ARCHAEOLOGICAL EVALUATION OF A PORTION OF SITE 24PE0726

Report prepared for

The Montana Department of Environmental Quality, Helena, MT

by

Patrick J. Rennie
DNRC
Helena, MT 59620

July, 2010

DNRC Project No. 2010-7-1

ABSTRACT

On July 26, 2010, the author, Mike Glenn (DEQ), and Tyrel Hulet (Trihydro Corporation) conducted archaeological evaluation of site 24PE0726. The property consists of a minimal lithic scatter in eastern Prairie County, Montana. Evaluation work was conducted in response to a proposal by the Montana Department of Environmental Quality's Abandoned Mine Lands Program to extinguish an actively burning, subterrranean coal fire.

The burning coal seam is located on private land and partially beneath the boundaries of site 24PE0726. Evaluation work consisted of the excavation of two one square meter units excavated to a depth of 20 cm below the present ground surface (BS). Only a single piece of chipped stone debitage was recovered from each of the two test units. No cultural remains were recovered below 10 cm BS. The portion of site 24PE0726 where remediation work is proposed (the upper bench top) is recommended here to be ineligible for listing in the National Register of Historic Places. Proposed coal fire remediation work will have No Effect to Historic Properties. No additional archaeological investigative work is recommended in order for the proposed action to proceed.

TABLE OF CONTENTS

LIST OF FIGURES

1.0 INTRODUCTION

On July 26, 2010, the author, Mike Glenn (DEQ), and Tyrel Hulet (Trihydro Corporation) conducted archaeological evaluation of site 24PE0726. The property consists of a minimal lithic scatter in eastern Prairie County, Montana (Figure 1). Evaluation work was conducted in response to a proposal by the Montana Department of Environmental Quality's Abandoned Mine Lands Program to extinguish an actively burning, subterranean coal fire. The burning coal seam is located on private land and partially beneath the boundaries of site 24PE0726 in the NE1/4 of Section 34, T14N R51E (Figure 2).

Remediation work will require a trackhoe, and moving several tons of earth. Expected depth below present ground surface to reach the smoldering coal seam is approximately 10-15 ft. Proposed coal fire remediation work will consist of excavating a trench that measures approximately 15 ft wide x 85 ft in length, removing the sediments, mixing them with water, and placing those sediments in a nearby, excavated repository pit (Figure 3). The proposed repository pit will measure approximately 100 ft wide x 300 ft long x 10 ft deep. The sediments excavated to form the repository pit will be used to replace those removed at the burning coal seam locality (Figure 3). Following remediation work, the areas of excavation will be contoured to an approximation of the current topography.

A second locality may also be opened to explore for evidence of a subsurface coal fire (Figure 3). If the results are positive, a trench similar in dimension to that previously described will be excavated. Because the second potential subterranean coal fire, as well as the proposed sediment repository pit, is located outside of the boundaries of site 24PE0726, neither is considered further here. The project is scheduled to begin, and be completed, fall of 2010. The following report provides a detailed description of the project area, the field methods used, and the results of site evaluation work.

2.0 PREFIELD STUDIES

Prior to conducting fieldwork, the author reviewed the site form and corresponding inventory report prepared by RTI (RTI 2009). Evaluation work was based on previously defined boundaries of site 24PE0726, land forms contained with site boundaries, locations of proposed coal fire remediation work, and discussions with Dr. Stan Wilmoth at the Montana State Historic Preservation Office.

3.0 PROJECT AREA DESCRIPTION

Site 24PE0726 is located in the Lower Yellowstone River basin near Terry, Montana. The Lower Tertiary Fort Union Formation comprises the bedrock throughout this region. Bedrock largely includes shale, siltstone, and sandstone with numerous coal beds and local lenses of limestone (Veseth and Montage 1980). The fires all occupy the ecological subsection known as the Montana Sedimentary Plains. There, short grass prairie vegetation dominates. The site occupies a narrow bench top, and the narrow first terraces of a reach of Cottonwood Creek--an intermittent tributary of the Yellowstone River.

The soils in site 24PE0726 are calcareous Cherry-Typic Ustifluvents complex which formed on stream terraces in silty and gravelly alluvium. These well-drained, deep silt loam soils have a high calcium carbonate content.

Figure 1: General location of the project area in Montana.

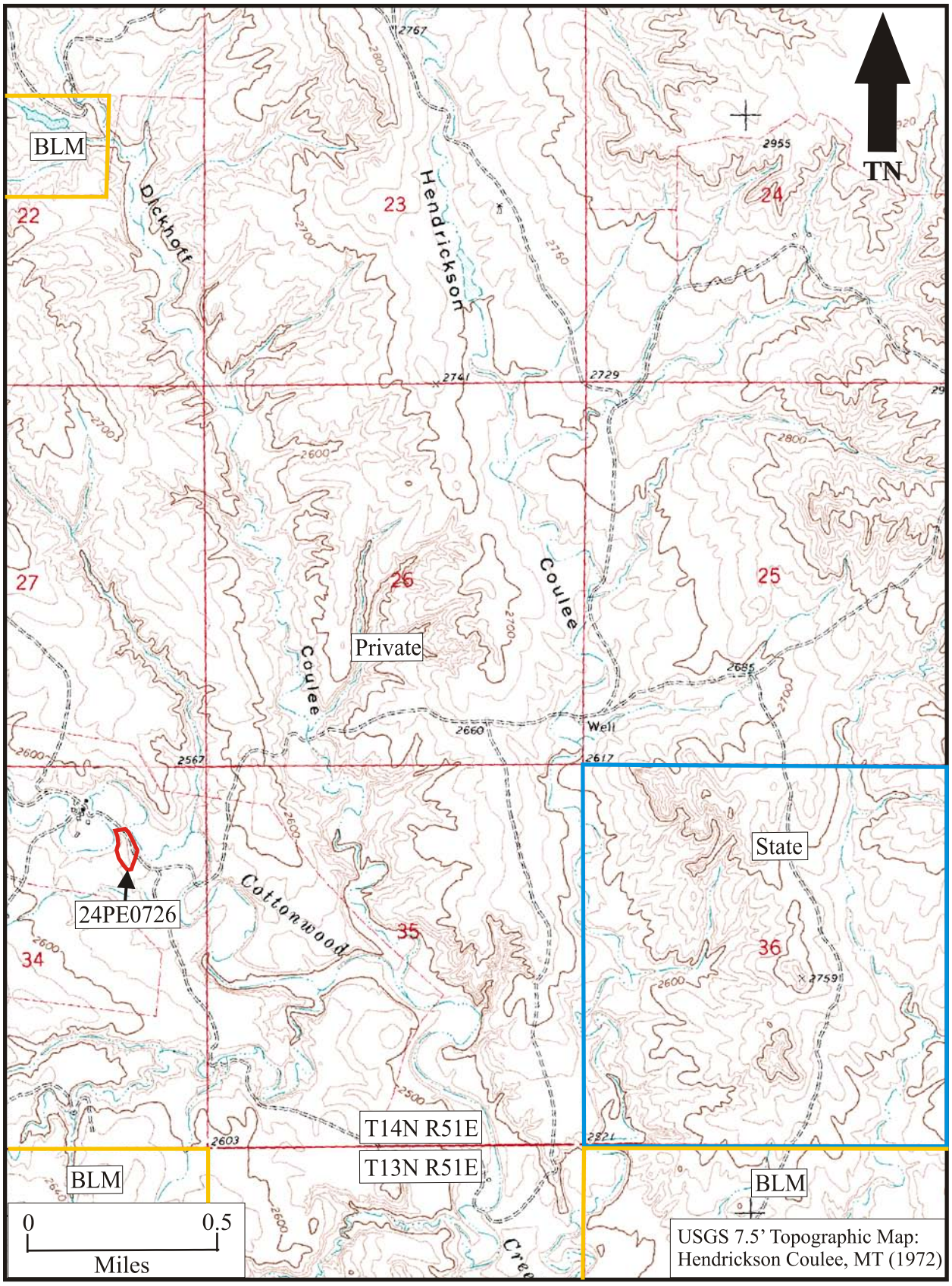


Figure 2: Map showing site 24PE0726.

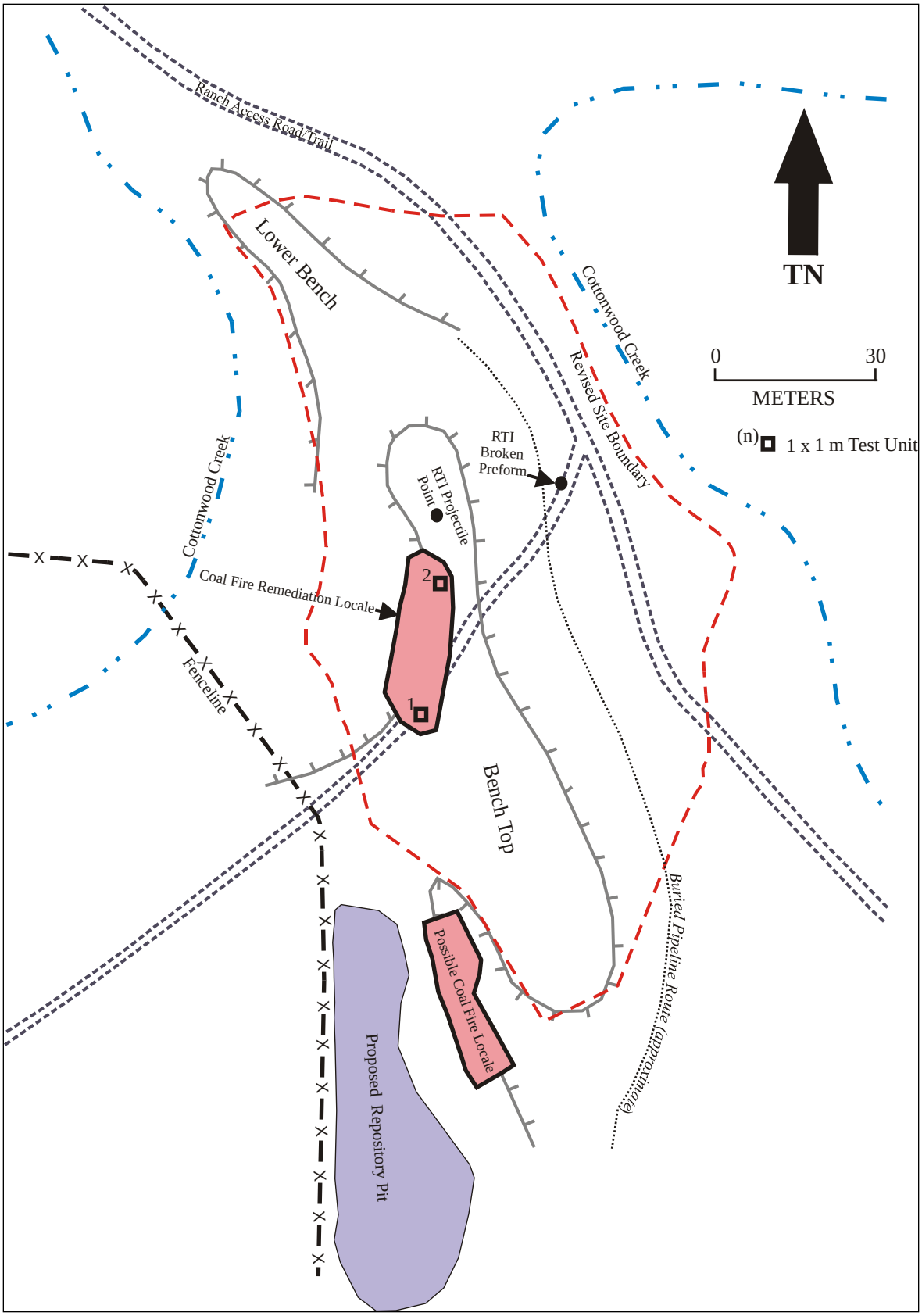


Figure 3: Plan map of site 24PE0726 showing test units 1-2, and proposed remediation locales.

4.0 FIELD INVESTIGATIVE METHODS

Prior to conducting subsurface investigations, a general inspection of the site area was conducted. Although occasional (12-15) pieces of chipped stone, and 2-3 pieces of quartzite firecracked rock, were identified across the defined site surface. Most of the cultural items were observed on the eroded slope (west side) of the upper bench surface in site 24PE0726. Based on visual examination alone, it could not be determined if the observed artifacts were eroding from a surface or subsurface context.

Evaluation work consisted of the excavation of two spatially discrete one square meter units (Figure 3: Test Units 1-2) which were layed out in the proposed coal fire remediation APE within site 24PE0726. Specifically, both test units were layed out within the area where the aforementioned, proposed remediation trench will be excavated. The purpose of the subsurface testing of 24PE0726 was not intended to evaluate the entire site, but to determine if significant cultural deposits are present within the area of potential effect (APE) of the coal fire remediation work.

Both test units were excavated in 10 cm deep increments. Sediments were removed with flat-blade shovels. Excavated sediments were screened through $1/8^{th}$ inch wire mesh. Each test unit produced only a single piece of chipped stone debitage. No cultural remains were recovered deeper than 10 cm below the present ground surface (BS). Further, no evidence of buried, intact cultural levels or soil horizons was identifiable in the excavation unit wall profiles, or in the eroded side slopes of the upper bench.

Sediments in Test Unit 1 consist of silty loams from ground surface to approximately 10 cm BS (Figure 4). Sediments from approximately 10 cm BS to at least 20 cm BS consist of alluvial gravels that are culturally sterile (Figure 5). Sediments in Test Unit 2 consist of silty loams from ground surface to at least 20 cm BS (Figures 6-7). Because no cultural materials were recovered from 10-20 cm BS, excavations ceased at 20 cm BS in both test units. Both pieces of chipped stone debitage were examined in the field, and left on top of their respective test units following infilling.

5.0 STONE ARTIFACT ANALYTICAL PROCEDURES AND DEFINITIONS

Definitions of terms used in this report for organizing the culturally modified stone, as well as the procedures used to visually organize selected data, are presented in detail in Baumler and Davis (2000), Brumley (1981), Kooyman (2000), Rennie (2002), and Whittaker (1994).

Unmodified Debitage is lithic material generated either intentionally or inadvertently during the course of stone tool production/maintenance, and which exhibits no evidence of subsequent modification or use. Following Sullivan and Rozen (1985:759), debitage includes diagnostic flakes which exhibit analytically intact margins and largely intact platforms (*complete flakes*); flakes that retain their platforms, but otherwise appear to be incomplete (*broken flakes*); fragments of flakes that lack platforms (*flake fragments*); and *shatter*. Shatter is considered here to consist of both angular pieces which lack intentional flake production characteristics, and thin, flake-like pieces that cannot be oriented to distal or proximal ends, or interior or exterior surfaces.

Figure 4: Looking N at Test Unit 1 excavated to 10 cm below present ground surface (BS).

Figure 5: View of gravelly sediments encountered in Test Unit 1 at 10-20 cm BS.

Figure 6: Looking N at Test Unit 2 excavated to 20 cm below present ground surface (BS).

Figure 7: View from Test Unit 1 across APE to Test Unit 2.

Both pieces of chipped stone debitage were segregated by defined lithic raw material groupings. These groupings are based first on lithologic class and second on perceived visual and textural differences. This approach is established elsewhere (see Ingbar et al. 1989; Hall and Larson 2004) as Minimum Analytical Nodule Analysis (MANA). Once segregated, each distinct lithic material grouping was assigned a letter-number code. Minimum Analytical Nodule (MAN) definitions used for this study are taken from Rennie (2002). These MAN definitions are detailed in Appendix 1 of this report. The utility in subdividing lithic raw materials into Minimum Analytical Nodule (MAN) categories is, in part, that the distinct groupings provide a meaningful way of organizing culturally modified lithic materials that were likely produced from the same, or very similar, pieces of stone. Further, those groupings provide a broader means of discussing the kinds and varieties of imported and locally available lithic raw materials comprising the site. The weaknesses in applying the MANA approach is the fact that the larger the piece of lithic raw material is prior to reduction, the greater the possibility becomes for variability in the color/texture range of the piece. This could result in multiple MAN's being assigned to pieces generated from only a single large piece of lithic raw material.

Unmodified stone debitage was size graded generally following methods established by Ahler (1989) and more recently discussed and applied by Baumler and Davis (2000:24). A series of 5 stacked screens of sequentially half-size smaller openings were used. The uppermost screen (G1) consists of 1 inch square wire mesh. The bottom screen (G5) is composed of 1/16 inch (window screen size) wire mesh. In discussing the utility of size grading, it has recently been noted that, "Frequency and, in some cases, weight by size class provide a meaningful expression of the relative volume of the assemblage comprised by smaller and larger artifacts within as well as across the different raw material groups (Baumler and Davis 2000:24)."

The two pieces of cultural material recovered during evaluation work in site 24PE0726 are classified here as flake fragments following terms (i.e., *complete*, *broken*, and *flake fragment*) established by Sullivan and Rozen (1985). Detailed summaries of the utility, and short-comings, of the Sullivan and Rozen typology are presented and summarized by Andrefsky (2001), Baumler and Davis (2000:24-25), and Roll (2003). The two flake fragments were further sub-divided into categories of reduction stage based on extent of cortex and number of flake scars on their exterior surfaces.

Culturally modified stone recovered from site 24PE0726 consists entirely of two distinct chert/chalcedony MAN (CCCS1 and RCCS1: see Appendix 1). Both pieces are secondary reduction stage flake fragments that fall under Size Grade 3. Both pieces exhibit only one obvious exterior surface flake scar, and if complete, both pieces would probably be elongate in form (the pieces are longest in the direction of the removal axis). This trait is commonly seen among debitage produced during mid level reduction stages of prepared cores and bifaces. Thus, the limited evidence exhibited among the debitage suggests that the pieces were largely or wholly generated during mid through late stage reduction of bifaces and/or the reduction of other kinds of prepared/moderately prepared cores (Ahler 1989; Baumler and Davis 2000:36).

6.0 SUMMARY AND CONCLUSIONS

On July 26, 2010, the author, Mike Glenn (DEQ), and Tyrel Hulet (Trihydro Corporation) conducted archaeological evaluation of site 24PE0726. The property consists of a minimal lithic scatter in eastern Prairie County, Montana. Evaluation work was conducted in response to a proposal by the Montana Department of Environmental Quality's Abandoned Mine Lands Program to extinguish an actively burning, subterrranean coal fire.

The burning coal seam is located on private land and partially beneath the boundaries of site 24PE0726. Evaluation work consisted of the excavation of two one square meter units excavated to a depth of 20 cm below the present ground surface (BS). Only a single piece of chipped stone debitage was recovered from each of the two test units. No cultural remains were recovered below 10 cm BS. The portion of site 24PE0726 where remediation work is proposed (the upper bench top) is recommended here to be ineligible for listing in the National Register of Historic Places. Proposed coal fire remediation work will have No Effect to Historic Properties. No additional archaeological investigative work is recommended in order for the proposed action to proceed.

REFERENCES CITED

Ahler, S.A.
1989 Experimental Knapping with KRF and Midcontinent Cherts: Overview and Applications. In *Experiments in Lithic Technology*. D.S. Amick and R.P. Mauldin (eds). British Archaeological Reports, International Series 528. Oxford, England.

Andrefsky, W. Jr. (ed)
2001 *Lithic Debitage: Context, Form and Meaning*. The University of Utah Press, Salt Lake City.

Baumler, M. and L.B. Davis
2000 Upon Closer Examination: Paleoindian Behavioral Inferences from a Folsom Feature Lithic Assemblage at the Indian Creek Occupation Site, West-Central Montana Rockies. *Archaeology in Montana* 41(2):17-62.

Brumley, J.
1981 Definitions and Procedures Employed in the Excavation, Description, and Analysis of Archaeological Materials (revised edition). Unpublished manuscript on file at Ethos Consultants Inc., Havre.

Hall, C. and M.L. Larson (eds)
2004 *Aggregate Analysis in Chipped Stone*. The University of Utah Press, Salt Lake City.

Ingbar, E., M.L. Larson, and B. Bradley
1989 A Nontypical Approach to Debitage Analysis. In *Experiments in Lithic Technology*. pp. 117-136. D. Amick and R. Mauldin (eds). British Archaeological Reports, International Series 528. Oxford, England.

Kooyman, B.P.
2000 *Understanding Stone Tools and Archaeological Sites*. University of Calgary Press, Alberta.

Rennie, P.
2002 Department of Natural Resources and Conservation Manual for Collecting, Organizing, Describing, Coding and Tracking Cultural Materials: Definitions and Procedures, Vol. I. Unpublished manuscript on file with the DNRC, Helena, MT.

Roll, T.
2003 The Camp Baker Quarry (24ME467): 2001. Unpublished technical report prepared under the auspices of Assistance Agreement No. 1422E930A90017, Task Order #1, between the Bureau of Land Management and Montana State University, Bozeman. Report on file at the Montana State Historic Preservation Office, Helena.

RTI
2009 Walde, Tonn Ranch, and O'Neil Ranch Coal Fire Suppression: Cultural Resources Inventory. Consultant's report (RTI, Butte) prepared for the Montana Department of Environmental Quality (Helena, MT).

Sullivan, A.P. and K.C. Rozen
1985 Debitage Analysis and Archaeological Interpretation. *American Antiquity* 50:755-779.

Veseth, R. and C. Montagne
1980 Geologic Parent Materials of Montana Soils. Montana State University and USDA-Soil Conservation Service *Bulletin 721*. Document dated November, 1980.

Whittaker, J.
1994 *Flintknapping: Making and Understanding Stone Tools*. University of Texas Press, Austin.

24PE0726

Appendix 1: Minimum Analytical Nodule Analysis Groupings

Cryptocrystalline and microcrystalline silicates

This category includes cryptocrystalline and microcrystalline varieties of highly siliceous sedimentary rock (silicon dioxide) referred to by Frondel (1965:171) as chalcedonic silica. Commonly used names for materials that would fall under this category include agate, chert, chalcedony, flint, jasper, opalite, carnelian, sard, sinter, some forms of silicified sediment, silicified limestone, silicified peat, and silicified wood. Because of the great variability among cryptocrystalline and microcrystalline silicates, the following categories are organized with reference to the primary color of each piece of material described.

colorless to milky

CCCS1

General: Clear to slightly milky.
Munsell Color Notation: colorless to 7.5YR N8/
Translucency: moderately to highly translucent
Luster: vitreous to resinous
Texture: cryptocrystalline

pink to dark red

RCCS1

General: Dark reddish-brown to very dusky red to dark red
Munsell Color Notation: 2.5YR 2.5/2 to 2.5YR 2.5/4 to 2.5YR 3/6
Translucency: opaque to moderately translucent
Luster: vitreous to resinous
Texture: cryptocrystalline

24PE0726

Appendix 2: Cultural Resource Inventory System Forms (CRIS)

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

1. IDENTIFICATION

***required to receive Smithsonian number**

1.1 Smithsonian Number: 24PE726 **1.2 Field Designation:** R080317A

1.3 Project Name: Eastern Montana Coal Fire Suppression

1.4 Agency Project Number: **1.5 Consultant Project Number:** 09017

2. LOCATION

***2.1 Township:** 14 N **Range:** 51 E **Section:** 34 **¼ Section(s):** SW, NE, NE ***2.2 County:** Prairie
QQQ QQ Q

***2.3 UTM Coordinates:** Zone 13 E 481440m; N 5197500m ***Datum used:** ☒NAD 83 conus

***2.4 Administrative/Surface Ownership:** (Agency/Region/District/Office)

***2.5 7.5' USGS Map Name, Date:** Hendrickson Coulee (1991)

2.6 Narrative of access: From Highway 253 heading north from Terry, turn right onto Bad Route Road. Stay on that road for 6.5 miles. At that point, Bad Route intersects the O'Neill Road. Turn right onto the O'Neill Road and drive 4.6 miles. At that point, there is an abandoned farmstead on the left side of the road. Don't stop, but continue on the main road for another 0.7 mile to the O'Neill Ranch house. Turn left into the yard and continue driving south onto a two-track ranch road. The site is 0.15 mile past the ranch headquarters along that road.

2.7 City/Town: NA **Vicinity of:** NA

3. DESCRIPTION

***3.1 Site Category** (choose one)**:** ☒ Prehistoric ☐ Historic ☐ Paleontological ☐ Combination ☐ Other

***3.2 Site Type** (see recommended site type list, choose all that apply)**:** prehistoric campsite

3.3 Narrative Description of Site: The site is the remains of probably multiple occupations of a prehistoric camp. Both tool making and food preparation occurred here, and to a lesser extent lithic procurement. The latter was probably more common along Cottonwood Creek, downhill from the site. Artifacts are widely scattered over a 5400-square-meter area, but soils are deep and it seems very possible that surface artifact numbers and densities are not a perfect reflection of subsurface numbers. Artifacts seem to continue farther south than mapped, but recording stopped with lower artifact densities.

3.4 Site Dimensions: 60 x 90 meters (200 x 300 feet)

Surface visibility: 30% or more on average, due to slumping soils, rodent burrows, two-track roads, livestock trampling, and dry environment

3.5 Feature Descriptions: no features observed

3.6 Artifacts: (✔ all that apply) ☒Chipped Stone ☐Wood ☐Ground Stone ☐Ceramics ☐Bone ☐Trade ☒Other

Description: In addition to the debitage described on the attached form, there are several other noteworthy items. These are a battered basalt(?) cobble, two exhausted chert cores, three bifaces, a tested quartzite cobble, a large quartzite flake, and a projectile point (see below). In addition to the battered, 11.5x6.5 centimeter cobble thought to be of basalt (see attached photo), there are two other cobbles of the same material which appear to have been culturally modified. Both of these cobbles were found on the ground surface immediately in front of the coal fire, on a low stream terrace there. They were no embedded in the soil, suggesting that they had been displaced from their prehistoric positions. The first cobble measures 12x11x6 centimeters and had about four flakes removed from one end to make what appears to have been an expedient chopper (see attached photo). The second cobble is slightly smaller, measuring 8.5x8.5x5 centimeters. One end of the artifact was truncated with the removal of a single flat spall. The opposite end exhibits about four flake scars, which form a steep-angled chopping edge about 5 centimeters long. The chert cores are both fairly small. One, of white and brown chert, has had most of the cortex removed, but the stone is badly checked. It was no doubt discarded because of the inferior material. The other core is of a good-quality red chert. It measures 40x29x14 millimeters. The three bifaces that RTI observed were preforms that were discarded prior to use, apparently due to breakage. The first preform is a grayish-red chert tip 44 millimeters thick. The second is a red chert base 6 millimeters thick and 35 millimeters wide. The last artifact in this class is a yellowish-brown chalcedony mid-section. In its broken state, it measures 36 millimeters wide, 22 millimeters long, and 6.5 millimeters thick. There is a bad check on one face, suggesting that the inferior quality of the stone resulted in breakage and rejection. Also, RTI observed 24 pieces of fire-cracked rock, all quartzite. The pieces are fairly widely scattered, although most were found at the north end of the site

3.7 Diagnostic Artifacts: The single temporally diagnostic tool found at 24PE726 is a fragment of a large corner-notched projectile point. This is a proximal point fragment with the tip broken at approximately the blade midsection. Additionally, the lateral blade and base tangs on one margin are missing. In its present form it measures 24x21x4.5 millimeters (length x width x thickness) with a neck width of 12 millimeters. The base is flat and corner notches are narrow (<2 millimeters) and deep (>5 millimeters) forming a contracting stem terminating at abrupt lateral blade tangs. Unpatterned flake scars along the margins form straight to slightly convex lateral margins. Those scars extend to the artifact midline or beyond, producing broad and relatively thin blades with sharp margins.

This is a classic Pelican Lake-type projectile point. The point type, and its Great Basin Elko and Plateau Harder-phase counterparts, has a broad distribution ranging from west of the Continental Divide throughout the intermountain and Northwestern Plains regions. Numerous radiometric dates indicate that Pelican Lake components range in age from 3000 to 1500 B.P.

3.8 Subsurface Testing: no testing conducted

3.9 Site function/interpretation: This is a temporary prehistoric campsite at which multiple activities occurred. The presence of a wide variety of lithic material types and a few some tested cobbles indicates that a lithic procurement locus was nearby. Materials were brought to this location for further reduction. The site also likely had a food preparation component because fire-cracked-rock is widely scattered. The site offers a fairly broad view into the Cottonwood Creek valley and the broken terrain beyond. The single projectile point found on-site indicates that at least one of the occupations dates to the period from 3000 to 1500 B.P.

4. PERIOD

4.1 Apparent Time Period of Site (use dropdowns)**:**

Prehistoric Prehistoric Middle Period **Historic** **Paleontological**

5. ENVIRONMENTAL SETTING

5.1 Geographic Setting: The site is on two levels of stream terraces that stand above Cottonwood Creek. The east edge of the site corresponds with a steep drop-off to the creek below. Small cobbles of knappable material are found in pockets on-site and are almost certainly common along the creek.

5.2 Contour: ☒ Known ☐ Approximate ☐ Unknown **5.3 Elevation:** 2550 ft

5.4 View/Aspect (estimated direction and distance): good views in all directions from the top of the upper terrace/ bench

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

5.5 Sediments: calcareous Cherry-Typic Ustifluevnts complex. Formed on stream terraces in silty alluvium, these well-drained, deep silt loam soils have a high calcium carbonate content (30%).

Deposition: ☐ Surface Only ☐ Buried Only ☒ Surface and Buried ☐ Redeposited ☐ Other

5.6 Available Water Sources (use dropdown)**:** Stream/River/Creek

5.7 Major River Drainage (name, distance, elevation): Yellowstone River is 7 miles to the southeast.

5.8 Minor Drainage (name, distance, elevation): Cottonwood Creek is about 15 feet beyond the northeast edge of the site, and 12-18 feet lower in elevation.

5.9 Local Vegetation: grass, short sagebrush, prickly pear, weeds. Cottonwoods grow along creek.

Regional Vegetation: short grass prairie

6. ASSESSMENT, RECORDING & MANAGEMENT

6.1 Significance: Site significance must be established through demonstration of an intact buried component of regional importance. There is some reason to suspect that the site might be able to address important questions about the prehistory in the Yellowstone River basin at a small, but heavily occupied site on a moderate-sized tributary of that river. Datable material is present in the form of a single projectile point. Fire-cracked rock suggests that one or more hearths may be present. While RTI does not have ready access to such data, the staff suspects that an intact campsite such as 24PE726 would be significant as one of only a few known intact camps in that part of Montana. While the surface artifact density strongly suggests that artifacts occur in great enough numbers to provide information on lithic tool production and the character of activity areas within the site, only testing will reveal if those numbers occur in a subsurface setting and with minimal post-depositional disturbance.

6.2 Condition/Integrity: Some damage is obvious, but the extent to which subsurface cultural horizons have been compromised is unknown. A main two-track ranch road cuts through the east edge of the site. Two other two-tracks head west from the road at the south edge of the site, and other recent tracks climb across the top of the bench to the coal fire area. Slumping soil and cracks are not only present where the fire approaches the surface, but also along the sides of the bench above the fire. A buried water line was cut along the east edge of the site (west of the main two-track ranch road) as well. There are numerous rodent burrows, plus livestock trample this area somewhat. All of these factors have displaced some artifacts, but it seems possible that some buried sections of the site might still remain intact, perhaps on the lower bench.

6.3 Possible impacts to site: Recent site impacts are listed above. The planned coal fire suppression project could result in removal of substantial portions of the site, as the contractor follows the fire to its maximum underground extent.

6.4 Evaluation: Does this property meet National Register criteria for eligibility? ☐ **Yes** ☐ **No** ☒ **Unevaluated**

Evaluation Procedures/Justification: The National Register eligibility of 24PE726 cannot be determined without archaeological testing. That testing will establish the presence or absence of datable artifacts and activity areas, whether there are sufficient artifacts to make meaningful statements about multiple prehistoric occupations, and if known impacts over the years have left some parts of the site intact.

6.5 Recording status: ☒ surface examination ☒ photo ☒ map ☐ subsurface tested

6.6 Recommendations (use dropdown)**:** Test excavate

Comments: If the coal fire suppression project cannot be designed to avoid 24CR , then archaeological testing and, if necessary, full-scale excavation are recommended.

6.7 Site Located by: Mitzi Rossillon **Date Located:** August 3, 2009

6.8 Site Recorded by: Mitzi Rossillon **Date Recorded:** August 3, 2009

6.9 Site form update and revisions by: **Date updated:**

6.10 Federal/State Permit No: NA

6.11 Publication(s)/Report(s) where site is described: Waldie, Tonn Ranch, and O'Neill Ranch Coal Fire Suppression: A Cultural Resource Inventory, by Mitzi Rossillon, 2009. Renewable Technologies, Inc., Butte. Submitted to Montana Department of Environmental Quality, Helena.

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

6.12 Artifact Repository: no artifacts collected

6.13 Field notes/maps/photos repository: Renewable Technologies, Inc., 8 W. Park St., Suite 313, Butte, MT 59701

6.14 Photographs: digital images 243-256 (sample attached)

***6.15 Map: Attach a sketch map (if applicable) and photocopy of 7.5' Quad showing site location.** ☺

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

FIELD DEBITAGE DESCRIPTION SHEET

Site: 24PE726 (temp #R080317A) Date: August 3, 2009
Location: O'Neill Ranch Coal Fire

Material Type	Size Grade	Cortex	Rel. Thickness	Tally
porcellanite				
	SG1 (>1")			
		Present		
			Thick	
			Thin	
		Absent		
			Thick	
			Thin	
	SG2 (1>½")			
		Present		
			Thick	**4**
			Thin	
		Absent		
			Thick	**6**
			Thin	
	SG3 (½>¼")			
		Present		
			Thick	
			Thin	
		Absent		
			Thick	
			Thin	

Comments (~% of retouched flakes, reduction tech., etc.) plus a small exhausted core

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

FIELD DEBITAGE DESCRIPTION SHEET

Site: 24PE726 (temp #R080317A) Date: August 3, 2009
Location: O'Neill Ranch Coal Fire

Material Type	Size Grade	Cortex	Rel. Thickness	Tally
chalcedony				
	SG1 (>1")			
		Present		
			Thick	
			Thin	
		Absent		
			Thick	
			Thin	
	SG2 (1>½")			
		Present		
			Thick	**1**
			Thin	
		Absent		
			Thick	**4**
			Thin	
	SG3 (½>¼")			
		Present		
			Thick	
			Thin	
		Absent		
			Thick	
			Thin	**2**

Comments (~% of retouched flakes, reduction tech., etc.) plus one tested cobble

After Smithsonian number received, submit completed form to the Archaeological Records Office.

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

FIELD DEBITAGE DESCRIPTION SHEET

Site: 24PE726 (temp #R080317A) Date: August 3, 2009
Location: O'Neill Ranch Coal Fire Page: 3 of 3

Material Type	Size Grade	Cortex	Rel. Thickness	Tally
chert				
	SG1 (>1")			
		Present		
			Thick	
			Thin	
		Absent		
			Thick	
			Thin	
	SG2 (1>½")			
		Present		
			Thick	**6**
			Thin	
		Absent		
			Thick	**6**
			Thin	
	SG3 (½>¼")			
		Present		
			Thick	
			Thin	
		Absent		
			Thick	
			Thin	**1**

Comments (~% of retouched flakes, reduction tech., etc.) plus three tested cobbles and two exhausted cores. One of the latter is a white and brown chert core that exhibits almost no cortex. The material is badly checked. The other core is of red chert and measures 40 x 29 x 14 mm.

After Smithsonian number received, submit completed form to the Archaeological Records Office.

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

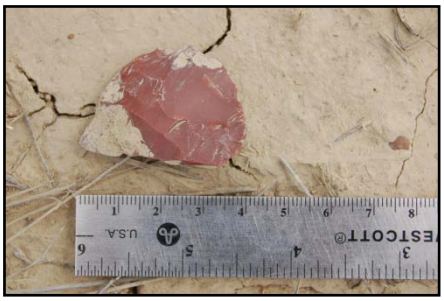
Wide-angle overview of O'Neill Ranch Coal Fire,
with 24PE726 on bench behind and on lower bench to left, facing north-northeast.

Porcellanite projectile point at 24PE726.

Two red chert biface fragments at 24PE726.

After Smithsonian number received, submit completed form to the Archaeological Records Office.

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM



Exhausted red chert core at 24PE726.

Possible basalt(?) chopper at 24PE726, on flat immediately in front of O'Neill Ranch Coal Fire.

Battered basalt(?) cobble at 24PE726.

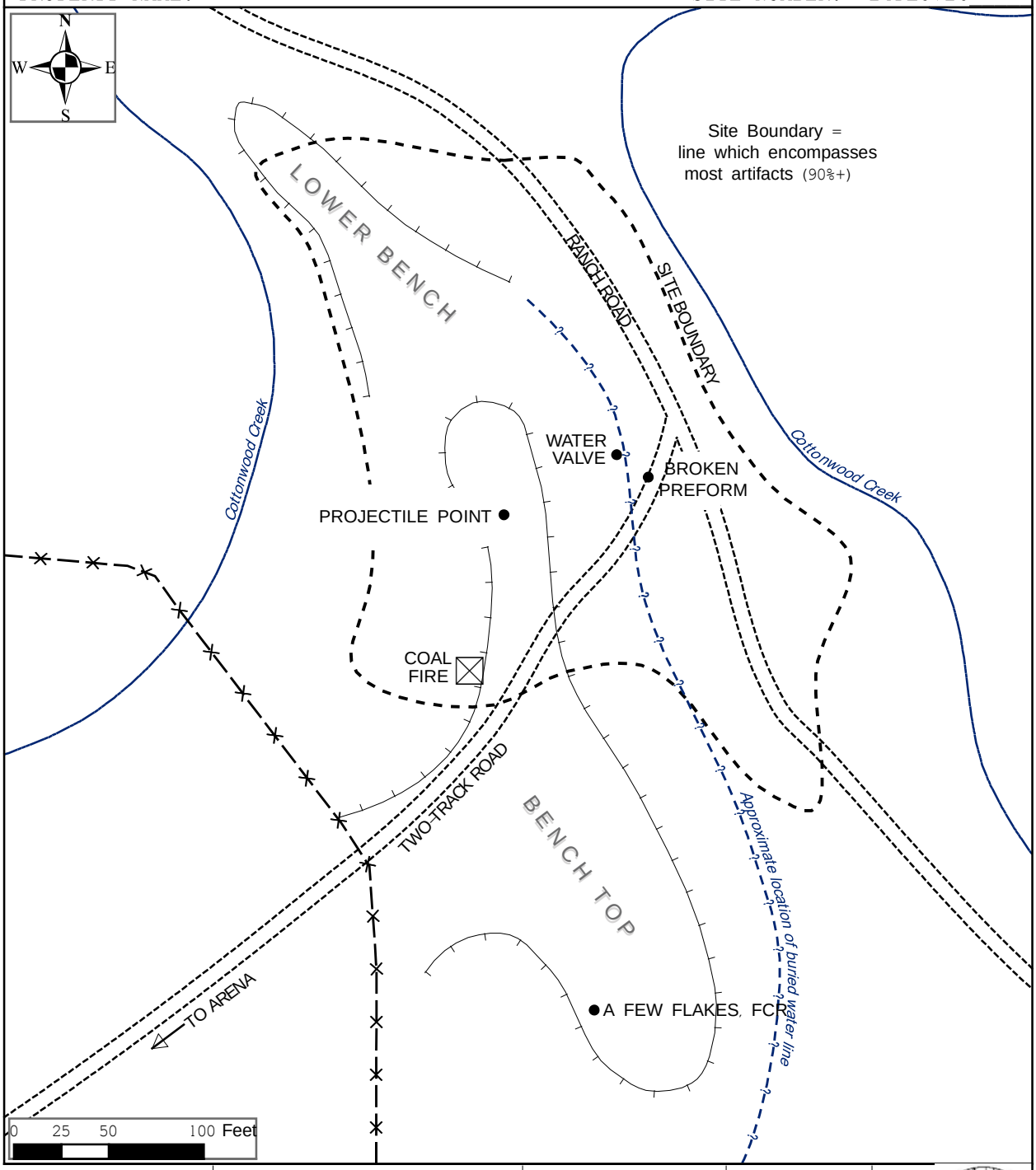
After Smithsonian number received, submit completed form to the Archaeological Records Office.

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

MONTANA HISTORIC PROPERTY RECORD
TOPOGRAPHIC MAP

PROPERTY NAME:

SITE NUMBER: 24PE0726



LOCATION DATA:			
		EASTING:	481442
COUNTY, STATE:	Prairie, Montana	NORTHING:	5197502
SCALE:	1:1000	TRS:	T14N R51E S34

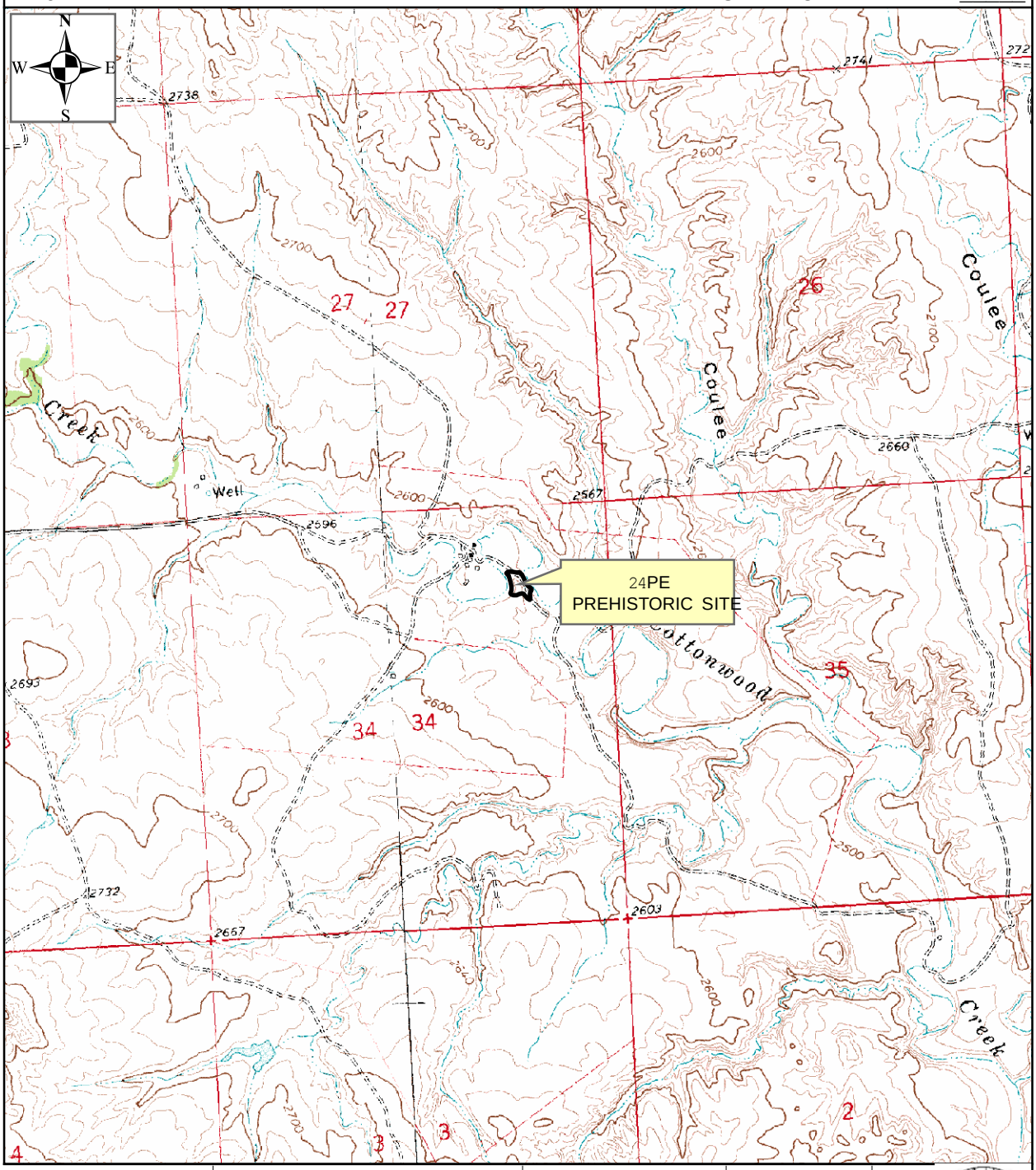
After Smithsonian number received, submit completed form to the Archaeological Records Office.

		UTM NAD 88 ZONE 2	

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

MONTANA HISTORIC PROPERTY RECORD
TOPOGRAPHIC MAP

PROPERTY NAME: SITE NUMBER: 24PE_____



LOCATION DATA:		UTM NAD 83 ZONE 13	
USGS TOPO:	Hendrickson Coulee (1991)	EASTING:	481442
COUNTY, STATE:	Prairie, Montana	NORTHING:	5197502
SCALE:	1:24000	TRS:	T14N R51E S34

After Smithsonian number received, submit completed form to the Archaeological Records Office.			

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

1. IDENTIFICATION

***required to receive Smithsonian number**

1.1 Smithsonian Number: 24PE726 update **1.2 Field Designation:**

1.3 Project Name: O'Neill Ranch Coal Fire Remediation

1.4 Agency Project Number: 2010-7-1 **1.5 Consultant Project Number:**

2. LOCATION

***2.1 Township:** 14 N **Range:** 51 E **Section:** 34 **¼ Section(s):** SW, NE, NE ***2.2 County:** Prairie
QQQ QQ Q

***2.3 UTM Coordinates:** Zone 13 E 481440m; N 5197500m ***Datum used:** ☒NAD 83 conus

***2.4 Administrative/Surface Ownership:** (Agency/Region/District/Office)

***2.5 7.5' USGS Map Name, Date:** Hendrickson Coulee (1991)

2.6 Narrative of access: From Highway 253 heading north from Terry, turn right onto Bad Route Road. Stay on that road for 6.5 miles. At that point, Bad Route intersects the O'Neill Road. Turn right onto the O'Neill Road and drive 4.6 miles. At that point, there is an abandoned farmstead on the left side of the road. Don't stop, but continue on the main road for another 0.7 mile to the O'Neill Ranch house. Turn left into the yard and continue driving south onto a two-track ranch road. The site is 0.15 mile past the ranch headquarters along that road.

2.7 City/Town: NA **Vicinity of:** Terry, MT

3. DESCRIPTION

***3.1 Site Category** (choose one)**:** ☒ Prehistoric ☐ Historic ☐ Paleontological ☐ Combination ☐ Other

***3.2 Site Type** (see recommended site type list, choose all that apply)**:** prehistoric campsite

3.3 Narrative Description of Site: As originally recorded by, "The site is the remains of probably multiple occupations of a prehistoric camp. Both tool making and food preparation occurred here, and to a lesser extent lithic procurement. The latter was probably more common along Cottonwood Creek, downhill from the site. Artifacts are widely scattered over a 5400-square-meter area, but soils are deep and it seems very possible that surface artifact numbers and densities are not a perfect reflection of subsurface numbers. Artifacts seem to continue farther south than mapped, but recording stopped with lower artifact densities. RTI (2009)"

On July 26, 2010, Patrick Rennie (DNRC), Mike Glenn (DEQ), and Tyrel Hulet (Trihydro Corporation) conducted archaeological evaluation of site 24PE0726. Evaluation work was conducted in response to a proposal by the Montana Department of Environmental Quality's Abandoned Mine Lands Program to extinguish an actively burning, subterranean coal fire. Site boundaries were modified slightly based on the visible, uninterrupted, horizontal distribution of cultural materials of the ground surface.

Remediation work will require a trackhoe, and moving several tons of earth. Expected depth below present ground surface to reach the smoldering coal seam is approximately 10-15 ft. Proposed coal fire remediation work will in part consist of excavating a trench that measures approximately 15 ft wide x 85 ft in length, and removing the sediments. Following remediation work, the areas of excavation will be contoured to an approximation of the current topography.

3.4 Site Dimensions: 60 x 90 meters (200 x 300 feet)
Surface visibility: 30% or more on average, due to slumping soils, rodent burrows, two-track roads, livestock trampling, and dry environment

3.5 Feature Descriptions: no features observed

After Smithsonian number received, submit completed form to the Archaeological Records Office.

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

3.6 Artifacts: (✔ all that apply) ☒Chipped Stone ☐Wood ☐Ground Stone ☐Ceramics ☐Bone ☐Trade ☒Other

Description: As reported in the original site form for 24PE0726, " In addition to the debitage described on the attached form, there are several other noteworthy items. These are a battered basalt(?) cobble, two exhausted chert cores, three bifaces, a tested quartzite cobble, a large quartzite flake, and a projectile point (see below). In addition to the battered, 11.5x6.5 centimeter cobble thought to be of basalt (see attached photo), there are two other cobbles of the same material which appear to have been culturally modified. Both of these cobbles were found on the ground surface immediately in front of the coal fire, on a low stream terrace there. They were no embedded in the soil, suggesting that they had been displaced from their prehistoric positions. The first cobble measures 12x11x6 centimeters and had about four flakes removed from one end to make what appears to have been an expedient chopper (see attached photo). The second cobble is slightly smaller, measuring 8.5x8.5x5 centimeters. One end of the artifact was truncated with the removal of a single flat spall. The opposite end exhibits about four flake scars, which form a steep-angled chopping edge about 5 centimeters long. The chert cores are both fairly small. One, of white and brown chert, has had most of the cortex removed, but the stone is badly checked. It was no doubt discarded because of the inferior material. The other core is of a good-quality red chert. It measures 40x29x14 millimeters. The three bifaces that RTI observed were preforms that were discarded prior to use, apparently due to breakage. The first preform is a grayish-red chert tip 44 millimeters thick. The second is a red chert base 6 millimeters thick and 35 millimeters wide. The last artifact in this class is a yellowish-brown chalcedony mid-section. In its broken state, it measures 36 millimeters wide, 22 millimeters long, and 6.5 millimeters thick. There is a bad check on one face, suggesting that the inferior quality of the stone resulted in breakage and rejection. Also, RTI observed 24 pieces of fire-cracked rock, all quartzite. The pieces are fairly widely scattered, although most were found at the north end of the site (RTI 2009)".

Culturally modified stone recovered during formal evaluation work in site 24PE0726 consists entirely of two distinct chert/chalcedony MAN (CCCS1 and RCCS1). Both pieces are secondary reduction stage flake fragments that fall under Size Grade 3. Both pieces exhibit only one obvious exterior surface flake scar, and if complete, both pieces would probably be elongate in form (the pieces are longest in the direction of the removal axis). This trait is commonly seen among debitage produced during mid level reduction stages of prepared cores and bifaces. Thus, the limited evidence exhibited among the debitage suggests that the pieces were largely or wholly generated during mid through late stage reduction of bifaces and/or the reduction of other kinds of prepared/moderately prepared cores.

MANA definitions:

CCCS1
General: Clear to slightly milky.
Munsell Color Notation: colorless to 7.5YR N8/
Translucency: moderately to highly translucent
Luster: vitreous to resinous
Texture: cryptocrystalline

RCCS1
General: Dark reddish-brown to very dusky red to dark red
Munsell Color Notation: 2.5YR 2.5/2 to 2.5YR 2.5/4 to 2.5YR 3/6
Translucency: opaque to moderately translucent
Luster: vitreous to resinous
Texture: cryptocrystalline

3.7 Diagnostic Artifacts: Previously documented as a surface find in site 24PE0726, " The single temporally diagnostic tool found at 24PE726 is a fragment of a large corner-notched projectile point. This is a proximal point fragment with the tip broken at approximately the blade midsection. Additionally, the lateral blade and base tangs on one margin are missing. In its present form it measures 24x21x4.5 millimeters (length x width x thickness) with a neck width of 12 millimeters. The base is flat and corner notches are narrow (<2 millimeters) and deep (>5 millimeters) forming a contracting stem terminating at abrupt lateral blade tangs. Unpatterned flake scars along the margins form straight to slightly convex lateral margins. Those scars extend to the artifact midline or beyond, producing broad and relatively thin blades with sharp margins.

This is a classic Pelican Lake-type projectile point. The point type, and its Great Basin Elko and Plateau Harder-phase counterparts, has a broad distribution ranging from west of the Continental Divide throughout the intermountain and Northwestern Plains regions. Numerous radiometric dates indicate that Pelican Lake components range in age from 3000 to 1500 B.P. (RTI 2009)." No temporally or culturally diagnostic artifacts were identified during evaluation work in site 24PE0726 in 2010.

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

3.8 Subsurface Testing: Evaluation work consisted of the excavation of two spatially discrete one square meter units which were layed out in the proposed coal fire remediation area of potential effect (APE) within site 24PE0726. Specifically, both test units were layed out within the area where the aforementioned, proposed remediation trench will be excavated. The purpose of the subsurface testing of 24PE0726 was not intended to evaluate the entire site, but to determine if significant cultural deposits are present within the APE of the coal fire remediation work.

Both test units were excavated in 10 cm deep increments. Sediments were removed with flat-blade shovels. Excavated sediments were screened through 1/8th inch wire mesh. Each test unit produced only a single piece of chipped stone debitage. No cultural remains were recovered deeper than 10 cm below the present ground surface (BS). Further, no evidence of buried, intact cultural levels or soil horizons was identifiable in the excavation unit wall profiles, or in the eroded side slopes of the upper bench.

Sediments in Test Unit 1 consist of silty loams from ground surface to approximately 10 cm BS. Sediments from approximately 10 cm BS to at least 20 cm BS consist of alluvial gravels that are culturally sterile. Sediments in Test Unit 2 consist of silty loams from ground surface to at least 20 cm BS. Because no cultural materials were recovered from 10-20 cm BS, excavations ceased at 20 cm BS in both test units. Both pieces of chipped stone debitage were examined in the field, and left on top of their respective test units following infilling.

3.9 Site function/interpretation: This is a temporary prehistoric campsite at which multiple activities occurred. The presence of a wide variety of lithic material types and a few some tested cobbles indicates that a lithic procurement locus was nearby. Materials were brought to this location for further reduction. The site also likely had a food preparation component because fire-cracked-rock is widely scattered. The site offers a fairly broad view into the Cottonwood Creek valley and the broken terrain beyond. The single projectile point found on-site indicates that at least one of the occupations dates to the period from 3000 to 1500 B.P.

4. PERIOD

4.1 Apparent Time Period of Site (use dropdowns)**:**

Prehistoric Prehistoric Middle Period **Historic** **Paleontological**

5. ENVIRONMENTAL SETTING

5.1 Geographic Setting: The site is on two levels of stream terraces that stand above Cottonwood Creek. The east edge of the site corresponds with a steep drop-off to the creek below. Small cobbles of knappable material are found in pockets on-site and are almost certainly common along the creek.

5.2 Contour: ☒ Known ☐ Approximate ☐ Unknown **5.3 Elevation:** 2550 ft

5.4 View/Aspect (estimated direction and distance): good views in all directions from the top of the upper terrace/ bench

5.5 Sediments: calcareous Cherry-Typic Ustifluevnts complex. Formed on stream terraces in silty alluvium, these well-drained, deep silt loam soils have a high calcium carbonate content (30%).

Deposition: ☐ Surface Only ☐ Buried Only ☒ Surface and Buried ☐ Redeposited ☐ Other

5.6 Available Water Sources (use dropdown)**:** Stream/River/Creek

5.7 Major River Drainage (name, distance, elevation): Yellowstone River is 7 miles to the southeast.

5.8 Minor Drainage (name, distance, elevation): Cottonwood Creek is about 15 feet beyond the northeast edge of the site, and 12-18 feet lower in elevation.

5.9 Local Vegetation: grass, short sagebrush, prickly pear, weeds. Cottonwoods grow along creek. **Regional Vegetation:** short grass prairie

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

6. ASSESSMENT, RECORDING & MANAGEMENT

6.1 Significance: Formal evaluation work conducted on the upper bench of site 24PE0726 has demonstrated that this portion of the archaeological property does not contain the kinds or quantities of cultural remains necessary to give the resource significance under any of the established National Register Criteria (A-D).

6.2 Condition/Integrity: Archaeological deposits in the upper bench portion of site 24PE0726 are recommended here to retain only limited aspects of setting and materials. Integrity of association may also be retained based on the presence of an atlatl size corner-notched projectile point, but a credible argument for contextual integrity of the cultural remains in the upper bench portion of the site cannot be made.

6.3 Possible impacts to site: Removal of the subsurface, burning coal deposit will heavily impact a portion of the upper bench in site 24PE0726. Providing that ground disturbing activities will be restricted to the upper bench portion of site 24PE0726, no additional archaeological investigative work is recommended. Proposed coal fire remediation activities are recommended here to have No Effect to historic properties.

6.4 Evaluation: Does this property meet National Register criteria for eligibility? ☐ **Yes** ☒ **No** ☐ **Unevaluated**

Evaluation Procedures/Justification: The upper bench portion of site 24PE0726 which was evaluated in 2010 is recommended here to be ineligible for listing in the National Register of Historic Places. The significance of archaeological deposits in the lower terraces adjoining the bench top is presently unknown.

6.5 Recording status: ☒ surface examination ☒ photo ☒ map ☒ subsurface tested

6.6 Recommendations (use dropdown)**:** No Recommendation

Comments: No additional archaeological investigative work is recommended for the upper bench portion of site 24PE0726.

6.7 Site Located by: Mitzi Rossillon **Date Located:** August 3, 2009

6.8 Site Recorded by: Mitzi Rossillon **Date Recorded:** August 3, 2009

6.9 Site form update and revisions by: Patrick Rennie **Date updated:** July 27, 2010

6.10 Federal/State Permit No: NA

6.11 Publication(s)/Report(s) where site is described:

Rennie, P.
2010 Archaeological Evaluation of a Portion of Site 24PE0726. Report prepared for the Montana Department of Environmental Quality, Helena.

RTI
2009 Waldie, Tonn Ranch, and O'Neill Ranch Coal Fire Suppression: A Cultural Resource Inventory, by Mitzi Rossillon, 2009. Renewable Technologies, Inc., Butte. Submitted to Montana Department of Environmental Quality, Helena.

6.12 Artifact Repository: no artifacts collected

6.13 Field notes/maps/photos repository: Renewable Technologies, Inc., 8 W. Park St., Suite 313, Butte, MT 59701

6.14 Photographs: See attached

***6.15 Map: Attach a sketch map (if applicable) and photocopy of 7.5' Quad showing site location.** ☺

After Smithsonian number received, submit completed form to the Archaeological Records Office.

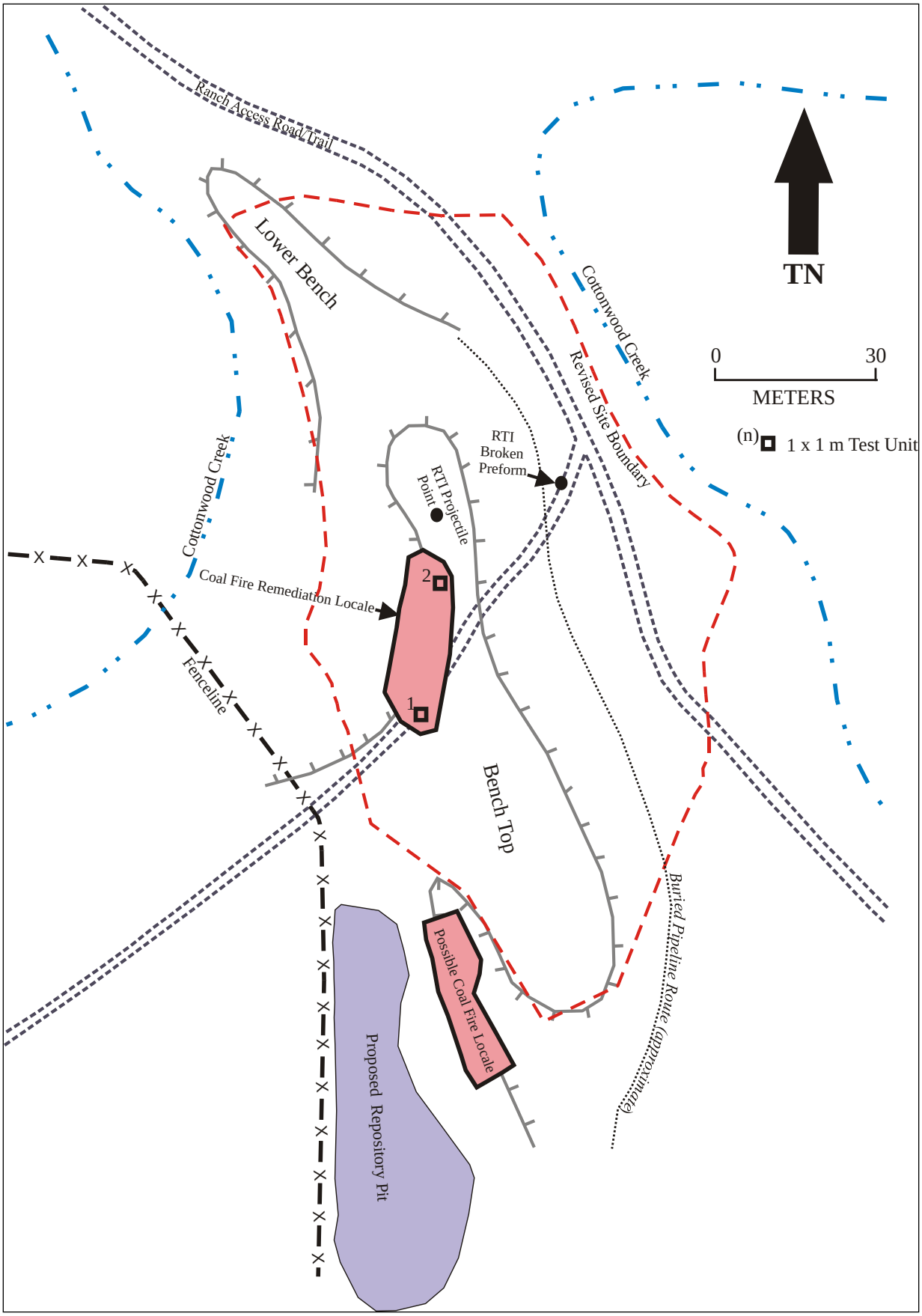
Looking N at Test Unit 1 excavated to 10 cm below present ground surface (BS).

View of gravelly sediments encountered in Test Unit 1 at 10-20 cm BS.

Looking N at Test Unit 2 excavated to 20 cm below present ground surface (BS).

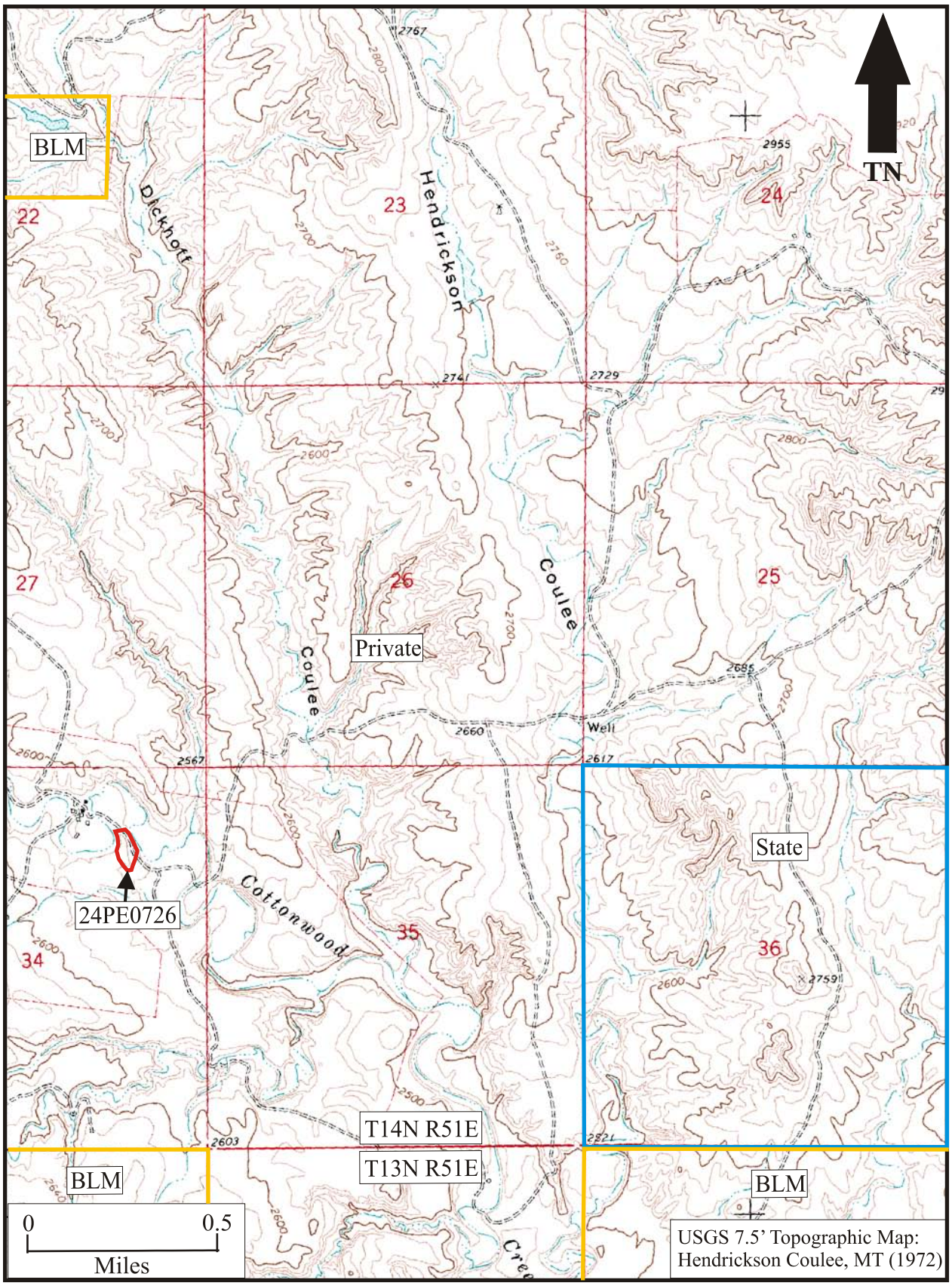
View from Test Unit 1 across APE to Test Unit 2.

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM



Plan map of site 24PE0726 showing test units 1-2, and proposed remediation locales.

After Smithsonian number received, submit completed form to the Archaeological Records Office.



Topographic map showing location of site 24PE0726.

After Smithsonian number received, submit completed form to the Archaeological Records Office.