

ATTACHMENT 4

Protocol for Interim Wilderness Boundary Delineation

Signing of Wilderness boundaries is the primary on-the-ground mechanism for informing the public of the location of Wilderness boundaries and the status of roads on the periphery of Wilderness boundaries. Signing allows Bureau Law Enforcement Rangers to enforce the closure of Wilderness Areas to vehicular access. The following protocol provides a consistent, standardized approach to interim boundary delineation in Nevada's Wilderness Areas.

It may be advisable to prioritize boundary segments in order that high use and conflict areas are signed first. The examples of relevant criteria given in Step #1 under Attachment 1 may be useful as references.

Brown, six-foot, barbless Carsonite or Rock Art fiberglass posts will be used for interim delineations of Wilderness boundaries. These posts will be affixed with standard BLM Wilderness decals and/or decals with a red slash through a motor vehicle symbol.

Posts will be placed along boundary segments that are easily definable (e.g., along roads or fence lines, at primary and secondary access points). Distances between posts will vary depending on topography, and the potential for motorized trespass. On-the-ground posting is the responsibility of qualified Bureau employees. Volunteers may be used for the placement of posts under the direct supervision of a qualified Bureau employee.

Prepare an internal GIS field-level work map for each Wilderness Area using precisely the same boundary that appears on the legislative map. Overlay the legislative Wilderness boundary on aerial imagery Digital Orthophoto Quadrangles using GIS, to expedite boundary locations on the ground. USGS 1:24,000 scale hard copy topographic maps, or Digital Raster Graphics used in GIS, may also be useful for this process. Identify "way" access points and other readily identifiable natural and cultural features on legislative Wilderness boundaries to assist with on-the-ground orientation. It may also be helpful to create a GIS shapefile containing coordinate points for post locations along "ambiguous" boundary lines, such as contour lines and toe-of-slope. The coordinates shapefile can be uploaded into a GPS unit and used to navigate as close to the post location as possible.

Place posts on the ground utilizing the GIS legislative map dataset coordinates and Resource Grade GPS units. Acceptable GPS units include Trimble Pro XR (XL), Trimble Geo-Explorer III, and Trimble Geo-CE. GPS equipment users must complete a pre-plan assessment of field conditions prior to leaving the office. This will ensure optimum equipment performance and positional accuracy. Pre-planning includes verifying the position and number of satellites that will be available for the field location, checking the operational status of those satellites, and

assessing atmospheric conditions. This is especially critical when field work is conducted in canyons or narrow valleys, dense vegetative cover, and during times of intense solar flare activity. Pre-planning can be conducted using the Trimble PathFinder Office Quick Plan utility and the U.S. Coast Guard's Notice Advisory to Navstar Users for availability and status of satellites. The Trimble website <http://www.trimble.com/gpsdataresources.html> offers links to GPS resources for pre-planning. In addition, the following GPS requirements must be met:

1. Use Coordinate System: UTM Zone 11 NAD83 meters;
2. Conduct a minimum of ten (10) minutes of phase data collection;
3. Use over-determined 3D (minimum 5 satellites);
4. The Position Dilution of Precision (PDOP) must be ≤ 4 ;
5. Use the factory default setting for Signal to Noise Ratio level (Pro-XL = 6);
6. The antenna height must be accurately measured above ground level (use of a meter stick provides a constant height);
7. If a GeoExplorer is utilized, an external antenna must be employed;
8. Refer to the "State GPS Standard," available from the Geographic Sciences Team in the State Office.

The location and placement of interim boundary posts based on the legislative map boundaries are interim boundaries and may not be legally defensible until the final legal boundary description process is completed. Use prudence if the boundary is in proximity to high use areas, where boundary conflicts are suspected, or if there are potential issues with management of adjacent lands. In such instances, it may be necessary to consider the need for a professional survey. In these cases, the situation must be thoroughly documented and presented to the State Office Chief of the Branch of Geographical Services (Cadastral Survey Section) for evaluation of potential survey needs. Following are some examples of situations where a survey review might be requested:

1. The proposed placement locations for the posts appear to be on privately owned land;
2. The proposed placement locations for the posts conflict with what another agency or local government has posted or fenced for their boundary;
3. Structures, dwellings, or surface disturbances seem to be inside the Wilderness boundary;
4. Where there is manifest uncertainty about the location of the rectangular system of survey which may define the boundary.

With the degree of accuracy possible using acceptable GPS equipment under optimal conditions, and GIS, it is possible that many posts will not have to be moved after legal boundary descriptions and official Wilderness maps are filed with Congressional committees. Use the standard boundary setback distances Congress has traditionally used for setbacks from existing boundary roads (see BLM Handbook H-8560-1), unless some other standard is prescribed in the designation/enabling legislation.

Place posts associated with "closed" routes and ways in the center of the "closed" route or way. If possible, place posts paralleling boundary roads in shrubs or near vegetation to reduce theft and vandalism.

For cherry-stem roads, place a “designated route” or “vehicle access route” post or sign at the beginning of the road. This post or sign should contain information about the actual length of the cherrystem. At the end of the cherrystem, place a standard BLM Wilderness post.

As each post is installed, the location of the post will be collected using the previously specified GPS equipment and requirements. Each post will be assigned a unique alpha-numeric post identification number. The identification number will contain several characters of each word in the title of the Wilderness area followed by a hyphen then a sequential post number. For example, “SMCW-1” could be the identification number for South McCullough Wilderness post number one; “SMCW-2” would be the identification number for post #2, and so on. This identification number, together with the UTM Northing and Easting of the post location captured by the GPS unit, will be placed on the back of the post using a white permanent marking pen. The post location and number will be noted on the GIS field map for reference.

In addition to the post identification number and the location of the post, other specific Wilderness inventory data must be collected for each post. These include the name of the Wilderness, type of GPS equipment used, date, name of the person collecting the information, type of decal used, and any additional comments. Please refer to the “Wilderness Interim Post Data Collection Standard – Points” table on the following page that defines the data to be collected and the required standard format. Collection of this data is most easily accomplished using a standardized data dictionary with the GPS equipment. This will eliminate the need to enter the information later. The tabular data should be exported from GIS as a comma delimited text file and used to create an Excel spreadsheet for sharing and display purposes.

Once the data has been collected using GPS equipment, it must be post processed/differentially corrected to achieve the highest degree of accuracy possible. The point locations and associated data must also be reviewed to eliminate errors. After the data has been verified and exported for use in GIS, metadata must be written to document the dataset. Metadata must accompany the data when it is shared, and updated each time the data is modified. A hard copy of the inventory table, a hard copy of GIS maps, a digital record of the GPS data, digital versions of maps (e.g., plot files, PDF’s, or Jpeg’s), metadata documentation, and other information should be placed in a permanent file for each Wilderness Area.

Wilderness Interim Post Data Collection Standard - Points

<i>Attribute Data Element</i>	Input Width	Output Width	Type
Wld_name	50	50	Character
Post_id_num	15	15	Character
Northing	20	20	Float 5dec
Easting	20	20	Float 5dec
Gps_unit_type	30	30	Character
Date	8	8	Date
Name (DE 2913)	30	30	Character
Decal_type	25	25	Character
Comments	32	32	Character

For all data elements (items) and domain values use first character and proper name capitalization as indicated below.

Wld_name

Attribute Data Element: Wld_name 50 50 C

Description: Wilderness Area Name

Definition: The official name of the Wilderness Area. This standard naming convention is in accordance with the National Landscape Conservation System GIS Boundary Data Standards issued under Instruction Memorandum 2003-021.

Post_id_num

Attribute Data Element: Post_id_num 15 15 C

Description: Post Identification Number

Definition: The alpha-numeric code assigned to an interim boundary post upon installation. The code will contain several characters of each word in the title of the Wilderness Area followed by a hyphen then a sequential post number. For example, "SMCW-1" could be the code for South McCullough Wilderness post number one. This code number will be placed on the back of the post using a white permanent marking pen.

Northing

Attribute Data Element: Northing 20 20 F 5dec

Description: Northing

Definition: The Northing in meters for the point location of the interim Wilderness Area boundary post. The GPS Northing coordinate will be placed on the back of the post using a white permanent marking pen.

