

Gallatin Forest Soil Assessment and Monitoring Methods
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Here is a description showing the flow of soil assessment and monitoring. This work flow can help us determine the scope of soil scientist involvement, soil monitoring priorities, and restoration priorities for various harvest scenarios during an EA or EIS process.

An Activity Area (AA) is a harvest unit. This includes proposed temporary roads and landings, whether in or outside of the harvest unit. It specifically *does not* include system roads. It should show where and how harvesting will occur.

Analysis Units are not AA's. They tend to be larger, more conceptual units, and have greater variability than Activity Areas. They may not have specified harvest methods, or may have multiple harvest methods. They generally do not have enough specificity to trigger a soil "monitoring" event, but can trigger an "assessment".

"Restoration" is a planned measure to improve soil productivity on a previously disturbed site.

"Assessment" means a review to determine best harvest methods, soil limitations, and evidence of previous disturbance. The Assessment could either be:

- 1) an on-the-ground traverse of each Activity Areas or Analysis Units where ground-based methods are proposed, This also can include review of TSMRS and aerial photos, or
- 2) review of TSMRS and aerial photos for AA's or Analysis Units where skyline or helicopter methods are planned.

All AA's and Analysis Units get an Assessment. Not all AA's get the formal monitoring process. Analysis Units do not get the formal monitoring process, if they do not have sufficient detail (they may have multiple harvest methods and un-specified locations). However, the flow chart can still be followed based on the Assessment for estimation of restoration needs and potential for meeting Regional Soil Quality Standards.

"Monitoring" means using the Region One Soil Quality Protocol for formal statistical evaluation of levels of detrimental soil disturbance.

The following flow chart shows the process of assessment and monitoring. This process should enable us to meet the Regional Soil Quality Standards.

I. If there is evidence that there is previous disturbance in the AA , based on the Assessment-

A. If use only *system* roads --> No pre-harvest or post-harvest monitoring needed. -
Restoration is optional but beneficial.

This is because no activity is planned in Activity Areas. I do not need to do monitoring.

B. If use *only* old skid roads and landings --> I need to do pre-harvest monitoring and post-harvest monitoring -- *Restoration is optional but beneficial.*

This is because no new disturbance is planned. I still need to do monitoring. There must be a planned way of doing this, not just the statement that "we will".

C. If use any other method (including winter logging) where activity is off old skid roads and landings --> I need to do pre-harvest monitoring and post-harvest monitoring

If total disturbance (previous harvest plus predicted project disturbance) is greater than 15%, - *Restoration is needed*

If total disturbance (previous harvest plus predicted project disturbance) is less than or equal to 15%, - *Restoration is optional but beneficial*

II. If there is evidence that there is *no* previous disturbance in the AA, based on the Assessment-

D. If use only *system* roads --> *No* pre-harvest or post-harvest monitoring needed. - *Restoration is optional but beneficial.*

This is because no activity is planned in the AA. I do not need to do monitoring.

E. If use any method (including winter logging) that has greater than 15% detrimental disturbance--> I need to do only post-harvest monitoring - *Restoration is needed*

This is because new disturbance will occur and is over 15%. I need to do monitoring.

F. If use any method (including winter logging) that has less than 15% detrimental disturbance--> I need to do only post-harvest monitoring - *No restoration is needed*

This is because new disturbance will occur and is less than 15%. I need to do monitoring.