

Additional Information Regarding Site Boundary Delineation Methodology in the *Tribal Field Surveys in the Ross Project Area* Report

Delineation of Site Boundaries

Sites of Tribal concern identified during the Tribal field surveys conducted within the Ross Project area during May and June 2013 were initially mapped by the NRC's archaeological contractor with a single GPS point for each feature or artifact location. Each mapped feature was given a field number and brief description. Some features and artifacts were clustered near each other or occupied the same landform. Normally, clusters of artifacts and features that are grouped together and that occupy the same landform are defined as sites. Because there were two separate Tribal inventories, a complication was that, in a few cases, the Tribes had identified different features along with some of the same features on the same landform or site. The NRC's archaeological contractor grouped the features and artifacts from both surveys together into sites, as required for recordation of cultural resources, and based on guidance the NRC staff received from the Wyoming State Historic Preservation Officer (WYSHPO) in August 2013. The contractor prepared a draft map of grouped GPS mapped entities. This draft map indicated a feature as a point on the landscape instead of as the space occupied by the site associated with the feature. The map indicated a two-feature site as two points on the landscape linked by a shaded rectangle. For more complex sites, the draft map linked features together as clusters of rectangles that formed odd shapes, which were not site boundaries but were used for convenience to show which features were linked together. These groupings were given temporary field number designations of TS-01 and so forth and the map was shared with the consulting Tribes. At this stage of processing the GPS data from the Tribal field surveys, sites had not yet been defined and Tribal consultation to define sites was not complete.

In July 2013, the archaeological contractor asked the Tribes to recommend a spatial area that should be used for the identified features, such as fasting beds. For example, a fasting bed may leave physical remains that measure approximately 3 m [10 ft] x 3 m [10 ft]. However, associated activities that took place on the land surrounding the fasting bed, which are less likely to leave any physical traces, are integral to the spiritual and ritual observances associated with fasting beds. Taking into account such non-visible attributes, the Tribe recommended that site boundaries should extend to at least a distance of 15 m [50 ft] from the center of the visible feature to account for the non-visible activities which took place there. This rationale provided a reasonable minimum boundary for sites. However, shape files to delineate such site boundaries had not yet been prepared in August 2013.

Consultation with Tribes on site boundaries and buffers continued from August through October 2013. During preparation of the NRC's *Tribal Field Surveys in the Ross Project Area* report, the archaeological contractor prepared the shape files delineating the site boundaries of each site employing the 15 m [50 ft] radius use area around each feature. When the site boundaries were defined, a single feature site would have a size of 30 m [100 ft] in diameter. Two feature sites would have a 15 m [50 ft] radius from each feature center to the edge of the site boundary as well as incorporating the space linking the two features. For multiple feature sites where the features were clustered together on a defined landform such as a knoll or hill top, in order to meet WYSHPO standards, site boundaries were drawn by a line that encompassed all the features and artifacts and included the landform occupied. Particularly, site boundaries were drawn in this manner when the landform was important to the use of the site or when the landform forms the border of the distribution of cultural materials.

Enclosure

One of the Tribal representatives who submitted a written report for the survey recommended that, for sites intentionally placed on high knolls or hill tops, the site boundary should extend to the base of the knoll or hill top. The NRC did not use this recommended definition for any of the site boundaries in the Tribal survey report. However, this definition of appropriate site boundaries of sites for which position on a high knoll or hill top is important may be discussed further during consultation for the assessment of effects and development of mitigation.

Avoidance Buffers

Avoidance buffers around sites of Tribal concern were recommended by the two Tribes that submitted written reports following the survey. The Tribes recommended a buffer of 30 m [100 ft] for all sites to prevent collateral and unintentional impacts, including vehicle traffic, heavy equipment turn around areas, and similar impacts. During preliminary consultation with Tribes, the Tribes recommended larger buffers for two sites of major significance. During consultation between August 22, 2013 and October 2013, the Tribes recommended larger buffers on two additional sites of major significance. All of the requested buffers will be discussed during conversations between the Federal agencies, the Tribes, and Strata, concerning what impacts can be avoided and during development of the assessment of effects and development of mitigation. The map provided by Strata in February 2014 and included with the NRC's *Tribal Field Surveys in the Ross Project Area* report provides a convenient starting place for these discussions.

Site 48CK2227

Tribal members of the June Tribal field survey crew showed Site 48CK2227 to the archaeological contractor during the survey. Following the fieldwork, the archaeological contractor discussed the site with the Tribe in order to find out where the Tribe would place the site boundaries. Because the area is large (encompassing approximately 75 acres) and incorporates several previously recorded sites, the archaeological contractor consulted the WYSHPO Cultural Records Office and Cultural Records and determined that the appropriate designation for the site is a district.

Preliminary Information Provided to Strata in August 2013

By emails dated August 22, 2013, and August 26, 2013, the NRC requested that Strata provide information on proposed effects to 17 preliminarily grouped feature locations that the Tribes had located during the May and June 2013 field surveys. Because site boundaries had not yet been defined and the Tribal consultation on site boundaries continued into October 2013, the only map information available in August was the preliminary grouped feature locations that were prepared for consulting with Tribes on establishing site boundaries. These shape files were provided to Strata with file names indicating that the information was "provisional."

During the July and August consultation, the Tribes requested a 30 m [100 ft] buffer to protect all of the sites and a 122 m [400 ft] buffer to protect two sites of major significance. Given these buffers and the Tribes' request to extend the site boundaries at least to a distance of 15 m [50 ft] from the visible site features, the NRC requested that Strata show a buffer around each of the 17 preliminarily grouped feature locations. The buffer included the area associated with the 15 m [50 ft] extended site boundaries proposed by the Tribes as well as the 30 m [100 ft] or

122 m [400 ft] buffer of protection proposed by the Tribes. The requested combined site boundaries and buffers were given to Strata in the file names of each feature or feature cluster (e.g., "TS01_150_ft_avoidance").

Information Provided to Strata in February 2014

By email dated February 13, 2014, the NRC requested that Strata provide a map depicting the Ross Project and the 18 sites that the Tribes had located during the May and June 2013 field surveys. This map was to be included in the NRC's *Tribal Field Surveys in the Ross Project Area* report that was being finalized at the time and that was provided to the Wyoming State Historic Preservation Office by letter dated March 6, 2014.

The shapefiles provided to Strata with the NRC's February 2014 email included Site 48CK2777. The boundary for this site was delineated after the preliminary shape files were provided to Strata in August 2013. The preliminary shape files were provided to Strata in August 2013 so that Strata could inform the NRC if any of the sites could be avoided and, if not, what type of effects were expected. Site 48CK2227 is located outside of the proposed Ross Project ground disturbance area. Therefore, it was not necessary for the NRC to delay requesting site effects information from Strata for the other 17 sites until the 48CK2227 boundary could be defined.

Because the 15 m [50 ft] radius of use had been incorporated into the site boundaries provided to Strata in February 2014, Strata was asked to show a 30 m [100 ft] buffer around these sites as opposed to the 46 m [150 ft] buffer that the NRC requested Strata to show in August 2013. Due to the fact that the 46 m [150 ft] buffer around all single feature locations on the August 2013 preliminary map already took into consideration the 15 m [50 ft] radius of use area and a 30 m [100 ft] buffer, the buffer for single-feature sites shown on the February 2014 final site map should be the same as the buffer shown around a single feature GPS location on the August 2013 preliminary map.

Where site boundaries for larger, multiple-feature sites need to incorporate the 15 m [50 ft] radius of use areas of several features, the final site boundary would differ from the preliminary feature location shape files and there would likely be an increase in the buffer area. For the few sites where the landform is significant to placement of features, such as a knoll top, recognizing that the landform is part of the site boundary would also result in an increase in size of the site compared with the size occupied by the grouped features and the buffer would also increase.