Cannonball River Gravel Pit: A Class III Cultural Resource Inventory in Hettinger Co., ND	6945
1997	Rothwell, S.	T. Larson et al.	Results of a Cultural Resource Inventory for the Missouri West Water System, Phase II & Report 1 for the 1998 Field Season	6919
1997	Scott, J.		Fisher's Mott North Gravel Pit: A Class III Cultural Resource Inventory in Hettinger Co., ND	6906
1997	Wermers, G.		Bridge Replacement Project in Adams Co., ND	7067
1997	Wermers, G.		County Road Improvement Project in Grant Co., ND	7070
1998	Isern, T.	L. Isern et al.	Historic Architectural Survey of Bowman Co., ND	8416
1998	Kinney, W.		A Proposed Morton Co. Borrow Area: A Class III Cultural Resource Inventory Report for NDDOT Project #SS-1-021(009)103	7101
1998	Larson, T.		Results of a Class II & Class III Cultural Resource Inventory for NDDOT Project Area SS-5-012(023)020 Bowman Co., ND	7282
1998	Larson, T.	D. Penny et al.	Results of Class I, Class II & Class III Cultural Resource Investigations for the Southwest Pipeline Project: The Bucyrus and Three Pocket Service Areas, Adams, Bowman, Hettinger, Slope, Stark Co., ND	7137

Year	First Author	Second Author	Title	Ms #
1998	Travis, L.		Katus Gravel Expansion: A Class III Cultural Resource Inventory, Grant Co., ND	7199
1998	Wermers, G.	D. Klinner et al.	Cannonball River State School Lands Sample Survey Project, Grant Co., ND 1997 Field Season	7232
1999	Isern, T.	K. Nesemeier	Wrought Iron Cross Cemeteries in ND-Continuing Survey, 1998-99 (Public Report)	7725
1999	Klinner, D.		Additions to the Southwest Pipeline in the North Stony Butte Pocket No. 2, South Stony Butte Pocket No. 2, & Lester Warnke Service Line, & the Proposed Burt Tank Location & Addendum in Stark, Hettinger & Slope Co., ND	7385
1999	Klinner, D.		Borrow Area Cultural Resources Inventory in Section 27, T136N, R96W, Hettinger Co., ND	7386
1999	Klinner, D.		Hettinger Co. Borrow Area for Federal Aid Project SC-2106(56) in Section 32, T136N, R96W	7420
1999	Klinner, D.		Slope and Hettinger Counties Road and Bridge Improvement Project in Portions of T136N, R98W, Slope Co., & T135N, R97W and T136N, R97W, Hettinger Co., ND	7295
1999	Klinner, D.	G. Wermers	Southwest Water Pipeline Project-Class III Inventories for the Mott-Elgin Main Line, Elgin-Carson Main Line, South Hebron Pneumatic Pocket Area, & the Southeast Jung Lake Pocket Area, ND	7455
1999	Klinner, D.		Stark and Slope Counties Road Improvement Project in Portions of T137N, R98W, Stark Co., & T136N, R98W, Slope Co., ND	7296
1999	Morrison, J.		Hepper Pipeline: A Class III Cultural Resource Inventory, Grant Co., ND	7451
1999	Ross, R.		Tenbroek Gravel Pits: A Class III Cultural Resource Inventory of Two Locations in Grant Co., ND	7532
1999	Wermers, G.		Road Improvement Project in Portions of T135N, R80W, Morton Co., ND	7380
1999	Wermers, G.		Road Improvement Project in Sections 26 & 35, T136N, R99W, Slope Co., ND	7469
2000	Bluemle, W.		Kohl Borrow Area: A Class III Cultural Resource Inventory, Hettinger Co., ND	7746
2000	Bluemle, W.		NDDOT Highway 8: A Class III Cultural Resource Inventory, Hettinger and Adams Counties, ND	7652
2000	Bluemle, W.		New England Landfill A Class III Cultural Resource Inventory Hettinger Co., ND	7689
2000	Floodman, M.		Medora District Well Plugging FY 2000 in Slope Co., ND	7581
2000	Jackson, M.		Oakes Industrial Park Road Improvement Projects Class III Cultural Resources Survey, Dickey Co., ND: Dickey Co. Projects SC-1110(051) and CP-11(000)	7615
2000	Klinner, D.		Reroutes and Additions for the Southwest Pipeline Project, Contract 7-3B/7-5B, SE Jung Lake and South Hebron Pocket Areas in Hettinger, Adams and Morton Co., ND	7640
2000	Klinner, D.		Road Improvement and Bridge Replacement Survey in Portions of T134N, R93W, and T134N, R94W, Hettinger Co., ND	7760
2000	Klinner, D.		Road Improvement Survey in Portions of T131N, R87W, and T132N, R87W, Grant Co., ND	7761
2000	Klinner, D.	G. Wermers	Southwest Water Pipeline Project - Class III Inventories for the Burt Service Area in Grant, Hettinger & Morton Co., ND	7642
2000	Morrison, J.		Chanta Peta Creek Bridge Survey: A Class III Cultural Resource Inventory, Hettinger Co., ND	7534
2000	Wermers, G.		Southwest Pipeline Routes in the Southeast Jung Lake & South Hebron Pocket Areas, Adams, Morton, & Grant Co., ND	7545

Year	First Author	Second Author	Title	Ms #
2000	Wermers, G.		Southwest Water Pipeline Project-Class III Inventories of Pipeline Reroutes & Additions Within the Burt Service Area, & a Tank Site Within the Coffin Buttes Service Area, Grant & Hettinger Co., ND	7763
2000	Wermers, G.		Thirteen NDDOT Living Snow Fence Planting Areas in Adams, Oliver, Burleigh, Barnes, & Cass Co., ND	7646
2000	Wermers, G.		Two Southwest Pipeline Routes in the Haynes Pocket Area, Adams Co., ND	7544
2001	Christensen, B.		STATEOP-407 Class III Inventory Report, Grant Co., ND	7989
2001	Floodman, M.		Cattle Grazing & Cultural Resources on the Cedar River National Grasslands, Grant Co., ND	8127
2001	Klinner, D.		Class III Investigations of the Twin Buttes Service Area Main Transmission Pipeline (Contract 2-4C) for the Bowman-Scranton Phase WO 3033.872 of the Southwest Pipeline Project	7965
2001	Klinner, D.		Schwartz Construction, Inc. Borrow Area in Section 32, T134N, R97W, Hettinger Co., ND	7837
2001	Morrison, J.		Living Snow Fence Survey of Six Parcels: Adams Co., ND: A Class III Cultural Resource Inventory,	7845
2001	Olson, B.		Upton Resources, USA Inc., Davis Creek #1-5H Cultural Resources Inventory, Billings Co., ND	8031
2001	Wermers, G.		Class III Cultural Resource Investigations For Phase III of the Mott-Elgin Project Area, Southwest Pipeline Project's Coffin Buttes Service Area & the Burt Service Area Additions in AD, GT, HT Co., ND	7940
2001	Wermers, G.		Class III Cultural Resource Investigations for Twin Buttes Service Area Rural Water Distribution System Contract 7-7A of the Bowman-Scranton Project Area, W. O. 3033.872, in Bowman and Slope Co., ND	8021
2001	Wermers, G.		Gravel Pit Expansion Project, Federal Aid No. SC-2116(51), in Section 22, T135N, R93W, Hettinger Co., ND	8053
2001	Wermers, G.		ND Highway 21 Right-Of-Way Class III Inventory, Hettinger and Grant Counties, ND	8052
2002	Bluemle, W.		Mosbrucker Property Survey: A Class III Cultural Resource Inventory, Morton Co., ND	8141
2002	Morrison, J.		Living Snow Fence Survey of 28 Sites in Adams, Barnes, Bowman, Emmons, Golden Valley, Hettinger, Kidder, McIntosh, Mountrail, Oliver & Walsh Co., ND: A Class III Cultural Resource Inventory	8187
2002	Wermers, G.		Class III Inventories for Pipeline Additions in the Burt Service Area, Contract 7-6A, & in the Coffin Buttes Service Area, Contract 7-6B, Hettinger and Grant Co., ND	8129
2002	Wermers, G.		Road Construction Project in Sections 20 & 21, T133N, R95W, Hettinger Co., ND	8365
2002	Wermers, G.		Southwest Pipeline Project-Class III Cultural Resource Investigations for the Twin Buttes Service Area & West Rainy Butte Booster Area Rural Water Distribution System (Contract 7-7B/7-3C) BO Co., ND	8335
2002	Wermers, G.		Two Borrow Areas, Federal Aid No. SC-2116(51), in Sections 8 & 18, T134N, R94W, Hettinger Co., ND	8195
2003	Bluemle, W.		Amidon to Bowman Exchange: A Class III Cultural Resource Inventory Project in Bowman and Slope Counties, ND	8591
2003	Bluemle, W.		Brenner Pipeline in Grant Co., ND: A Class III Cultural Resource Inventory	8680
2003	Buechler, J.		An Intensive Cultural Resources Inventory Survey of Buried Cable Routes Associated with West River Cooperative Telephone Company's Lemmon North Exchange Area in Adams, Grant & Sioux Co, ND & SD	8439
2003	Hertaus, J.	G. Wermers	Slope County Road Improvement (CP-44[03]01), Class III Cultural Resources Inventory, Slope Co., ND	8598

Year	First Author	Second Author	Title	Ms #
2003	Kulevsky, A.		US Highway 85 From Amidon to the Stark/Slope Co. Line: A Class II Cultural Resources Report in Slope Co., ND	8460
2003	Salisbury, E.	E. Stine	2003 Living Snow Fence Survey (B) of 22 Tree Sites in Adams, Grant, Hettinger, Kidder, McIntosh, Oliver, & Stutsman Counties, ND: A Class III Cultural Resource Inventory	8724
2003	Stine, E.		Hettinger to Mott Fiber Optics Line: An Intensive Inventory in Adams and Hettinger Counties, ND	8581
2003	Stine, E.		Milliner Pit: A Cultural Resource Inventory in Adams Co., ND	8503
2003	Wermers, G.		Adams Co. Bridge Replacement Project in Sections 8 & 9, T132N, R97W, ND, Structure 01-108-02.0	8560
2003	Wermers, G.		Class III Inventories for Pipeline Additions and Reroutes in the Twin Buttes Service Area (Contract 7-7A) & the Twin Buttes Service Area/West Rainy Butte Booster Area (Contract 7-7B/7-3C)	8492
2003	Wermers, G.		Road Improvement & Bridge Replacement Project, Stark Co., ND	8525
2004	Bluemle, W.		Highway 12: A Class III Cultural Resources Inventory Between Hettinger and the Bowman Co. Line in Adams Co., ND	8926
2004	Christensen, B.		SIP2004-002: Roadway Geometry Improvement SE of Elgin: A Small Class III Cultural Resource Inventory Grant Co., ND	8874
2004	Hiemstra, D.		Herbel Tree Tract: A Class III Cultural Resource Inventory in Adams Co., ND	8929
2004	Hiemstra, D.		Miller Tree Tract: A Class III Cultural Resource Inventory in Grant Co., ND	8927
2004	Hiemstra, D.		Volk Pit Expansion: A Class III Cultural Resource Inventory in Grant Co., ND	9029
2004	Sondeland, D.		Adams Co. Bridge No. 01-143-17.0 Replacement: A Class III Cultural Resource Inventory, Adams Co., ND	8987
2004	Springer, K.		04-037-196 to -200 Pipelines & Tanks Project Cultural Resources Inventory Grant Co., ND	8969
2004	Springer, K.		04-087-011m Pipeline & Tank Cultural Resources Inventory, Slope Co., ND	8932
2004	Springer, K.		A Revised Cultural Resources Inventory of the 04-001-037 Tree Planting Project Adams Co., ND	8728
2004	Springer, K.		The 03-001-064 Pipeline System Project Cultural Resources Inventory Adams Co., ND	8759
2004	Springer, K.		The 03-059-038 and -039 Pipeline & Tank Project Cultural Resources Inventory Morton Co., ND	8891
2004	Stine, E.		Mor-Gran-Sou's Transmission Line to the Solen Substation: A Cultural Resource Inventory in Morton Co., ND	8773
2004	Stine, E.		Tetra Tech's Cookout Tower Survey: A Class III Cultural Resource Inventory in Grant Co., ND	8757
2005	Bleier, A.		2005 Forest Land Enhancement Program Sites in Billings, Emmons, Hettinger, & Steele Counties, ND: A Class III Cultural Resource Inventory	9479
2005	Bleier, A.		2005 Living Snow Fence Transportation Enhancement Program Sites in Adams, Dickey, Emmons, Stark & Stutsman Counties, ND: A Class III Cultural Resource Inventory	9296
2005	Bleier, A.		Erickson Gravel Pit: An Intensive Class III Cultural Resource Inventory in Adams Co., ND	9204
2005	Bluemle, W.		Kouba Tree Site Survey: A Class III Cultural Resource Inventory in Hettinger Co., ND	9156
2005	Burgett, G.		Pedestrian Survey of Crowbar Ranch LLP (Tom McEnroe/Bruce Quammen) Wetland Restorations, Hettinger Co., ND	9249

Year	First Author	Second Author	Title	Ms #
2005	Burgett, G.		Pedestrian Survey of Doug Striegel Wetland Creation, Grant Co., ND	9244
2005	Burgett, G.		Pedestrian Survey of Jay Moser Wetland Creation, Grant Co., ND	9243
2005	Burgett, G.		Pedestrian Survey of John Traylor Wetland Creation, Grant Co., ND	9242
2005	Burgett, G.		Pedestrian Survey of Paul Burke Wetland Creation, Hettinger Co., ND	9251
2005	Burgett, G.		Pedestrian Survey of Tom McEnroe/Bruce Quammen Wetland Creation, Hettinger Co., ND	9250
2005	Christensen, B.		SS-5-021(011)001 Class III Inventory Report, Slope Co., ND	9519
2005	Klinner, D.		Mott Municipal Airport: A Class III Cultural Resource Inventory, Hettinger Co., ND	9284
2005	Salkin, P.		An Archaeological Survey of a Proposed Communications Tower Site in the Township of Minnie, Grant Co., ND	9292
2005	Stine, E.		Fisher's Milliren Gravel Pit Expansion: A Class III Cultural Resource Inventory in Adams Co., ND	9451
2005	Stine, E.		ND04 Amidon Alt 1: A Class III Cultural Resource Inventory in Slope Co., ND	9368
2005	Toom, D.		Morton Co. Bridge Survey, Class III Cultural Resources Inventory, Morton Co., ND [Project BRO-30(33), Bridge 30-145-34.0]	9376
2006	Buechler, J.		A Class III Cultural Resources Inventory Survey of Phase III of the Perkins Co. Rural Water System, Inc. in Adams Co., ND & Perkins Co., SD	9663
2006	Burns, W.		The Rath Survey, Adams Co.: A Class III Cultural Resource Inventory	9788
2006	Fandrich, B.		Cedar Creek: A Class III Cultural Resource Inventory of a Steel Stringer Bridge Along State Highway 8 in Adams Co., ND	9778
2006	Klinner, D.		Slope County Road Improvement: A Class III Cultural Resource Inventory, Slope Co., ND	9565
2006	Springer, K.		The 06-041-003 Wetland Restoration Project Cultural Resources Inventory, Hettinger Co., ND	9568
2006	Toom, D.	C. Kordecki	Mott Local Training Area Cultural Resources Investigations for the ND Army National Guard, Hettinger Co., ND, 2006	9794
2007	Bluemle, W.		Highway 21-2006 Survey: A Class III Cultural Resources Inventory in Hettinger and Slope Co., ND	10054
2007	Buchler, J.		A Cultural Resources Inventory Survey of West River Cooperative Telephone Company's Buried Cable Routes in the Bison/Lemmon Vicinity of Adams Co., ND & Perkins Co., SD	10125
2007	Hiemstra, D.		ND04 New England Alt 2: A Class III Cultural Resource Survey for a Proposed Cell Phone Tower and Ancillary Facilities in Hettinger Co., ND	10099
2007	Springer, K.		06-001-046 Pipeline System Project Cultural Resources Inventory, Adams Co., ND	10003
2007	Springer, K.		06-037-066 Well Decommissioning Project Cultural Resources Inventory Grant Co., ND	10023
2007	Stine, E.		Peterson Borrow: A Class III Cultural Resources Inventory in Adams Co., ND	9987

Test Excavation Projects

The listed reports of test excavations are not extensive (Table 2.5). One project (Keim and Simon 1983; Simon 1982) targeted two sites (32GT119 and 32GT120). These were two lithic scatters of unknown cultural/temporal affiliation in a Grant County road and bridge improvement project area at a Cannonball River crossing south of Leith. The sites had been recorded as a result of a survey of the project right-of-way (Keim and Simon 1982). Site 32GT119 was evaluated with two transects of shovel probes placed at 20 m intervals down the road right-of-way plus five 50 x 50 cm “test units.” The site was assessed as NRHP ineligible based on low artifact density, lack of diagnostic artifacts, low artifact diversity, lack of features, and lack of radiocarbon datable organic remains. While the 50 x 50 cm test units did not meet PCNDH standards for test excavation at the time, the combination of shovel probes and small tests on these two sites seem to have been sufficient to establish the fact that there were no significant artifacts in the construction right-of-way within 50 cm of the surface (Keim and Simon 1983). Site 32GT120 was evaluated based on negative results from 27 shovel probes, two 50 x 50 cm test units, and a Cannonball River cutbank profile examination.

Table 2.5: Test Excavation Projects in the Cannonball River Study Unit, 5-Sept-2007.

Year	First Author	Second Author	Title	Ms #
1983	Keim, K.	A. Simon	Archeological Test Excavations at 32GT119 & 32GT120, Grant Co., ND	2756
1983	Root, M.	M. Gregg	Archeology of the Northern Border Pipeline, North Dakota: Vol. 3, Test Excavations, McIntosh, Emmons, Morton, Stark, Mercer, Dunn, McKenzie, & Williams Counties, ND	3456
1990	Borchert, J.	J. Brownell et al.	Final Report: The Evaluation of Select Sites Along the Gladstone to Regent Road, Stark & Hettinger Counties	6185
1991	Good, K.		Testing of Archeological Site-32MO172 (Chantapeta Creek Tipi Ring Site) Aggregate Pit Associated with the Resurfacing Project of Highway 1806 Near Ft. Rice, Morton, Co., ND	5411
1998	Klinner, D.		Site 32AD78, Archeological Site Evaluation Testing Project, Adams Co., ND	7065
2001	Klinner, D.	G. Wermers	Evaluative Testing at 32GT198, Grant County, ND, 2001 Field Season	8170

Another project targeted 32MO94 (Gregg et al. 1983), a stone feature site with a solitary single-course stone circle situated at the base of a small knoll in an area capped with a veneer of glacial rocks. It is at the headwater of two ephemeral tributaries of the Northwest Branch of Cantapeta Creek. It was tested as part of the Northern Border Pipeline project (Gregg et al. 1983). Although shovel probes and surface reconnaissance at the time of survey failed to identify any artifacts in association with the stone circle, 13 of 38 shovel tests produced flaking debris and/or fire-cracked rock when the site was carefully assessed in preparation for test excavation. A 10 m square shovel test grid was placed over a 30 x 60 m area around the stone circle, and a 3 m shovel test grid was placed over the stone circle-proper. This enabled interior and exterior assessments of artifact densities.

Six 1-x-1-m units were excavated and 57 flakes, two chipped stone tools, and 93 pieces of fire-cracked rock were retained in the quarter-inch mesh screens; 34 size grade 4 (G4) flakes were recovered in fine-mesh screened matrix samples. This represents a salvage of perhaps 10% of a 60-m² activity area in and immediately around the stone circle. Artifacts were concentrated within 15 cm of the surface. The fire-cracked rock and ring course rocks were found to be resting on a living surface at ca. 12 cm surface depth. Some of the flaking debris was natural glass, either in the form of obsidian or NVN glass of coal burn origin. No temporally diagnostic artifacts were recovered. Based on the 10% sample, projected artifact densities for a 60 m² area taking in the entire ring are 20 chipped stone tools, 570 pieces of G1 to G3 flaking debris, 3,060 pieces of G4 flaking debris, and 930 pieces of fire-cracked rock weighing 23.9 kg. Artifact densities such as these would seem to indicate more than overnight camping. Inferring from the testing results, this stone circle site may have been occupied by a small hunting party or a nuclear family for several days. This case indicates the sort of significant artifact deposit which can be totally missed by surface survey and cursory shovel probing. Had it not been for the stone circle feature, the associated artifact deposit would not have been noticed at all.

Borchert et al. (1990) conducted subsurface testing at two sites along the Gladstone/Lefor Road in Stark County. The setting of 32SK793 is a bench above the Heart River floodplain. It is a low density (less than one artifact per meter) cultural material scatter (ibid.:11). The stratigraphy of the site is poor and no features or datable materials were recovered. Investigators suggest the site served as a temporary campsite where food procurement and processing took place.

Sites 32HT51 and 32HT53 were also tested by Borchert et al. (1990). Sites 32HT51 and 32HT53 are located on the north and south sides of Thirtymile Creek in Hettinger County, respectively. Prior to testing, no artifacts were observed on the ground surface. Fifty-six auger probes, 10 m apart, were placed along 13 transects (ibid.:19). No cultural resources were recovered from any of the auger probes.

Site 32MO172 required test excavations resulting from a transportation project associated with ND Highway 1806 in Morton County (Good 1991). Initially, a stone circle site, consisting of 10 rings, was recorded during the inventory of an area slated for aggregate mining. The site is located on a terrace above the North Branch of Chantapeta Creek. Testing of the site revealed no buried features, datable material, or cultural materials lower than 10 cm below ground surface (ibid.:3). Artifacts recovered included a heavily patinated McKean lanceolate point and patinated and unpatinated flakes (ibid.:6). McKean stone circle sites are known from a variety of topographic settings in the Northern Plains (Keyser and Klassen 2001:48). Two occupational episodes likely occurred at the site, one during the Plains Archaic as evinced by the McKean point and one during the Late Prehistoric as assumed due to the presence of stone circles (ibid.:5). Investigators noted that a portion of the site already had been disturbed, probably destroying any cultural deposits.

Several years passed before the next test excavation project was undertaken in the CRSU. As with previous transportation-sponsored testing endeavors here, overall results of excavation at 32AD78 were poor. The cultural material scatter is located on a terrace above Cedar Creek to the west and north, and Russian Slough to the southeast. Testing of the site included 80 auger probes, 5 test units, and 4 backhoe trenches (Klinner 1998a:iii). Although a fair amount of excavation took place, it appears that the surface expression of the site proved more informative than the shallow, disturbed buried deposits. The site has been cultivated and the eastern portion of the site has been affected by erosion and deflation (ibid.:23). No features were uncovered. The four diagnostic artifacts, projectile points dating to the Middle Plains Archaic and Late Prehistoric/Plains Village, were collected on the surface (ibid.). Investigators recommended no further work at the site based on the lack of contextual integrity due to ongoing disturbances.

In 2001, evaluative testing was conducted at 32GT198 because of planned road improvements in Grant County. The site, consisting of two cairns, is situated atop a high hill with drainages to the south and north. The testing project involved a surface inventory and excavation of two test units, one place within each feature (Klinner and Wermers 2001:8). No cultural materials were observed on the surface or recovered from the test units (ibid.:12). Investigators recommended no further work at the site.

NRHP and NDSHSR

Medicine Rock (32GT129), the multi-ethnic, prehistoric and historic rock art site, is listed (nomination by Snortland and Loendorf on file, SHSND). Site 32GT102 is a prehistoric Plains Village cultural material scatter with Riggs ware ceramics on a Cannonball River terrace (SHSND, site files). Site 32GT405 is a stone feature site with five cairns and a TRSS “surface quarry” (ibid.). Site 32GT437 possibly is a stratified multiple component prehistoric artifact deposit containing chipped stone tools, flaking debris, bison bone, fire-cracked rock, charcoal, and fire features along an intermittent tributary stream near the edge of the Cannonball River valley. A corner-notched point from the middle cultural zone indicates the possible presence of stratified Late Plains Archaic deposits.

Medicine Butte, the location of Medicine Rock (32GT129) in Grant County south of Elgin, is also listed in the North Dakota State Historic Sites Register (NDSHSR). A “dance ring” feature is highlighted in the NDSHSR listing. The 200-ft diameter ring is marked by a vegetation color change with a dark ring band set off by lighter vegetation inside and out. This ring has been discernible for more than 50 years. Is the dark ring of vegetation resultant from dancing or some other activity related to Medicine Rock ceremonialism?

The current list of archeological sites in North Dakota listed on the NRHP is available on the National Park Service website. The following internet links are useful (NPS 2008a, b):

General information and links to specific information: <http://www.nps.gov/nr/>
National Register Information System: <http://www.nr.nps.gov/>

Major Excavation Projects

No major excavations have been conducted within the CRSU as of 2007. Whatever the source of funding, there is a need to carry out major excavations in order to recover several large artifact samples from controlled proveniences in order to develop more particular historic contexts.

Other Work

The Sappington (1980) manuscript is a brief letter report to Jim Connolly of Fargo, North Dakota, regarding sourcing of obsidian artifacts reportedly found along the Cannonball and Heart rivers. No site numbers or cultural/temporal affiliations are mentioned. Samples from the “South bank of Cannonball Creek, Hettinger Co., N. Dakota” were sourced to “obsidian Cliff in Yellowstone.” The Borchert and Kuehn (1985) manuscript is a letter report of no effects to lithic scatter 32SL41 by a reroute of an access road to an oil and gas exploration well pad.

In 1992, Bureau of Reclamation archeologists re-evaluated several sites and recorded one new site along two Southwest Pipeline segments. Site types included 11 lithic scatters and 6 cultural material scatters. Four archeological sites (32HT28, 32HT32, 32HT69, and 32SK86) were recommended as potentially eligible under Criterion D for listing in the NRHP. All of the sites are lithic scatters, almost exclusively comprising KRF, located near intermittent streams (Banks 1992:12-19). Sites 32HT32 and 32SK86 were previously disturbed by the installation of buried telephone cable.

In 1993, Toom and Kordecki (1994) assessed the condition of 28 flood damaged sites across the state. Ten sites were reported to be significantly damaged due to high water levels. Recommendations for bank stabilization were made for nine of the sites and complete salvage of 32MO97 (Heart River Study Unit) was recommended because the site is a known ossuary.

Table 2.6: Other Work in the Cannonball River Study Unit, 5-Sept-2007.

Year	First Author	Second Author	Title	Ms #
1965	Anonymous		Historic Sites Under the Authority of the State Historical Society of North Dakota As Established by The 39 th Legislative Assembly	2011
1978	Loendorf, L.		An Evaluation of 110 Archaeological & Historical Sites, McKenzie, Billings, Golden Valley, Bowman, & Slope Counties in the Little Missouri Grasslands of ND	5466
1980	Sappington, L.		Analysis of Obsidian Samples from Cannonball & Heart River Sites	2493
1985	Borchert, J.	D. Kuehn	Letter Report: Construction Monitoring of Road Reroute Near Site 32SL41 for Dance USA 22-5 Access Route.	3559
1986	Snortland-Coles, J.		Medicine Rock NRHP Nomination	--
1991	Karsmizki, K.		U308 Uranium Industry Context Statement. Adams, Slope, Golden Valley, Billings, Bowman, Dunn & Stark Counties, ND	5477
1992	Banks, K.		Southwest Pipeline Segments C3 and C4 in Hettinger & Stark Counties: Site Updates	5735
1994	Toom, D.	C. Kordecki	Flood Damage Assessment Survey of Twenty-Eight Archeological Sites Along the Cannonball, Heart, James, Maple, Red & Sheyenne Rivers, ND	6222
2000	Vyzralek, F.		Historical Review of West Mott, Mott, Hettinger Co., ND	7932
2005	Hufstetler, M.	J. Goff	Historic Bridges in North Dakota 2004 Revision	10128

Paleo-Indian Period

There is every reason to expect that there was regular use of this area throughout Paleo-Indian times. Settlement would not have been inhibited by glacial ice because this area was unglaciated. During the more mesic early Holocene, there may have been numerous playa lakes present, especially in the upper portions of the basin. Further, there was an abundance of raw material available for flintworking, most notably the beautifully colored silicified woods.

Paleo-Environmental Modeling

There is nearly a total lack of Holocene environmental data for this unit. Efforts should be made to identify the early Holocene Leonard paleosols of the Aggie Brown Member of the Oahe Formation which are so prominent in other parts of the state (cf. Clayton et al. 1976).

Cultural Chronology

A variety of Paleo-Indian points, including a Folsom point made from KRF, reportedly have been found in the Rhame locality (Keim and Simon 1983:5). What is the range of named archeological units evidenced by diagnostic point types in private collections of artifacts from sites in the Study Unit?

The discovery of a Folsom point made from RBSW at Lake Ilo in Dunn County is further evidence that people with Folsom material culture were using this part of the state around 9000-8000 BC. There is no reason not to expect earlier Goshen and Clovis components; the land was certainly open to settlement,

and big game resources ought to have abounded. Should sites of the earlier and later Paleo-Indian complexes be found in similar geomorphic settings?

Settlement Behavior

At least by Folsom times, temporary camps should have been established in the Rainy Buttes locality when RBSW was being procured. Did Paleo-Indian peoples surface collect or quarry for RBSW? Were Paleo-Indian workshop strategies for RBSW similar to those for KRF where procured materials were tested and worked into cores and preforms at workshop sites near the source? How did Paleo-Indian strategies for RBSW procurement differ from those of subsequent time periods?

Native Subsistence Practices

At the Lange-Ferguson site (39SH33) in the White River Badlands less than 200 miles to the south of the Cannonball, Clovis points have been found in proximity to butchered mammoth bone (Hannus 1981). At the Mill Iron site (24CT30) in the Box Elder Creek drainage of southeastern Montana, about 50 mi to the southwest of the Cannonball headwaters, there is a Goshen bison-butcher- ing component with three dates on charcoal averaging over 11,200 BP (Frison 1986, 1988b). The most readily identifiable Paleo-Indian sites in the Study Unit should be expected to be either (1) big game kill or butchering sites or (2) RBSW or TRSS lithic procurement/workshops. Suspected early Holocene megafaunal bone deposits should be tested very carefully for the presence of cultural remains because chipped stone artifact densities can be surprising low at some Paleo- Indian butchering sites (cf. Hannus 1981), and archeological components can easily be misidentified as paleontological sites. Big game kill and butchering sites should be expected in former playa lake settings in areas which would have received accumulations of sediments during the mid-Holocene. A major gap in knowledge of Paleo-Indian subsistence practices regards use of small animals and floral resources. Camps in proximity to kill and butchering sites can be expected to hold information concerning subsistence practices other than big game hunting. Flotation recovery procedures should be applied to all sediments excavated from Paleo-Indian residential sites.

Technologies

The discovery in the KRF primary source area of a Folsom point made from RBSW (J. Borchert, personal communication to Gregg, November 1989) is of particular technological interest because of the material's unusually high density due to high iron content (Loendorf et al. 1984). Does the time of the Folsom complex mark the beginning of the use of RBSW or was it used by earlier people who made Goshen and Clovis points? Were indirect percussion and pressure fluting techniques equally effective with RBSW? With reference to the agatized woods, was fluting any less difficult "with the grain" than "against the grain?"

Artifact Styles

The Goshen point style was first identified at the Hell Gap site in southeastern Wyoming where it was represented in a discrete cultural zone interpreted by the excavators as positioned stratigraphically beneath Folsom (Irwin-Williams et al. 1973). The style was described as resembling Clovis in overall outline form, but being basally thinned by the removal of multiple flakes rather than flutes (ibid.:46). During the decade and a half following that discovery, Goshen points have been reported throughout eastern Wyoming, western Nebraska, western South Dakota, and eastern Montana, but they were misidentified as Plainview (Frison 1985). Are there Goshen points from the Cannonball drainage that have been misidentified as Plainview?

The base of a large stemmed point, perhaps representing either the Hell Gap or Alberta style, was collected as an isolated find on a sample survey unit in the BLM's Mott Coal Study Area south of the Cannonball River west of Mott (Metcalf et al. 1988:171). Cody complex points are reported in the Rainy Buttes locality (Keim and Simon 1983:5). The diversity of Paleo-Indian projectile point styles in the CRSU should be studied with an eye toward identifying stylistic affinities with surrounding areas.

Regional Interaction

Hayden (1982:18) has argued that finely crafted chipped stone projectile points and high quality lithic raw materials for flintknapping were widely exchanged during Paleo-Indian times in order to maintain far-flung alliance networks which could be relied upon for support during times of subsistence resource scarcity. Whatever the reason, interaction networks were not only extensive but seem to have been particularly active during the eras of the earlier Paleo-Indian complexes. Distinctive high grade lithic raw materials are good indicators of exchange/interaction. Paleo points of RBSW found in other areas are evidence for contacts with this Study Unit. Clark (1985:80) reported a Paleo-Indian projectile point of RBSW from the KRF quarry area not far to the north in the Knife River Study Unit. Folsom deposits containing RBSW artifacts have been excavated near the Lake Ilo National Wildlife Refuge within the Knife River Study Unit (Root 2000; Shifrin 2000; William 2000).

One problem with RBSW is that it is poorly known and not readily recognized by most archeologists outside of North Dakota, notwithstanding the type description article in *Plains Anthropologist* (Loendorf et al. 1984). What nonlocal raw materials are represented by Paleo points in surface collections from sites in this Study Unit?

Historic Preservation Goals, Priorities, and Strategies

Basic Paleo-Indian site inventory work needs to be done to build a sample of site cases. This should be a top priority for upgrading the Paleo-Indian contexts for this Study Unit. Collector-informant interviewing is a way to secure site leads to follow up with on-the-ground inspections and site recording.

Plains Archaic Period

Plains Archaic sites have been identified within this Study Unit. A tributary drainage basin such as the Cannonball, upstream from the reliable Missouri River water source, ought to have been used regularly throughout prehistory.

Paleo-Environmental Modeling

A possible Early Plains Archaic large side-notched point was found on the surface of 32GT139 south of the Cannonball River during the sample survey of the BLM's Mott Coal Study Area (Metcalf et al. 1988:114). The site is on a ridge, and other heavily patinated KRF or agatized wood artifacts were associated with it. Sites dating to the early Holocene and mid-Holocene ought to be surface-evident only on erosional landforms such as hills, ridges, and knolls. While the side-notched point is not of the Simonsen type, heavy patination does evince considerable antiquity. What were the environmental conditions in the Cannonball basin during the Early, Middle, and Late Plains Archaic periods?

Cultural Chronology

Lacking excavated components and radiocarbon dates, identification of Plains Archaic archeological materials must rely primarily upon typological dating of distinctive projectile point styles. But other relative dating techniques such as assessment of patination intensity on KRF artifacts also can be of value. Heavily patinated shallow side-notched and incurvate base point fragments from 32HT410 (Fox 1979) may be Early Plains Archaic specimens classifiable as Simonsen ("early side notched") and attributable to the Logan Creek/Mummy Cave complex (Agogino 1962:247; Agogino and Frankforter 1960a; Frankforter and Agogino 1959, 1960; Gregg 1985a:101-105; Gryba 1980; Kivett 1962; McCracken et al. 1978; Wedel et al. 1968). Some Simonsen points are very small and are indistinguishable from some late prehistoric Prairie Side-Notched forms (cf. Kehoe 1966b:830-834). What are the functional differences represented by small versus large Simonsen points? How can small Simonsen points be distinguished from Prairie Side-Notched points?

A Duncan point is reported from 32GT419 near the Cannonball in the north-central portion of the Study Unit (Fox 1979). With the Duncan complex seemingly so well represented to the southwest in the Grand River Study Unit,

occurrences of Duncan components are expected to extend eastward throughout the Cannonball River basin and eastward into eastern North Dakota.

Knife River flint corner-notched points from 32GT422 (Fox 1979) could signal a Late Plains Archaic or possibly Early Plains Woodland component. Lack of radiocarbon dates from Plains Archaic components is a major data gap.

Settlement Behavior

Given the range of functional site types expected of collectors (cf. Binford 1980). What attributes should be used to identify Plains Archaic residential base, field camp, station, locations, caches, and mortuary sites in the CRSU?

Native Subsistence Practices

What subsistence resources were available to people of the Plains Archaic period inhabiting in the CRSU? How did subsistence resource availability vary from the Early to the Middle to Late Plains Archaic periods in the CRSU?

Technologies

Was RBSW unsuitable for any of the regional Plains Archaic chipped stone technologies? Were any essential technological resources unavailable in the CRSU?

Artifact Styles

Are any concentrations of Plains Archaic point styles represented within the CRSU indicative of maintenance of a core area within the Cannonball River basin?

Regional Interaction

Clark (1985:80) reported Middle and Late Plains Archaic projectile points made from RBSW in private collections in the KRF quarry area. What extents of regional interaction are indicated by finds of RBSW artifacts in Plains Archaic sites in surrounding areas?

Historic Preservation Goals, Priorities, and Strategies

The top priority is to excavate samples of artifacts from intact Plains Archaic deposits.

Plains Woodland Period

Sites of the Early, Middle, and Late Plains Woodland periods can all be expected here. If Early Plains Woodland adaptations evolved in the Northeastern Plains from a Pelican Lake milieu at the approximate latitude of this Study Unit in the James River valley, about 200 miles to the east, on a 400 BC time level as suggested by Gregg (ed. 1987:443); there is every reason to anticipate sites of similar antiquity with ceramics in the CRSU. The Early Plains Woodland component at the Naze site (32SN246) does contain smooth gray TRSS and dark chalcedony agatized wood flaking debris which may have been collected in the Cannonball River drainage (Picha and Gregg 1987:200).

Paleo-Environmental Modeling

Sites such as 32HT22, recorded during a survey based on flaking debris eroding from a stream cutbank, might be relatively datable if late Holocene sequences of mesic and xeric periods were known. In a Spring Creek cutbank, between Mott and Elgin, two dark organic-rich buried soils were exposed by erosion at depths of ca. 80 cm and 90 cm below the surface. Two near-surface buried soils in a stream floodplain setting such as this might be the pair of paleosols often seen in the Upper Submember of the Riverdale Member of the Oahe Formation which correlate with the mesic conditions of the Neo-Atlantic and Pacific climatic episodes (cf. Clayton 1976:11). If this is the case, the artifacts in the lower paleosol should date to either the Late Plains Woodland period or early in the Plains Village period. Holocene geomorphic sequences need to be identified for the main valley of the Cannonball and its tributaries. How much does the depth of Holocene alluvial sediments vary in the valley of the Cannonball and its tributaries?

Cultural Chronology

While Early Plains Woodland sites have not yet been identified, Middle Plains Woodland Besant/Sonota components have been registered in the site files. The Cannonball drainage is immediately west of one of the core territories of people with Besant/Sonota material culture (cf. Neuman 1975). The Wounded Knee site (32EM21) contains the remains of a 2,000-year-old Sonota settlement just across the Missouri River from the mouth of the Cannonball River (Root 1983v). There are other Sonota sites on the western side of the Missouri River in Sioux County directly east of the CRSU (Scheans 1975). Site 32HT101 within the Cannonball River drainage, just south of Regent on a tributary of Indian Creek, was recorded by Franke in his 1974 survey for the Indian Creek recreation dam (Franke 1974) as a site with eight possible Plains Woodland mounds (Fox 1979). Are there Besant/Sonota earthen mortuary mound features in the CRSU?

Settlement Behavior

The West and East Rainy Buttes locality attracted at least temporary settlement during the Middle Plains Woodland period associated with collection or quarrying RBSW (cf. Loendorf et al. 1984) for making chipped stone tools. People with Sonota material culture residing in the eastern part of North Dakota made Besant Side-Notched points from this stone (cf. Gregg 1987d:274). There should be Sonota/Besant field camps and RBSW procurement/workshop sites in the Rainy Butte locality. The same types of sites should be anticipated in areas of TRSS outcrops and lag deposits.

If there are Middle Woodland Besant/Sonota mounds in the Indian Creek locality south of Regent at 32HT101 and 32HT401 near Mott (cf. Fox 1979), then there may well be Besant/Sonota residential bases nearby. With the mesic climatic conditions of 2,000 years ago, water and timber resources may have been sufficient in that locality to support semi-permanent settlement. The range of Besant/Sonota settlement types in the CRSU needs to be identified. Perhaps Middle Plains Woodland body sherd attributes could be specified to enable distinguishing Sonota from late prehistoric sherds and thus facilitate identification of Middle Plains Woodland sites in the basin (cf. Gregg 1987a; Snortland-Coles 1985). If Besant/Sonota residential bases and mortuary mounds are identified in the interior portions of the CRSU, then the full range of Besant/Sonota settlement types can be expected to occur. With the suite of settlement types unknown, it is impossible to specify the breadth of the data gap. How big is the Plains Woodland settlement data gap?

Native Subsistence Practices

The length of the growing season and amount of annual precipitation are historically about the same for most of the CRSU and the Missouri River valley to the east (cf. Jensen 1972). Considering conditions and cultigens acclimated to the Northern Plains, in the past what sorts of gardening would have been possible in this Study Unit during the three Plains Woodland periods?

Technologies

Ceramics identified as “possibly Woodland” have been reported from 32HT403 west of Regent on a bluff overlooking the Cannonball River valley (Fox 1979). The sherds were assessed as more likely to be Plains Woodland than Plains Village based on cord-impressed decoration in combination with coarse friable paste (ibid.). If these are Plains Woodland sherds, they are more likely to be Late than Early or Middle Plains Woodland because of the rarity of cord-impressed decoration on Early and Middle Woodland vessels in the Northern Plains. Are Early, Middle, and Late Plains Woodland ceramic technologies represented in the CRSU?

Artifact Styles

Temporally diagnostic artifacts other than ceramic wares and types are less common for Plains Woodland complexes than they are for the complexes of other traditions. The corner-notched dart points found in Early Plains Woodland components are also characteristic of Late Plains Archaic Pelican Lake components. Late Plains Woodland side-notched arrowpoints are sometimes indistinguishable from Plains Village forms. The most distinctive Plains Woodland artifact styles are represented by Besant Side-Notched and Samantha Side-Notched dart points (cf. Johnson 1970; Reeves 1970b:41-45) and Besant/Sonota ceramic vessels with cord roughened exterior surfaces, cord wrapped tool-impressed decorations on the lips, and punctates and/or nodes on the exterior rims. Are there distinctive Plains Woodland complexes geographically limited to core areas within the Cannonball River drainage? Contemporary with Early Plains Woodland, there may be localized Late Plains Archaic complexes in the nearby Pine Parklands areas of Montana, Wyoming, and South Dakota which represent small, conservative local populations adapted to very small core areas (Beckes and Keyser 1983:102; Keyser and Davis 1981).

It would be helpful if distinct Plains Woodland artifact styles could be identified within the CRSU. Controlled excavation or controlled surface collection of single component deposits with scientific study of data collected from recovered artifacts will be necessary to achieve this goal.

Regional Interaction

Rainy Buttes silicified wood and TRSS should have fit well in the system of Besant/Sonota long distance exchange of exotic flintknapping materials. Stones which were moved west to east were most notably obsidian and KRF. However, the two Cannonball River basin stones were also involved to some extent. A RBSW Besant Side-Notched point and 100 smooth gray TRSS flakes were identified in an excavated sample of the Sonota component of the Naze site (32SN246) in the James River Study Unit (Gregg 1987d:274; Picha and Gregg 1987:200). Other reports could be reviewed to determine the quantity of Cannonball River basin materials present in order to get a better indication of the extent to which groups with Besant/Sonota material culture were linked into the vast Middle Plains Woodland exchange networks. This is the sort of library research project which could be accomplished by an undergraduate student enrolled in a North Dakota prehistory course at one of the institutions of higher education in the state.

Historic Preservation Goals, Priorities, and Strategies

There is a need to recover samples of Plains Woodland deposits through controlled excavation in the CRSU in order to identify their make-up. Stratified sites with two or more Plains Woodland cultural zones would be likely to yield more important information than sites with only one cultural zone. Site

32GT437, in a low river terrace setting near New Leipzig, may be such a site (cf. Fox 1979). Further evaluation is recommended before it is targeted for excavation with this particular research topic in mind. This site has four stratified cultural zones; the earlier ones may be Plains Archaic and latest may be Plains Village, but several could be Plains Woodland.

Plains Village Period

Sites of the Plains Village period should abound throughout the drainage basin. Thousands of Plains Village lifetimes were lived out of earthlodge village communities situated near the confluence of the Cannonball and Missouri rivers. These include the Extended Middle Missouri Bendish (32M02), South Cannonball (32SI19), and Badger Ferry (32EM7) sites as well as the Terminal Middle Missouri North Cannonball (32M01), Lower Fort Rice (32M03), Shermer (32EM10), and Tony Glas (32EM3) sites (Lehmer 1971).

Paleo-Environmental Modeling

Almost any intact deposit has potential to yield important paleo-environmental information. At 32HT9 on a low Cannonball River terrace, an intact deposit was identified beneath the plow zone (Gregg et al. 1985:83). If this is an indication of where the land surface was when the site was occupied during Extended or Terminal Middle Missouri times, then at least one major episode of deposition associated with a drought period may be indicated. Was there Pacific climatic episode drought in the Cannonball River basin? Studies of artifactual and ecofactual remains from Plains Village components could provide answers. What were the environmental conditions of the Plains Village period in the CRSU?

Cultural Chronology

The Plains Village chronology for the Cannonball region of the Middle Missouri subarea should be applicable to this entire Study Unit. The Extended Middle Missouri variant predominated from the inception of the Plains Village period until ca. 1550 (Lehmer 1971). This was represented by the Fort Yates phase with an “occupational hiatus” between AD 1300 and 1400 (Lehmer 1966, 1971; Thiessen 1976). Extended Middle Missouri sites are distributed upstream into the Garrison region and down the Missouri into South Dakota (Lehmer 1971:66). The Terminal Middle Missouri variant is represented by settlements of the Huff focus dating from AD 1500 to the late 1600s (Lehmer 1971; Wood 1967). During the 1600s, there may have been a time when the southern Cannonball region was an unoccupied “buffer zone” between peoples with Terminal Middle Missouri and Extended Coalescent material culture. However, this is merely a projection of the chronology for the adjacent archeological subarea into the Study Unit. When Plains Village sites turn up in inventories, attempts should be made not merely to classify them within this chronology, but appraise their material content with reference to the defining characteristics of the named archeological unit under

scrutiny. In this way, there will be appraisal of the suitability of extending the chronology for the Cannonball region westward to include part or all of this Study Unit.

Settlement Behavior

A range of Plains Village settlement types should be represented in proximity to the earthlodge village residential bases along the nearby reaches of Missouri River. Ritual/sacred sites should be well-represented because the CRSU includes areas removed from the villages yet within just a few hours travel. Medicine Rock (Me-me-ho-pa, site 32GT129) is one such sacred place. The significance of Medicine Rock extends back to times before writing for the Mandan and Hidatsa, and it was recognized by the earliest explorers to be a cultural and natural landmark (Snortland 1986, NRHP form on file, SHSND). The site “preserves a record of native [*sic*] American art and religious values and continues to be used as a religious shrine by Plains Indian tribes” (ibid.). Petroglyphs and pictographs include handprint, footprint, rider on horseback, shield bearing warrior, bearpaw, pecked bighorn sheep, pecked bison figure, incised turtles, and ungulate hoof prints (ibid.). Can ethnic affiliations be ascribed to particular glyphs? What sorts of activity areas are archeologically detectible in proximity to Writing Rock outside the bounds of the National Register property?

Hunting sites, stone procurement sites, and petroforms are also suggested (cf. Fox 1979). If there are Plains Village residential sites in the Cannonball basin interior, should mortuary sites also be expected? The earthen mounds reported at 32HT101 and 32HT401 could be Plains Village rather than (or in addition to) Plains Woodland. While Plains Village mortuary tumuli in the Cannonball subarea are more likely to be stone cairns than earthen mounds, Plains Villagers did erect earthen mounds in the eastern Dakotas (cf. Alex 1981; Snortland-Coles 1985; Swenson and Gregg 1988).

There may be a few residential base settlements along the Cannonball River. Site 32HT9 just east of Mott discovered during survey of the proposed Southwest Pipeline is a likely candidate (Gregg et al. 1985). There is also 32GT102 recorded as a Terminal Middle Missouri variant site along the Cannonball River, southwest of New Leipzig (Gregg 1985a:Figure 34). This site has never been tested, but two buried cultural zones in an eroded terrace setting contain Riggs ware ceramics, bone, stone tools, flaking debris, charcoal, and fire-cracked rock (site form on file, SHSND). How would Plains Village residential base settlements in the Cannonball interior vary from similar settlements along the Missouri River?

Native Subsistence Practices

Because of the lack of artifact samples from controlled excavation, the database pertinent to the topic of Plains Village subsistence is quite feeble. One

shovel probe at 32HT9 near Mott along the Cannonball River recovered a sample of artifacts which is all probably Plains Village. The probe produced a stone tool, potsherds, flaking debris, burned rock, butchered bone, and freshwater mussel shell (Gregg et al. 1985:84). Big game hunting and mussel collecting in the Mott locality are indicated. But data are missing evincing horticultural activities. If there were residential bases in the Cannonball River basin interior, should garden locations be anticipated?

Technologies

Plains Village peoples are known to have frequented the Rainy Buttes territory and collected RBSW from which to make tools. Plains Village artifacts were recovered during testing in a sheltered location near a spring on a bench north of West Rainy Butte. Was the heavy weight of this iron-rich stone a factor in its selection for use in making projectile points?

Sites such as the Cedar Creek site (32AD26) along the Southwest Pipeline right-of-way between New England and Wolf Butte (Artz et al. 1987:5.37-38) may be aceramic Plains Village field camps. Arrowpoint preforms and bipolar cores from the site are generic late prehistoric indicators. Some means should be devised to differentiate between aceramic Plains Village and aceramic Late Plains Woodland components.

Smooth gray TRSS was favored by the Villagers for flaking small and large patterned bifacial tools such as arrowpoints and side-hafted knives. It may be possible to identify particular reduction procedures which were employed to produce these tool forms from the blocks and chunks of raw material found in this Study Unit. During pedestrian inventory of procurement/workshop areas, the surface should be examined closely for discrete flintknapping activity areas. The activity area hit by a shovel probe at 32HT9 may be such a case (Gregg et al. 1985:85). The probe and a surface artifact concentration surrounding it produced two arrowpoints which broke while being made, an expended smooth gray TRSS core, and 349 pieces of flaking debris, 325 of which were smooth gray TRSS. This spot should be relocated based on information in the field notes, and a salvage excavation should be conducted to identify diagnostic traits of a Plains Village TRSS reduction strategy.

Artifact Styles

Ceramic styles in the form of Riggs ware from site 32GT102 and Fort Yates Incised from site 32HT9 have been the basis for identifying Extended Middle Missouri and Terminal Middle Missouri Plains Village components at these sites (Fox 1979; Gregg et al. 1985:85). Does the seriation of ceramic vessel styles which has been developed for the Cannonball region, of the Middle Missouri subarea, hold for the modest-sized Cannonball drainage basin?

Regional Interaction

Interactions of hunting and gathering groups of the Northwestern Plains with Villagers in the Trench has long been recognized as an important adaptation of peoples living different lifeways to their natural and cultural environments. This topic has been raised specifically for the CRSU because this area is immediately upstream from the Cannonball region of the Middle Missouri subarea where a number of large Extended and Terminal Middle Missouri villages were situated (cf. Fox 1979:14; Thiessen 1975, 1976). Temporary campsites of Northwestern Plains peoples with Beehive complex, Old Women's complex, and possibly Absaroka phase material culture ought to be identifiable in the CRSU. One clue to western cultural affinities could be dominance of western lithic materials in samples of lithic artifacts representative of overall deposits of target components.

Historic Preservation Goals, Priorities, and Strategies

Approximately 10% of the recorded archeological sites in the CRSU have been assigned to the Plains Village period. Site surveyors should watch carefully for potsherds when they are on sites. There should be an attempt to identify potsherds at least to the gross cultural/temporal affiliations of Plains Woodland versus Plains Village.

Equestrian/Fur Trade Period

There is thought to have been relatively little Disorganized Coalescent occupation of the Cannonball region of the Middle Missouri subarea subsequent to the plague of 1780 which decimated the Villagers (Lehmer 1971). Arikaras would have traveled up and down the Missouri River valley in their sojourns back and forth between their South Dakota homelands and the shrinking Mandan-Hidatsa core territory at the confluence of the Knife and Missouri rivers upstream. The principal users of the Cannonball basin in the Equestrian period were probably Sioux and possibly Cheyenne.

Paleo-Environmental Modeling

How greatly did environmental conditions vary through Equestrian period of AD 1780-1880 in the CRSU?

Cultural Chronology

What archeological complexes can be identified through analysis of artifacts and features at Equestrian period sites in the CRSU?

Settlement Behavior

Settlement behavior should have shifted when the Cannonball basin territory came under the control of the Sioux and was lost by the Villagers. In 1855, Denig (1961:25) specified this basin as part of the territory of the “Honc pa pas, Se ah sap pas, and Etas epe chos.” How did Sioux Equestrian period settlement behavior differ from that of the Villagers’ Equestrian period settlement behavior in the tributary basin interiors, and how would those differences be archeologically detectible?

Native Subsistence Practices

Is there archaeological evidence for Villagers and nomads aggregating for communal bison hunts?

Technologies

Did TRSS and RBSW continue to play any part in native technologies of the Equestrian period?

Artifact Styles

What artifact styles are diagnostic of Equestrian period archeological sites in the CRSU?

Regional Interaction

There was more regional interaction during this period than at any time during prehistory due to the mobility afforded by use of horses. Through established trade networks, peoples of the Northern Plains were linked with others in the Southwest and Pacific Northwest (Wood 1980). Sioux and Cheyenne peoples became spread out from the Northeastern Plains-Woodlands border area westward into the Northwestern Plains and southwestward into the High Plains. Individual bands of Cheyenne moved westward from their Northeastern Plains homeland, perhaps beginning in the 1600s or 1700s (Wood 1971:67-68). Some of them may have constructed earthlodge villages and established new core areas centered at locations in the Missouri River Trench between the mouth of the Heart River in North Dakota and the mouth of the White River in South Dakota (ibid.). It should be possible to identify Cheyenne sites in the Cannonball basin. How can such sites be distinguished from protohistoric Siouan sites?

Historic Preservation Goals, Priorities, and Strategies

There is first a problem of identifying archeological sites of the Equestrian period on the ground, and then one of identifying ethnicity or tribal affiliation. A high priority is to develop methodologies for identifying sites of this period. This could be approached by locating historically recorded Equestrian Nomadic

encampments and studying them in detail in order to determine their distinguishing characteristics.