


United States Nuclear Regulatory Commission Official Hearing Exhibit	
In the Matter of:	CROW BUTTE RESOURCES, INC. (License Renewal for the In Situ Leach Facility, Crawford, Nebraska)
ASLBP #:	08-867-02-OLA-BD01
Docket #:	04008943
Exhibit #:	NRC-051C-00-BD01
Admitted:	8/18/2015
Rejected:	
Other:	
	
Identified: 8/18/2015 Withdrawn: Stricken:	



Figure 24. RO unit located in an auxiliary building on the CPF. (Photo: DB, October 24, 2012)

All of the uranium-saturated ground water is pumped back to the main process facility, where the leach solution enters the pressurized downflow IX column and passes through the resin beds (**Figure 25**). After the processed uranium is dried, it is placed in 55-gallon drums to await shipment (**Figure 26**).



Figure 25. IX column located in the main processing building on the CPF. (Photo: DB, October 24, 2012)



Figure 26. Drums of processed uranium. (Photo: DB, October 24, 2012)

Adjacent to the processing area is a water quality laboratory where samples are analyzed (**Figure 27**). The laboratory currently uses atomic adsorption for metals analysis (**Figure 28**), but it recently purchased an induced coupled plasma machine that will replace atomic adsorption.



Figure 27. Water quality laboratory. (Photo: DB, October 24, 2012)



Figure 28. Atomic adsorption equipment. (Photo: DB, October 24, 2012)

2.5.2 Cultural Resources

The team visited archaeological sites 25DW191 and 192, both situated in the southern portion of the project area. These sites, along with two others, were fenced during early phases of the mining development to designate them as protected areas (**Figure 29**).



Figure 29. CBR current license area, fenced archaeological site 25DW192. View to the north-northeast with the Crow Butte visible in the distance (leftmost butte). Archaeological site 25DW191, also fenced for protection, is located just downslope and out of sight at the right center of the image. (Photo: PRN, October 24, 2012)

Finally, the team visited archaeological site 25DW194, located about 1 mile north-northwest of the CBR facility, given a high potential for tribal interest in this location. According to the report for the original cultural resources of the current license area, prepared by John Bozell and Robert Pepperl of the Nebraska State Historical Society in 1987 (p. 47), "An historic Native American burial was exposed and removed on the high ridge immediately north of the site in the 1950s during gravelling operations (L. Stetson: personal communication)." **Figure 30** portrays the original 1987 contour map of site 25DW194, including the approximate location of the burial from the 1950s.

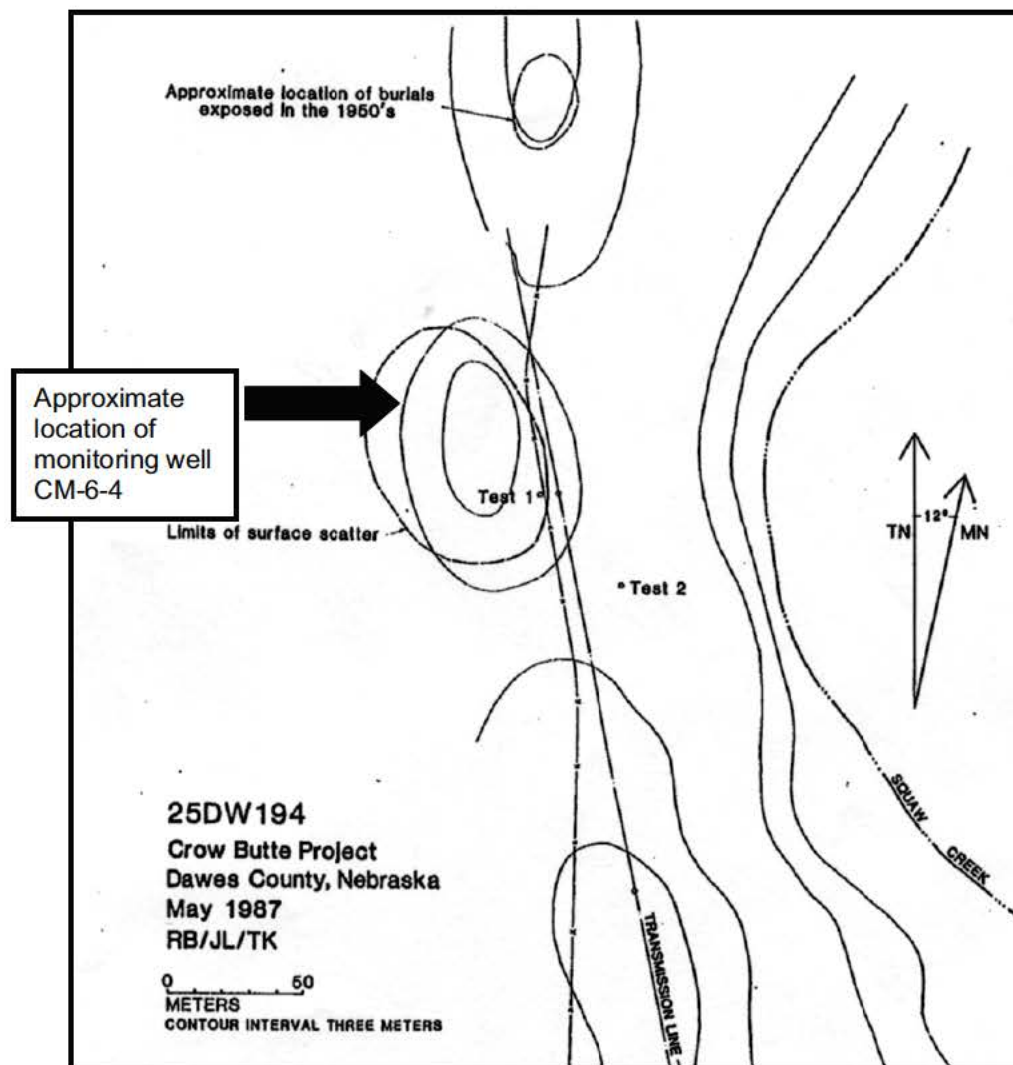


Figure 30. CBR current license area, archaeological site 25DW194. The base map is replicated from the cultural resources report for the current license area (John R. Bozell and Robert E. Pepperl, "Cultural Resources Study of the Crow Butte Uranium Prospect, Dawes County, Nebraska," Nebraska State Historical Society, Lincoln, Nebraska, 1987, p. 48). The black arrow is added to indicate the approximate location of a Crow Butte project monitoring well that was subsequently emplaced near or on the site.

Because of the potential for this locale to be of particular interest to the affected Tribes for the Crow Butte project, the site visit paid particular attention to this area. Some troublesome data

gaps pertain to this human burial, including whether or not it was even a Native American interment of historic age. The only specific information available is the single sentence quoted above from the 1987 cultural resources report. The area designated as 25DW194, lying south of the burial site on the edge of a continuously cultivated field, was noted to have been greatly impacted by past plowing (i.e., before 1987), except for a narrow north-south strip along the east edge of the site where there is a fence line (see Figure 30). The field and the archaeological site apparently continued to be plowed after 1987. During the 1987 field investigations, a surface collection of all observed surface artifacts was completed, along with the placement of two controlled test units. No temporally diagnostic materials were recovered and the site, although Native American in association, could not be placed in either the prehistoric or the historic period. Viewed by itself, the archaeological site appears problematic in terms of potential significance for the NRHP. Rather, the designation of the site as potentially eligible for the NRHP appears to have been made on the possible presence of human remains, removed some 30 years before the recording of the site, on a ridge about 100 meters north of the mapped site boundary.

Questions also remain about the burial from the 1950s. The 1987 map reproduced in Figure 30 indicates the “location of burials exposed in the 1950s.” The report gives no other indication of more than one possible burial from the location. Further, the quote about the 1950s given above is the only data presented for the burial. There is no indication, other than possibly from the personal communication with the landowner, regarding how it was determined that the remains were human, Native American, and from the historic period, or even who removed them in the 1950s. More detailed information may be contained in project notes, if they exist in the Nebraska State Historical Society archives. Some of the original project archaeologists are also still available for interviews.

Mr. Laverne Stetson, the “L. Stetson” who communicated the information to the archaeologists about the 1950s burial, lives today in Lincoln, Nebraska, but continues to own and operate the farm. His local residence is just to the east (site 25DW00-25). During a telephone conversation with Mr. Stetson at his Lincoln home on October 11, 2012, he recalled that he and a cousin found some bones in the gravel quarry locale before 1957, when he moved to Lincoln. “Someone,” possibly from Chadron State College, was called in and apparently did not think the bones were important. Mr. Stetson could not remember whether the bones were actually removed at the time. He also recalled that there were no artifacts, such as beads or other material culture; he and his cousin specifically looked for such items.

Lacking more specific data, it seems open to discussion that the find (1) was a human burial, (2) was actually removed, and (3) in any event, can be associated with the historic Native American period. It may be that additional information can be located to either substantiate or refute this situation. Mr. Terry Steinacher, Historic Preservation Archaeologist with the State Historical Society at Fort Robinson, who reviewed the original report in 1987, stated by e-mail (October 12, 2012) that he does not remember anything about the possible historic Native American burial near site 25DW194.

During the field visit to archaeological site 25DW194 on October 24, 2012, it was observed that a CBR project monitoring well, No. CM-6-4, was, at some time in the past, placed in what appears to be within the boundary of the archaeological site. The approximate location of the monitoring well is indicated by an arrow in Figure 30. Dr. Nickens advised CBR personnel of this possible conflict and recommended that they could have their archaeologist evaluate the situation and that some care should be taken when the well is removed during decommissioning

activities (e.g., monitoring of the removal by an archaeologist), if it is determined that the monitoring well is actually within the site boundaries.

Following the site visits, the team spent some time at the CBR office discussing the general cultural resources information in terms of the ongoing EAs. Although not detailed here, discussions took place between the NRC Project Manager, Ms. Trefethen, and CBR personnel regarding ongoing consultations under Section 106 of the National Historic Preservation Act (NHPA) with the affected Indian Tribes and related efforts to conduct field investigations at the four CBR project areas in the near future.

For the three expansion areas, cultural resources data made available through the applicant's Environmental and Technical Reports are current and sufficient for the EA analysis. A few MEA data requests will be handled through the Request for Additional Information process. For the CPF license renewal EA, a significant data gap relates to information about a previous archaeological effort that has not yet been made available to the EA technical analyst or included in the applicant's Environmental Report for the license renewal. During the 1987 field investigations, 21 archaeological and historic sites were recorded; six of these were recommended as being potentially significant for listing in the NRHP. As noted, four of these sites were fenced and avoided by subsequent project developments. In fact, the CBR approach to protecting cultural resources sites over the years has involved avoiding impact to all recorded cultural resources, regardless of their NRHP status.

One of the potentially eligible sites, 25DW198, located in the far northern part of the current license area, actually received additional testing and evaluation in 2003 when it was found to be in an area that would be impacted by project activities. Through that process, the archaeological site was found **not** to contain information rendering it potentially eligible for the NRHP. The Nebraska State Historic Preservation Office (SHPO) concurred with this finding in June 2003. Since the meeting on October 24, 2012, John Schmuck (CBR) has provided a copy of the following report and the Nebraska SHPO letter of concurrence:

Späth, Carl and Cherie K. Walth, "Crow Butte Resources Evaluative Testing of Site 25DW198," Greystone Environmental Consultants, Inc., Greenwood Village, CO, 2003.

Mr. Schmuck has also provided additional information concerning historic disturbances and acreage within the proposed expansion areas, along with further information regarding CBR's management of cultural resource sites situated within the company's project areas. During construction and operation activities for the proposed expansion areas, CBR will continue the practice of avoiding all known cultural resource sites, whether eligible for the NHRP or not, if practicable.

2.5.2.1 Agate Fossil Beds National Monument

The Agate Fossil Beds National Monument is a National Park Service (NPS) unit about 20 miles west of the MEA. Literature reviews revealed that this is the nearest area where previous traditional cultural property (TCP) surveys have been conducted, similar to those being proposed for the MEA and other CBR project areas. Since the results of the NPS efforts are not available elsewhere, Dr. Nickens and Ms. Trefethen visited the office on the afternoon of October 24, 2012, to review these documents and discuss relevant issues with the park superintendent James Hill and other staff. This visit was very productive in terms of acquiring

regional information relevant to both the cultural affiliations of Tribes who historically inhabited the area and for the types of TCPs that might be anticipated to occur in the CBR project areas.

Several documents were reviewed, most of which were either partially or wholly copied for later review, including the following:

- (1) Hughes, David T., "Cultural Affiliations of Native Americans to the Region Encompassing Scotts Bluff National Monument and Agate Fossil Beds National Monument in Northwestern Nebraska," 1998. On file at Agate Fossil Beds National Monument, Harrison, Nebraska. (Note: This document is superseded by Van Vlack, et al., 2012, listed below.)
- (2) White, David M., "Mako Washte: An Ethnographic Overview and Oral History of the Badlands National Park," Applied Cultural Dynamics, Santa Fe, New Mexico, 2002. On file at Agate Fossil Beds National Monument, Harrison, Nebraska (electronic file to be provided by Superintendent, Agate Fossil Beds National Monument).
- (3) Albers, Patricia C., "The Home of the Bison: An Ethnographic Study of Traditional Cultural Affiliation: Wind Cave National Park, South Dakota." Department of American Indian Studies, University of Minnesota, Minneapolis, Minnesota, 2003. On file at Agate Fossil Beds National Monument, Harrison, Nebraska (electronic file to be provided by Superintendent, Agate Fossil Beds National Monument).
- (4) LeBeau, Sebastian C., "Wico'Cajeyate: Traditional Cultural Property Evaluation, Agate Fossil Beds National Monument," 2003. On file at Agate Fossil Beds National Monument, Harrison, Nebraska.
- (5) National Park Service, "Cultural Landscapes Inventory: Red Cloud Campsite, Agate Fossil Beds National Monument," 1988 (revised 2003). On file at Agate Fossil Beds National Monument, Harrison, Nebraska.
- (6) Bozell, John R., "An Archaeological Overview and Assessment of Agate Fossil Beds National Monument, Sioux County, Nebraska," 2004. NPS Midwest Archeological Center, Lincoln, Nebraska. On file at Agate Fossil Beds National Monument, Harrison, Nebraska.
- (7) National Park Service, "Cultural Landscapes Inventory: Inventory Overview, Agate Fossil Beds National Monument," 2010. On file at Agate Fossil Beds National Monument, Harrison, Nebraska.
- (8) National Park Service, "Cultural Landscapes Inventory: Red Cloud Campsite, Agate Fossil Beds National Monument," 2010. On file at Agate Fossil Beds National Monument, Harrison, Nebraska.
- (9) National Park Service, "Cultural Landscapes Inventory: Cook Homestead Complex, Agate Fossil Beds National Monument," 2010. On file at Agate Fossil Beds National Monument, Harrison, Nebraska.
- (10) National Park Service, "National Register of Historic Places Registration Form: Agate Springs Ranch, Agate Springs Fossil Hills Historic and Archaeological District, Agate

Fossil Beds National Monument,” 2012. On file at Agate Fossil Beds National Monument, Harrison, Nebraska.

- (11) Van Vlack, Kathleen, et al, “Agate Fossil Beds Cultural Affiliation Study,” 2012. Bureau of Applied Research in Anthropology, Tucson, Arizona. (Electronic file provided by Michael Evans, Chief, Ethnology Program, NPS, Midwest Region, Omaha, Nebraska, on October 25, 2012.)

2.5.2.2 Fort Robinson State Park, Fort Robinson National Historic Landmark, Fort Robinson Museum, Nebraska State Historical Society Historic Preservation Archaeologist

Dr. Nickens and Ms. Trefethen visited Mr. Terry Steinacher, Fort Robinson archaeologist, on the morning of October 25, 2012. Mr. Steinacher has been stationed at the Fort Robinson Museum for some 30 years and provides compliance reviews for all archaeological and historical reports conducted under NHPA Section 106 for the State of Nebraska.

When asked about potential resources that might be present in any of the CBR project areas, Mr. Steinacher did not identify any such places. Of importance for the upcoming TCEA EA, Mr. Steinacher discussed a pending application to the NPS NHL office to extend the boundaries of the extant NHL, specifically for the southern part. The NHL southern boundary is currently along the south side of the White River, but the expansion would move the southern boundary to the east-west line of the State park, which coincides with the original military reservation boundary. The expansion of the NHL in this vicinity places it immediately adjacent to the northern boundary of the TCEA. Today, a small herd of bison grazes in the southern part of the State park; this would apparently be the continued use for the southern part of the newly expanded NHL as well. This application is presently at the State level of review in Lincoln, Nebraska. Having an NHL boundary contiguous to the proposed TCEA would lead to a slightly different NHPA Section 106 consultation process for the NRC (see <http://www.achp.gov/regs-nhl.html>) at the TCEA, although the current boundaries are sufficiently close that this would probably be the case anyway.

Mr. Steinacher also informed the team that the Northern Cheyenne Tribe owns a sizable piece of property immediately west of the Fort Robinson State Park. This land is about 8 miles northwest of the TCEA. Although land records have not been searched, it appears that this property is not actually owned by the Tribe and therefore managed as trust land under the Bureau of Indian Affairs; rather, it is acreage donated to the Tribe’s Dull Knife College, located on the Northern Cheyenne Reservation in Lama, Montana. The Northern Cheyenne leader Dull Knife led the widely described “Cheyenne Breakout” from Fort Robinson in January 1879. The Cheyenne retreat took place, in part, through the land owned today by the Dull Knife College.

2.5.2.3 Nebraska National Forests and Grasslands

On the afternoon of October 25, 2012, Dr. Nickens and Ms. Trefethen visited with the staff at the U.S. Department of Agriculture Forest Service office in Chadron, Nebraska. The Pine Ridge Ranger District of the Nebraska National Forest lies west and south of the Crow Butte CPF and north of the proposed MEA. Most of the meeting took place with Ms. Kristina Hill, Forest Archaeologist; some time was also spent with Ms. Lisa Heiser, who is responsible for the Forest’s Recreation, Lands, Minerals, and Heritage program, regarding visual and scenic resources.

Much of the discussion with Ms. Hill concerned the recent extensive forest fire that covered several thousands of acres just west of the Crow Butte CPF, especially with regard to cultural resources field studies associated with the Burned Area Emergency Response (BAER) program of the U.S. Forest Service. This program is designed to address these emergency fire situations, both during the fire progression and in the postfire periods. During the fire, a two-person field crew was brought in from an Arizona Indian Tribe historic preservation program to work with fire crews to prevent unacceptable degradation to cultural resources. During the postfire effort, regional Tribes will be consulted for potential TCPs or other resources of potential cultural significance for the Tribes. This work is ongoing. Because of the proximity to some of the CBR project areas, including the MEA, some of these results may be useful for CBR cultural resource analyses. Ms. Hill will send the NRC a summary of the BEAR Team results as soon as is practicable.

Ms. Hill showed the team the Pine Ridge Ranger District cultural resource geographic information systems database, which includes previously recorded archaeological and historic sites at the CBR current license area. She will send the NRC a copy of the overlays for the areas on U.S. Forest Service lands that are close to the CBR CPF and MEA.

A relevant portion of the following U.S. Forest Service report was copied for use in the CBR EAs:

Prentiss, William C. and Robert G. Rosenberg, "Cultural Resource Overview of the Nebraska National Forest," Frontier Archaeology, Worland, Wyoming, 1996.

The team gave Ms. Heiser information about the proposed MEA, and she indicated that she would examine it in terms of the potential for visual impacts from construction and operation at the MEA on forest lands, particularly the Pine Ridge National Recreation Area, located some 8 miles north of the MEA. On November 2, 2012, Ms. Heiser sent an e-mail stating, "I did take a look at our maps and consulted with district folks...I think it is fairly unlikely that the [CBR] expansion will be visible from most of the [U.S. Forest Service] land."

A copy of the following map was purchased at the U.S. Forest Service office. This map shows public lands and cultural features for the region around the CBR project areas:

USDA Forest Service, "Nebraska National Forest, Oglala National Grassland, Pine Ridge Ranger District, Nebraska," 2002.

2.5.2.4 Museum of the Fur Trade

Dr. Nickens and Ms. Trefethen also visited to the Museum of the Fur Trade, located about 3 miles east of Chadron, Nebraska, specifically to consult with Dr. James A. Hanson, a recognized expert historian for the region and co-author of a 2009 monograph on "The Battle of Crow Butte." This event and the prominent butte situated within about a mile of the CPF and clearly visible from the NTEA and TCEA figure in regional tribal stories and are considered to be culturally important by various Lakota and Crow Tribes (**Figure 31**). The Crow Butte was the site of a legendary battle between a party of Crow Indians and a pursuing group of Brulé Sioux in the fall of 1849. On October 15, 1849, the Crow stole a herd of horses from Indian trader James Bordeaux, whose post was located near present-day Chadron, Nebraska, where the Museum of the Fur Trade sits today. Trader Bordeaux's two wives were from the Brulé Sioux band, which had a large village at the nearby Spotted Tail Indian Agency. Bordeaux petitioned

the Brulé to send a party after the Crow to recover his horses, leading to the “Battle of Crow Butte.” Dr. Nickens had previously obtained a copy of the Crow Butte monograph.



Figure 31. Crow Butte, Crawford, Nebraska, from the looking southwest, following a snowstorm on the preceding day. The CBR CPF lies on the opposite site of the butte. The prominent geological feature is readily visible from the CPF and from the proposed the NTEA and TCEA project areas. It cannot be seen from the MEA because of the Pine Ridge elevation. (Photo: PRN, October 24, 2012)

Discussion with Dr. Hanson did not result in specific new information for any of the CBR project areas, although that he indicated that the 1877 camp of the renowned Oglala Lakota leader Crazy Horse might have been located on the White River close to the NTEA. He referred the team to Dr. Thomas Buecker, Nebraska State Historical Society, in Lincoln, Nebraska, for more information on the location of Crazy Horse’s camp. Dr. Buecker was the historian at the Fort Robinson Museum for 26 years before removing to Lincoln in September 2011 as a result of funding reductions; he is the recognized expert in the military and Indian War history of the Crawford area.

Dr. Nickens conducted a follow-up telephone conversation with Dr. Buecker on November 2, 2012, after e-mailing him a map of the CBR project areas. Based on his extensive research, Dr. Buecker noted that the 1877 Crazy Horse camp was on the north side of the White River, not far from the NTEA but probably on the east side of Highway 2, which runs north-south along the eastern boundary of the NTEA. Land in the southern part of the NTEA, which extends to the White River, would have most certainly been used for some activities during that time. For example, travel between Crazy Horse’s village and the Red Cloud Indian Agency, located on the eastern part of the Fort Robinson Military Reservation, would have probably been along the north side of the White River since both the camp and the agency were located on the north side of the river.

Dr. Buecker also stated that there was a well-documented 4-day Sun Dance in June 1877 that took place not far north or northwest of the Crazy Horse camp. More than 20,000 Indian people from several regional Tribes attended this ceremony, which was the last Sun Dance to occur on what was then Unceded Indian Territory under the 1868 Treaty of Fort Laramie.

The locations of the Crazy Horse Village and the Sun Dance appear to be relatively close to the NTEA but outside the proposed license expansion boundaries. They could, however, contribute to the historical significance the Tribes, especially the Lakota, hold for the traditional cultural landscape in the vicinity.

Dr. Buecker observed that the well-known Sidney-Black Hills wagon road (ca. 1876–1880) probably passed through the NTEA since it extended due north from the Town of Crawford. Given the amount of historic disturbance in the NTEA, it seems unlikely that any vestiges of the historic road exist today. In addition, the trail from Fort Pierre, South Dakota, to Fort Laramie, Wyoming (ca. 1837–1880) followed the White River through this area, but it is not presently known if this trail was on the north or south side of the river. Both of these routes were mapped in the 1850s to 1870s.

Dr. Buecker corroborated what had been learned from the preceding office visits, that the MEA is devoid of known or suspected Native American and Euroamerican historic period resources. Finally, Dr. Buecker noted that there was an historic road from the Dead Man's Creek area, south of the proposed TCEA, that would have passed through the proposed expansion area and angled northeasterly through the Fort Robinson Military Reservation to Crawford. This road was used by ranchers and farmers until 1941, when the southern boundary of the military reservation was fenced.