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Completion Report: Yellowstone National Park Proposed Seven Mile Bridge Bison Capture Facility Archaeological Site Inventory and Assessment: 1999 Field Season Final Report.

This archeological study was undertaken in response to the proposed construction of the Seven Mile Bridge Bison Capture Facility along the Madison River. Research, in compliance with Section 106 of the National Historic Preservation Act as amended, was conducted to record undiscovered sites and to revisit previously known sites in the study area. These studies were undertaken to assess the potential for site damage or destruction due to proposed enclosure construction. Field studies also provide opportunities to assess the research and interpretive potential of those sites recorded.

Specific research questions identified in the "Archeological Treatment Plan for Yellowstone Grand Loop Road Federal Highway Projects; Prehistoric Sites" (National Park Service 1993) were used as general guidelines for determining site significance and research potential. Issues related to Yellowstone National Park's poorly understood culture history, human settlement and subsistence patterns, season(s) of occupation, and the procurement of faunal, floral, and lithic resources could be addressed through archaeological research such as that initiated by the current project. This study is thus a significant aspect in the development of any future archaeological data recovery plans.

Another study area is located along the Madison River roughly midway between the Park boundary at West Yellowstone and Madison Junction 18.8 km to the east. Specifically, the area under consideration lies immediately west of the Seven Mile Bridge in the Madison River valley. On the south side of the river, the study area encompasses a 1.3 km section of terrace between the Madison Junction-West Yellowstone road and the base of the slope to the southwest. Field studies on the north side of the Madison River include the area from the Seven Mile Bridge to the western end of a large terrace 2.5 km distant (2.05 km in a straight line). Targeted landforms on the north bank of the river include low river terraces and the margins of the high bench forming the northern rim of the Madison Valley. Additional areas to the north included the meadows at the junction of the Gneiss Creek and Cougar Creek Trails 950 m north of the Madison River. Inventory activities focussed on the open meadows and adjacent burnt lodgepole pine forest on the southern and southwestern flanks of a prominent hill. An unnamed creek draining the northwestern shoulder of Purple Mountain flows through the meadow to the west.

There had been no previous research in or near the present study area outside of work accomplished earlier in the summer of 1999 for the highway right-of-way between Madison Junction and West Yellowstone. Thus one of the benefits of this project was the opportunity to obtain inventory data for a relatively neglected part of Yellowstone National Park.

The proposed Seven Mile Bridge Bison Capture Facility archaeological site inventory was

carried out over a seven day period during the month of July under the direction of Mack W. Shortt (Project Archaeologist). Assisting crew members were Tom Besom, Doug Mitchell, and Kevin Thorson. John Reynolds, Dinah Shortt, and Bill Whitacre volunteered for the duration of the project. Emily Whitacre joined the crew for a single day. A total of 64.45 hectares were inventoried for the current study.

Report Organization

The following report is organized in an east to west orientation with results of the archaeological inventory presented on a site-by-site basis. In addition to the locations of all Precontact Native American sites, descriptions include those artifacts and features that were observed and/or collected. Recommendations concerning site eligibility for National Register of Historic Places and conservation, preservation, and interpretive potential are also given. An overall summary and concluding remarks are provided following presentation of the results.

Results- Native American Precontact and Non-Native Postcontact Archaeological Sites and Isolated Finds

A total of seven Precontact Native American archaeological sites were recorded during field studies: 48YE643, 48YP644, 48YE647, 48YE648, 48YE649, 48YE646, and 48YE645. Site 48YE643 also contains Non-Native Postcontact archaeological materials. Subsurface tests were conducted at two sites: 48YE643 and 48YE644.

48YE643: Site 48YE643 occurs on both sides of the Madison Junction-West Yellowstone road. On the south side of the highway, the site is associated with the southwest end of a large flat bordered on the west by a long strip of burned lodgepole forest running generally north-south.

48YE643 is an archaeological site consisting of a very light, diffuse surface scatter of five flakes and one retouched flake on the south side of the Madison Junction-West Yellowstone road. Six pieces of obsidian tertiary debitage, one utilized obsidian tertiary flake, and one utilized light brown-tan utilized flake were subsequently found on the north side in the vicinity of the picnic area. Overall these materials contribute to a site area approximating 340 m (northwest-southeast) X 100 m (southwest-northeast). A light scatter of Postcontact Euroamerican debris possibly dating to the early part of the 20th century was also noted on the south side of the highway. This material is limited to the south side of the highway and has dimensions of approximately 150 m (north-south) by 100 m (east-west). Neither fire-cracked rock nor faunal remains were observed at 48YE643.

The subsurface testing program at 48YE643 (south of the road) produced Precontact lithic materials and Postcontact Non-Native metal artifacts generally reflective of the low number of artifacts observed during the initial surface reconnaissance. In total, nine pieces of lithic debitage were collected from the completion of eight shovel tests. It is significant to note that five of the nine were derived from Shovel Test 1, the southern-most at the site. This may indicate a relative increase in archaeological richness.

As the site is currently recorded, information pertaining to Precontact human settlement patterns, domestic activities, and to the movement and use (lithic reduction) of specific lithic raw materials such as obsidian and cherts from regions in Montana, Wyoming, or Idaho may be derived from its study. The results of the 1999 inventory and subsurface testing program also demonstrated that the most significant portion of the site south of the highway is at its southern extremity near the tree throw and Shovel Test 1. The very light lithic scatter north of this area combined with the low number of artifacts in Shovel Tests 3-8 may suggest that this part of the site is less significant.

Given the presence of relatively low artifact frequencies in buried contexts 48YE643 is recommended as potentially eligible for the National Register of Historic Places under Criterion D. We recommend that additional shovel testing programs be undertaken to assess and confirm the boundary of the site to the west and north of Shovel Tests 1 and 8 respectively. Further assessment of the remaining northern portion of the site in the vicinity of the picnic area is also needed. Archival research should also be undertaken to possibly explain the presence of the Non-Native Postcontact specimens. These materials, all dating to roughly the same period, suggest that there may have been a Non-Native camp sometime around or prior to the First World War. Although the historic component of the site may have lost its integrity, this study would help to better understand the Non-Native use of the Madison River valley.

48YE644: Site 48YE644 lies on the first terrace above the river. It is bound on the south by the valley rim and on the west by the termination of the terrace. When initially recorded during the surface survey of the river terrace, 48YE644 consisted of approximately 30 pieces of debitage distributed over an area measuring 30 m (north-south) X 100 m (east-west). With the exception of one secondary decortication flake and five tertiary flakes on the north side of the highway, most of the lithics on the south side were observed in soils exposed by fallen trees. Neither fire-cracked rock nor faunal remains were observed during the surface reconnaissance.

At the terminus of survey activities, we felt that additional Precontact archaeological deposits coincident with the landform would be present at 48YE644. Thus, to verify the presence of buried remains and to possibly assess their geological and cultural/temporal affiliations, the authors initiated a subsurface testing program consisting of four 1 X 1 meter test units and twelve shovel tests. The 1 X 1 test units were established near the western end of the site where most of the surface artifacts were observed. The placement of these tests was also governed by heavy dead-fall and dense pine regrowth which limited the areas available for assessment.

All units yielded Precontact lithic debitage. A buried fire-cracked rock feature was also exposed in one of the 1 X 1 m units. This feature will provide the opportunity for specialized macrobotanical studies central to subsistence and paleoenvironmental reconstruction. Radiocarbon dates can also be derived from charcoal removed from the feature. This is of special significance in light of the general paucity of dated archaeological components in Yellowstone National Park. The importance of the site is underscored by considering the fact that 48YE644 provides the first recorded occurrence of a subsurface hearth in the Madison River valley in Yellowstone National Park. As such, we can also generate the first radiocarbon date for the

valley. Further archaeological research may also lead to the recovery of faunal remains not observed or recovered during the 1999 field season.

Upon the completion of the excavation of four 1 X 1 m test units, the authors initiated a shovel testing program aimed at determining the eastern boundary of 48YE644. At the terminus of field studies at the site, twelve 50 cm X 50 cm shovel tests (ST's) were complete. The tests that yielded buried Precontact archaeological deposits are ST1-ST3, ST5-ST6, ST8-ST9, and ST11. Shovel Tests 4, 7, 10, and 12 were culturally sterile.

The field program at 48YE644 demonstrated that it is a large Precontact Native American archaeological site characterized by a light lithic scatter and buried, *in situ* deposits in four 1 X 1 m test units and eight of twelve 50 X 50 cm shovel tests. Combined, the surface and subsurface testing data collected by the field crew suggest that 48YE644 encompasses an area measuring 160 m (east-west) X 50 m (north-south). The eastern boundary of the site remains to be fully determined. While artifact frequencies in the eastern-most shovel tests remain low, their presence indicates that the site extends beyond the area tested.

The presence of buried deposits that will provide important archaeological data indicates that 48YE644 is eligible for nomination to the National Register of Historic Places under Criterion D. We recommend that additional controlled test excavations be undertaken to determine the eastern boundary of the site. Shovel testing on the north side of the road should also be considered to determine the condition and integrity of the site adjacent to the river. 48YE644 should be noted on relevant utilities, highways, and other plans/documents and, if possible, avoided during any future infrastructure developments. The site should be monitored and collected annually with artifact provenances recorded.

48YE647: Site 48YE647 is a large lithic scatter on the Madison River. In a straight line, the site is located northwest of the Seven Mile Bridge in a rolling topographical setting. 48YE647 is a very large lithic scatter consisting of a minimum of 300 pieces of lithic debitage. Overall the site measures nearly 480 (east-west) X 100 m (north-south at its maximum). Lithic material types include obsidian which contributes to approximately 98% of the observed assemblage and small quantities of red Madison Formation chert (opaque) (n=1), pink banded (heat-treated) chert (n=2), and grey chert (n=1).

Lithic tools observed and subsequently collected include one obsidian Pelican Lake Corner-Notched projectile point (Middle Precontact Period; ca 3,000-1,700 years B.P.) (#142707), one obsidian biface (projectile point preform?) (#142708), five obsidian bifaces (#142709-#142713), one obsidian retouched flake (#142731), and one dark green chert spall that appears to have been either intentionally struck or heat fractured from a biface (#142730). Neither faunal remains nor fire-cracked rock were observed during field studies.

Given the probability of buried archaeological deposits possibly dating to the Middle Precontact Period, 48YE647 is recommended as potentially eligible for the National Register of Historic Places under Criterion D. We also recommend that limited test excavations be undertaken to further assess the site's research/interpretive value and to broaden our understanding of the

depth, age, cultural affiliations, and geological associations of the cultural deposits. 48YE647 should be noted on relevant utilities, highways, and other plans/documents and, if possible, avoided during any future infrastructure developments. The site should be monitored and collected annually with artifact provenances recorded.

48YE648: Site 48YE648 is a large lithic scatter and cairn. The site consists of a diffuse lithic scatter of roughly 100 obsidian tertiary flakes, two opaque red chert tertiary flakes, one yellow-brown semi-translucent chert tertiary flake, and one white chalcedony tertiary flake. Lithic tools include one obsidian utilized flake (#142734), one retouched (heat-treated) red-brown chert (Madison Formation) tertiary flake (#142735), one retouched dark red-brown tertiary flake (#142736), and one white-light grey utilized quartzite flake (#142737; found 10 m northeast of cairn). An obsidian projectile point base was also collected from the site (#142714). In overall form this specimen resembles Pelican Lake Phase projectiles common to the Northern Plains, Intermountain Region, and Rocky Mountains (ca. 3,000-1,700 years B.P.). All tools were collected for further analyses. Neither fire-cracked rock nor faunal remains were observed during field studies.

A large, prominent cairn was also recorded at 48YE648 near the midway point of the site. This feature consists of approximately 75 constituent rounded and angular cobbles varying in size from 15 cm to 50 cm in maximum dimension. Overall, the cairn measures 1.5 m (north-south) X 2.0 m (east-west) and rises nearly 0.5 m.

Given the probability of buried archaeological deposits possibly dating to the Middle Precontact Period, 48YE648 is recommended as potentially eligible for the National Register of Historic Places under Criterion D. We also recommend that limited test excavations be undertaken to further assess the site's research/interpretive value and to broaden our understanding of the depth, age, cultural affiliations, and geological associations of the cultural deposits. These test excavations will also determine the northern boundary of the site which, at the time of reporting, remains indeterminate. A detailed mapping program of the cairn should be undertaken to provide a record of its current condition. 48YE648 should be noted on relevant utilities, highways, and other plans/documents and, if possible, avoided during any future infrastructure developments. The site should be monitored and collected annually with artifact provenances recorded.

48YE649: Site 48YE649 is a large lithic scatter consisting of approximately 500 pieces of lithic debitage, 400 of which are black obsidian flakes. It is estimated that 99% of the obsidian assemblage is comprised of tertiary debitage (no dorsal cortex). Lithic material types of non-obsidian tertiary debitage include Schmitt Chert, white chalcedony, white quartzite, heat-treated red-dendritic chert, basalt, light grey/dark grey banded chert, white-pink chert (heat-treated?), white-yellow chert, and grey-red chert (heat-treated?). Lithic tools observed and subsequently collected include one obsidian Pelican Lake Phase (ca. 3,000-1,700 years B.P.) projectile point (#142715), one large obsidian heavily utilized blade (#142716), one obsidian projectile point preform (biface) (#142717), one grey semi-translucent chert tertiary retouched flake (#142739), and one crude obsidian biface (#142738).

Precontact archaeological remains occur in an area measuring 750 m (east-west) X at its widest point 100 m (north-south). Although the densest concentrations of archaeological materials tend to occur from the central part of the site to the base of the bench to the north, this phenomenon is likely due to worsening ground surface visibility toward the river, not to any Precontact cultural activities. Two flakes were seen eroding out of the terrace edge at 40-60 cm b.s. near the western end of the site. These suggest that buried, intact Precontact cultural deposits are likely present. Neither fire-cracked rock nor faunal remains were observed during field studies.

Given the probability of buried archaeological deposits dating to the Middle Precontact Period, 48YE649 is recommended as potentially eligible for nomination to the National Register of Historic Places under Criterion D. We also recommend that limited test excavations be undertaken to further assess the site's research/interpretive value and to broaden our understanding of the depth, age, cultural affiliations, and geological associations of the cultural deposits. 48YE649 should be noted on relevant utilities, highways, and other plans/documents and, if possible, avoided during any future infrastructure developments. The site should be monitored and collected annually with artifact provenances recorded.

48YE646: Site 48YE646 is a lithic scatter. 48YE646 consists of 11 obsidian tertiary flakes, one fine-grained light tan-grey chert retouched tertiary flake (#142741), and a retouched obsidian tertiary flake (#142742). Both tools were collected for further analysis. Eleven of thirteen artifacts are evenly distributed over an area approximating 50 m X 50 m. Two additional flakes were observed 100 m to the east. Neither fire-cracked rock nor faunal remains were observed during field studies.

Because of the probability of additional archaeological materials in buried contexts, 48YE646 is recommended as potentially eligible for the National Register of Historic Places under Criterion D. We recommend that limited test excavations be undertaken to further assess the site's research/interpretive value and to broaden our understanding of the depth, age, cultural affiliations, and geological associations of the cultural deposits. 48YE646 should be noted on relevant utilities, highways, and other plans/documents and, if possible, avoided during any future infrastructure developments. The site should be monitored and collected annually with artifact provenances recorded.

48YE645: Site 48YE645 is a large lithic scatter of obsidian debitage distributed over an area measuring 350 m (north-south) X minimally 60 m east-west. 48YE645 consists of at least two thousand pieces of obsidian debitage, most of which are tertiary flakes measuring less than ten centimeters. Many of the specimens are partially buried. With few exceptions, most of the observed obsidian resembles Cougar Creek obsidian.

In addition to the general scattering of obsidian debitage, several heavy concentrations were noted. Each consists of 200-300 pieces of obsidian tertiary debitage in areas not exceeding two by two meters. Secondary decortication flakes are less numerous than tertiary flakes but are certainly present in significant quantities. The only non-obsidian artifact observed was a mottled

white semi-translucent chert flake resembling Swan River Chert. Neither fire-cracked rock nor faunal remains were observed during field studies. Precontact archaeological materials collected from 48YE645 are limited to one projectile point (#142718) and three small obsidian samples for future sourcing studies. The projectile point resembles late Precontact Period specimens, possibly deriving from the Intermountain Tradition of ca. 500-200 years B.P.

Because of the probability of additional archaeological materials in buried contexts, 48YE645 is recommended as potentially eligible for the National Register of Historic Places under Criterion D. We recommend that limited test excavations be undertaken to further assess the site's research/interpretive value and to broaden our understanding of the depth, age, cultural affiliations, and geological associations of the cultural deposits. These test excavations will also determine the western boundary of the site. 48YE645 should be noted on relevant utilities, highways, and other plans/documents and, if possible, avoided during any future infrastructure developments. The site should be monitored and collected annually with artifact provenances recorded.