

**U.S. Nuclear Regulatory Commission
Crow Butte Resources, Inc. *In Situ* Uranium Recovery Facility
Crawford, Nebraska**

**Survey to Identify Sites of Historic, Cultural, and Religious Significance
to the Oglala Sioux Tribe**

Trip Report

1.0 INTRODUCTION

The purpose of this trip was for the U.S. Nuclear Regulatory Commission (NRC) staff to facilitate the field investigation portion of a tribal cultural resources survey at the Crow Butte Resources, Inc. (CBR) *in situ* uranium recovery (ISR) facility in Crawford, Nebraska. The survey focused on the identification of sites of significance to the Oglala Sioux Tribe within the CBR license area that could be affected by the continued operation of the CBR ISR facility under the renewed license.¹

On September 8, 2021, the NRC staff transmitted to the Tribe and CBR the final survey methodology² for identifying sites of historic, cultural, and religious significance to the Tribe within the license area. The Tribe subsequently contracted with Quality Services, Inc. (QSI) to conduct the survey using the final survey methodology. The field investigation began on November 1 and concluded on December 8, 2021.³ The NRC staff's contractor was onsite from November 1 through November 19, 2021, and an NRC staff project manager was onsite during the first and third weeks (November 1-5 and November 15-19). During that time, at the invitation of the QSI survey crew lead, the NRC staff project managers and the staff's contractor walked the site with the crew and assisted in survey activities.

2.0 TRIBAL CULTURAL SURVEY - FIELD INVESTIGATION

2.1 Background

The NRC, CBR, the Tribe, and QSI agreed to begin the field investigations on November 1, 2021. QSI's survey crew consisted of one supervisor/project lead, an assistant to the

¹ In LBP-16-7, the Board concluded that the NRC staff, in its 2014 environmental assessment for the renewal of the CBR ISR facility license, failed to meet its obligations under the National Historic Preservation Act and National Environmental Policy Act to identify historic properties that are significant to the Tribe and to take a "hard look" at potential impacts to cultural resources from renewing the license.

² Agencywide Documents and Access Management System [Accession No. ML21252A089](#).

³ The field investigation was originally expected to conclude on November 19, 2021. On November 18, 2021, QSI requested eight additional days of field work to complete its field investigations. On November 22, CBR agreed to eight additional days of field work to be conducted during the week of November 29 to December 3, 2021 and continuing during the week of December 6. QSI completed the field survey work on Thursday, December 2, and the field investigation concluded with a final site visit by the Tribal Elders on December 8.

supervisor (crew chief), and four tribal cultural specialists (TCSs) from the Oglala Sioux Tribe.⁴ QSI explained that Tribal Elders from the Oglala Sioux Tribe's Cultural and Historic Preservation Office Advisory Council would visit newly-identified sites and artifacts within the license area, as necessary, throughout the field investigation period. The NRC's representatives consisted of two project managers and a contractor. Several CBR employees supported the field investigation throughout the effort.



Figure 1. View of CBR ISR wellfields and Crow Butte (leftmost butte).

2.2 November 1, 2021 Planning Meeting

On November 1, 2021, representatives from NRC, CBR, the Tribe, and QSI met at the CBR ISR facility at 2:00pm for a planning meeting. CBR provided the participants with facility safety briefings and an orientation and led a tour of the site. The safety briefings covered non-radiological hazards (e.g., electrical and road hazards), radiation safety, and the process for conducting radiation surveys when exiting areas located within the monitoring well rings.⁵

The final survey methodology planned for surveying the entire license area, which consists of 1,149 hectares (2,840 acres). During the meeting QSI described its plans for the fieldwork. QSI anticipated daily surveying to begin at approximately 8:00am and finish at approximately 4:00pm, depending on visibility. QSI indicated that they planned to first survey undisturbed areas⁶ that had not been previously surveyed during the 1980s cultural resource investigations. Second, they planned to survey undisturbed areas that had been previously surveyed, and third,

⁴ On November 14, 2021, a TCS from the Rosebud Sioux Tribe joined the survey crew as an additional surveyor.

⁵ CBR's safety procedures require radiation surveys anytime a person spends time inside the monitoring well rings.

⁶ Undisturbed areas refer to areas within the CBR license area that have not been disturbed by construction and operation of the ISR facility.

they planned to re-evaluate sites that had been previously documented during the 1980s cultural resource investigations.

CBR also explained that the week-long hunting season would begin on November 13, and that hunting could occur in some portions of the CBR license. QSI's goal was to prioritize those areas where hunting could occur for the first week of the survey.

The participants also discussed potential impacts to the survey schedule due to inclement weather. The survey methodology provided for 15 workdays to complete the onsite field investigation and acknowledged that bad weather or other unexpected circumstances would not be counted against the 15 workdays. CBR stated that missed days due to inclement weather would be rescheduled.

Finally, CBR conducted a tour of the site, which provided an opportunity for QSI to see first-hand the CBR ISR operations and landscape. The group also observed the areas that would not be accessible because of safety and security reasons, as well as the areas where hunting was anticipated. The group also observed English Creek, Native Creek,⁷ and Crow Butte from different vantage points.



Figure 2. CBR, NRC, Oglala Sioux Tribe, and QSI representatives during the ISR site tour on November 1, 2021.

⁷ At the request of the survey crew, the participants used the name “Native Creek” in lieu of the official topographic name, which is considered to be a derogatory term.

2.3 Survey Week 1

On November 2, 2021, the survey crew, accompanied by the NRC staff, the staff's contractor, and a CBR escort,⁸ began walking the ISR site.⁹ The survey was conducted using 5-meter transects, which were adjusted (narrowed or widened) throughout the field investigation based on factors such as the extent of land disturbance, vegetation density, topography, and number of findings. The survey began in Section 12 on the northern edge of the CBR license area boundary and continued south-southeast.

At the request of the QSI survey crew, the NRC staff and the staff's contractor walked the site with the crew and, as appropriate, assisted with identifying artifacts and describing newly-identified sites and artifacts. The survey crew lead would, at times, divide the survey crew in groups to cover more ground or to survey steep hills.



Figure 3. Survey crew walking the ISR site using transects.

Most of the areas surveyed during the week of November 1, 2021 consisted of pasturelands and cultivated fields. The terrain included slopes, ridges, and buttes with tall grasses, and flat pasture along creeks. Ground visibility varied depending on the density of surface vegetation. The riparian areas along the creeks featured dense vegetation (ash tree, elms, cottonwoods), water plants, and deadfall. Some of the areas surveyed continue to be actively grazed by cattle.

The survey crew identified and recorded lithic flakes, stone flakes, animal bone fragments, medicinal plants (echinacea and cabbage mullein), potential stone tools (e.g., scrapers), a stone alignment, a depression in a ridgeline, and what appeared to be the skeleton of a bison along the banks of a creek.

⁸ Each day during the fieldwork CBR escorted the visitors per the facility's requirements and procedures but stayed at a distance from the survey crew.

⁹ Enclosure 1 contains a list of individuals who participated in all or part of the field investigation.



Figure 4. Some of the areas surveyed during the first week of the field investigations. Cultivated fields on the left.

2.4 Survey Week 2

The second week of the field investigations began on November 8, 2021, in the southeast portion of the CBR license area, which is an area characterized by dense grasslands. Throughout the week, the crew surveyed the west side of steep bluffs and pasturelands bordering the bluffs on the northwest. On Wednesday, November 10, 2021, the survey crew focused on two contiguous parcels in areas with no trees and no creeks but characterized by rolling hills and a few prominent bluffs.

Weather conditions worsened mid-week with icy cold winds from the west. On November 10, 2021, a four-person survey crew began surveying areas adjacent to the CBR ISR facility entrance; however, the effort was terminated by late morning due to the winds from the north, which resulted in wind chill in the lower teens (degrees Fahrenheit). By the end of the week, the survey crew identified and recorded several depressions, lithic flakes, bones, modified fossils, and fire-oxidized stones.



Figure 5. Survey crew recording a stone alignment.



Figure 6. Native Creek (left) and the survey crew walking in transects (right).

During this week, there were a few days when some TCSs were absent. Also, one TCS suffered an injury, which prevented him from continuing to walk the site for the duration of the survey. After consulting and receiving approval from the Oglala Sioux Tribe, on November 14, 2021, QSI brought in a TCS from the Rosebud Sioux Tribe to support the field investigations.

Additionally, on Wednesday November 10, 2021, Tribal Elders visited the ISR site, and the survey crew lead spent the day showing them some of the newly-identified sites and artifacts.



Figure 7. Apparent bison skeleton (left) and point fragment of orange chert; possibly an arrowpoint (right).

2.5 Survey Week 3

The third week of the survey started on November 14, 2021.¹⁰ Survey efforts focused on the western portion of the ISR site and continued through the northwest. Weather conditions at the beginning of the week had improved compared to the prior week. During the first part of the week, the survey crew recorded stone alignments, lithic flakes, a stone tool, and fossilized bones.



Figure 8. Survey crew walking the ISR site using transects (left) and chert tertiary flake (right).

During this week, the survey crew began surveying the parcels outside of the monitoring well ring that had been previously surveyed and investigated in the 1980s. One area was being grazed by a herd of black angus bulls. Another surveyed area consisted of an alfalfa field that had been recently mowed. The survey crew identified and recorded isolated artifacts (flakes, a potential scraper, granite mano, and a lithic scatter).



Figure 9. Tribal medicinal plants: echinacea (left) and cabbage mullein (right).

By mid-week, weather conditions had significantly worsened with wind chill temperatures at approximately 10 degrees Fahrenheit, and the survey efforts were terminated for the day on the morning of Wednesday, November 17, 2021. Survey efforts resumed the

¹⁰ At the request of QSI, CBR agreed to an additional survey day on November 14, 2021 (Sunday), because the survey crew actually began walking the site on Tuesday November 2, 2021, rather than Monday November 1 (as originally anticipated).

next morning on parcels that had been previously surveyed during the 1980s and along Native Creek. An obsidian tertiary flake was found.

2.6 Additional Survey Days¹¹

On November 18, 2021, QSI requested eight additional days of fieldwork to complete the recording of newly-identified sites and artifacts, to re-evaluate five of the sites previously identified in the 1980s cultural resource investigations, and to complete surveying in two specific areas.¹² CBR agreed to eight additional days of fieldwork to be conducted during the week of November 29 – December 3, 2021 and continuing during the week of December 6. In addition, CBR had previously agreed to a site visit by Tribal Elders on November 23, 2021, to provide an opportunity for the Elders to observe some of the newly-identified sites and artifacts.

The NRC Staff's contractor and project managers were not on site for the additional survey days. CBR reported to the NRC staff that the Tribal Elders visit took place as scheduled on November 23, 2021. CBR also reported that the additional fieldwork began as agreed on November 29 and was completed on December 2, and that a final site visit by the Tribal Elders took place on December 8.



Figure 10. Some of the cultivated fields surveyed.

3.0 Additional NRC Staff Contractor Activities

Finally, on a couple of non-survey days, the NRC staff's contractor visited several historic locations in the vicinity of the CBR facility. These included the site of the "Council Tree," sometimes referred as the "Treaty Tree" (located approximately 5 miles east of Crawford, NE), the White River (near Crawford, NE), the Crazy Horse Memorial at Fort Robinson State Park, and Lover's Leap (located near Fort Robinson).

¹¹ The NRC staff and the staff's contractor were not present during the additional survey dates.

¹² The survey crew elected not to survey within the monitoring well rings, which encompass an area of approximately 485 hectares (1,199 acres).

Enclosure 1

Crow Butte Resources, Inc. In Situ Uranium Recovery Facility Crawford, Nebraska

Tribal Cultural Resource Survey

List of Participants

The following individuals participated in all or part of the field investigation activities from November 1 – December 8, 2021.

Oglala Sioux Tribe

Thomas Brings, Tribal Historic Preservation Officer (THPO)
Tribal Elders

Quality Services, Inc.

Lance Rom, President
Reuben Weston, Project Lead and Tribal Liaison
Kurt Lanno, Social Anthropologist
Loni Weston, Tribal Cultural Specialist (Oglala Sioux Tribe)
James Pine, Tribal Cultural Specialist (Oglala Sioux Tribe)
Tyrel Salway, Tribal Cultural Specialist (Oglala Sioux Tribe)
Isaac Weston, Tribal Cultural Specialist (Oglala Sioux Tribe)
Jared Red Bird, Tribal Cultural Specialist (Rosebud Sioux Tribe)

Crow Butte Resources, Inc.

Doug Pavlick, General Manager, U.S. Operations
Walter Nelson, Safety, Health, and Environmental Quality (SHEQ) Coordinator
Tate Hagman, Restoration Manager
Additional CBR staff escorted the survey crew throughout the effort

U.S. Nuclear Regulatory Commission

Diana Diaz-Toro, Project Manager
Jean Trefethen, Project Manager
Jerry Spangler, NRC Contractor, SC&A, Inc.