Terrestrial AIM Rejection Criteria Protocol

This protocol has been reviewed by several AIM state and project leads and has been implemented since 2014. Contact Emily Kachergis (ekachergis@blm.gov) with feedback.

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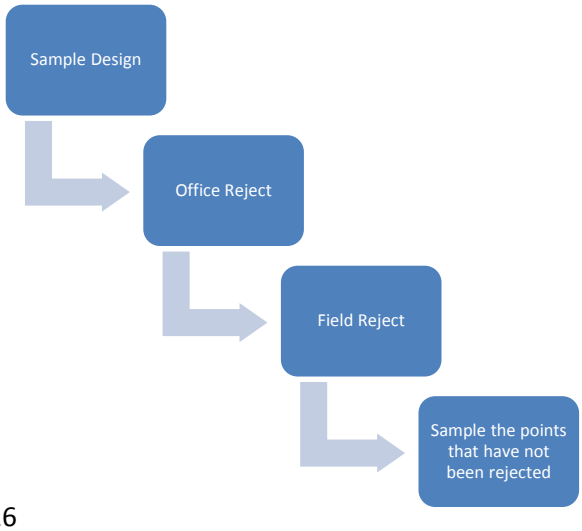
Probabilistic sample designs randomly sample a defined target population. In landscape monitoring, the target population is the study area and each sample point represents a plot. Probabilistic sampling enables us to learn about the entire study area because every point in the study area had a greater-than-zero probability of being sampled.

Three outcomes are possible for each sample point that is drawn for the study area. First, ideally, data are collected at the sample point. Second, the sample point is found to be outside of the target population (e.g., not on BLM land) and the point and its associated area are removed from the study area and target population. Third, data are not collected at the sample point for a particular reason (e.g., safety). This last option is called *non-response* and methods of *imputation* allow us to make inferences about this unknown sample location in some instances.

Rejection criteria set thresholds for failing to sample a point and clearly define the reasons for sample point rejection. Rejection criteria preserve statistical inference while also maximizing efficiency and promoting safety during field sampling. Rejection criteria must be carefully considered because they limit the inferences that can be drawn from the data. For example, if all plots on slopes greater than 50% are rejected, then the monitoring data only tell you about resource status on slopes less than 50%.

By following this exact protocol to determine whether to sample or not sample a randomly selected point, the unbiased nature of the sample design is preserved. Sample points should be reviewed against rejection criteria in the office using ancillary data sources (e.g., ownership maps, topographic maps, and aerial or satellite imagery) and the same GIS data used during sample design. If a point is accepted in the office, the field sampling team should review the rejection criteria again once they have arrived at the point in the field. If a point is rejected, it is important to document the reason(s) for rejection as this information is incorporated into data analysis. Make every effort to avoid rejecting a point, including evaluating if a plot could be moved in the field to keep it in the sample.



Updated 12/28/2016

Office Rejection Criteria: A sample point is <u>rejected</u> only if one of the following is true AND moving the plot in the field (see moving protocol below) would not prevent rejection:

- ☐ Sample point is unsafe to sample
  *Comments*_____
- ☐ Sample point is >3 miles walking distance from the closest point accessible by a vehicle
  *Comments*_____
- ☐ Sample point falls on non-BLM land
  *Comments*_____
- ☐ Slope of sample point exceeds 50%
  *Comments*_____
- ☐ Access to the point was denied
  - Access route unsafe
  - Access required passage through non-BLM land, access was denied
    - Owner contacted on _____
  - Locked gate
  - Access denied but visit rescheduled for _____
- ☐ (Optional, determined by the monitoring objectives) The sample point transect crosses a boundary between different management units (e.g., in an allotment-scale monitoring project, the sample point intersects two allotments)
  *Comments*_____
- ☐ (Optional, only recommended if forested areas are already covered by a monitoring effort) Plot center (point), and at least a one acre area contiguous to the plot center, has canopy cover of woody vegetation of greater than 25%. Pinyon-juniper should not be excluded from sampling using this criteria.
- ☐ *Comments*_____

Field Rejection Criteria: A sample point is <u>rejected</u> only if:

- ☐ Sample point is unsafe to sample (e.g., unstable soil surface, cliffs, hazardous wildlife, law enforcement concerns)
  *Comments*_____
- ☐ Sample point is >3 miles walking distance from the closest point accessible by a vehicle
  *Comments*_____
- ☐ Slope of sample point exceeds 50%
  *Comments*_____
- ☐ Sample point transect intersects a **road** or **primitive road** (see definition below)
  *Comments*_____
- ☐ (Optional, determined by the monitoring objectives) Sample point transect intersects wetland, riparian or aquatic feature (see definition below)
  *Comments*_____

☐ Access to the point was denied
- Access route unsafe
- Access required passage through non-BLM land, access was denied
  - Owner contacted on _____
- Locked gate
- Access denied but visit rescheduled for _____

If initial point is rejected but a short move might prevent rejection, follow this procedure to shift the pot center. (Note: only move plots in the field. Do not adjust the plot location in GIS.)

From the original plot center point, move 50 m North (0 degrees). With this location as the center of a new potential plot, evaluate the rejection criteria. If the new plot is not rejected, sample that plot. If it is rejected, move 50 m East (90 degrees) of the original plot center point and evaluate the rejection criteria again. Each time the new plot is rejected, repeat for the remaining cardinal directions--South (180 degrees) then West (270 degrees). If 50 m in all 4 cardinal directions of the original plot center point are rejected, reject the plot. If one of the new locations is accepted as the new plot center, the crew must verify that the plot is still in the study area (BLM land, allotment, etc.) Also, record the reason for the original rejection, this procedure and the outcome in your plot notes.

Ecological Sites

Due to different circumstances in different BLM Districts and Field Offices, we have developed the following key to help you decide how to treat plots that may cross an ecological site boundary. The decision is best made at a broad scale (e.g., within a District or State) to facilitate combining monitoring data to answer multiple questions at multiple scales.

1A. Your study area does not have ecological site information for the entire study area (e.g., ecological sites are available for less than 90% of the study area): **Option A.**

> **Option A** (Default, Recommended): Do not reject plots that may cross an ecological site boundary. However, if you observe a possible ecological site boundary, DO note the location on the transect(s) where you think the boundary is, so that this information is preserved. Without Ecological Site Descriptions that detail specific criteria for identifying which site you are on, there is no repeatable way of determining when an ecological site boundary has been crossed. Also, many applications of monitoring data do not require ecological site information.

1B. Your study area does have ecological site information for the entire study area: Go to 2.

2A. Your monitoring objectives are not ecological site specific (e.g., sage grouse habitat monitoring) OR they are a mix: **Option A.** Remember, you can always split a single plot's data out by ecological site if you record the location along each transect where the transition occurs.

2B. *All* of your monitoring objectives are ecological site specific (e.g., treatment effectiveness monitoring):

Option B: Reject plots that cross ecological site boundaries. Use Ecological Site Descriptions to determine specific criteria for identifying which site you are on, and document those criteria for each rejection.

Note that rejection or moving of plots that fall wholly within a non-target stratum (e.g., ecological site) is not a part of this standard AIM protocol.

Project-Specific Rejection Criteria

Depending on the management objectives, monitoring objectives, and sample design, additional rejection criteria may be warranted. For instance, in treatment effectiveness monitoring it would be appropriate to reject a point if it does not fall within the target treatment. Be sure to clearly describe your rejection criteria to eliminate bias. *Please approve additional plot rejection criteria with Emily Kachergis (ekachergis@blm.gov) at the BLM National Operations Center.*

Definitions

Road (from BLM Tech Note 422; http://www.blm.gov/nstc/library/pdf/TN422.pdf):

- *Road*: A linear route declared a road by the owner, managed for use by low-clearance vehicles having four or more wheels, and maintained for regular and continuous use. An AIM plot may not intersect a road.
- *Primitive Road*: A linear route managed for use by four-wheel drive or high clearance vehicles. Primitive roads do not normally meet any BLM road design standards. An AIM plot may not intersect a primitive road.
- *Trail*: A linear route managed for human-powered, stock, or off-highway vehicle forms of transportation or for historical or heritage values. Trails are not generally managed for use by four-wheel drive or high-clearance vehicles. An AIM plot may intersect a trail.

Riparian/Wetland (from Army Corps of Engineers;
http://el.erdc.usace.army.mil/elpubs/pdf/wlman87.pdf)

Note: The following definition is for your reference. Whether wetland areas are sampled within a monitoring program depends on monitoring objectives. For the purposes of terrestrial AIM monitoring, a quick, visual inspection of the vegetation and hydrology of the area is sufficient to determine whether or not the plot meets the criteria. This is not wetland delineation—please do not dig multiple soil pits to determine extent of hydric soils. Most ephemeral washes will not meet wetland criteria and should be sampled. This is because ephemeral washes only run in response to precipitation events and are not usually tied to the groundwater table. Therefore, they do not support riparian vegetation because the water is not there long enough to support hydric species. They should be sampled with upland monitoring efforts because they will have similar species. Perennial, intermittent, and interrupted systems do tend to have water long enough or frequent enough to support hydric plants.

The following definition, diagnostic environmental characteristics, and technical approach comprise a guideline for the identification and delineation of wetlands. Whether wetlands are sampled within a monitoring program depends on the monitoring objectives.

a) *Definition.* The CE (Federal Register 1982) and the EPA (Federal Register 1980) jointly define wetlands as: Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

b) *Diagnostic environmental characteristics.* Wetlands have the following general diagnostic environmental characteristics:

   (1) **Vegetation.** The prevalent vegetation consists of macrophytes that are typically adapted to areas having hydrologic and soil conditions described in a above. Hydrophytic species, due to morphological, physiological, and/or reproductive adaptation(s), have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions. Indicators of vegetation associated with wetlands are listed in paragraph 35.

   (2) **Soil.** Soils are present and have been classified as hydric, or they possess characteristics that are associated with reducing soil conditions. Indicators of soils developed under reducing conditions are listed in paragraphs 44 and 45.

(3) **Hydrology.** The area is inundated either permanently or periodically at mean water depths 6.6 ft, or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation. Indicators of hydrologic conditions that occur in wetlands are listed in paragraph 49.

c) *Technical approach for the identification and delineation of wetlands.* Except in certain situations defined in this manual, evidence of a minimum of one positive wetland indicator from each parameter (hydrology, soil, and vegetation) must be found in order to make a positive wetland determination.