

# Flathead National Forest Plan

## Soils Monitoring Guide and Evaluation of Results (MON-SOIL)

### *Point of Contact:*

Forest Soils Scientist: Derek Milner

### *Introduction*

This document provides the instructions and information needed to address the forest plan monitoring items associated with soil productivity. The monitoring items included in this document are listed below:

Monitoring Item and Question (Chapter 5 of Flathead Forest Plan)
<b>MON-SOIL-01:</b> To what extent are vegetation management activities not causing irreversible damage to soil conditions?
<b>MON-SOIL-02:</b> How many miles of temporary road are constructed and rehabilitated?

### *Purpose and Outline of this Document*

Each individual monitoring item in the Forest Plan monitoring program (Chapter 5 of the Plan) has been addressed in a document such as this one, which is intended to serve as the primary location for information needed to conduct the monitoring and to record the results. It is designed to aid in the tracking and preservation of monitoring methods, data and results over the life of the plan. It is anticipated that these documents would be revisited and used as a guide to conduct the monitoring for each biennial reporting; to see past results and record new results; and updated where needed based on recommendations for change in the previous biennial report.

This document is **NOT** the final Biennial Monitoring Evaluation Report (MER), but it should contain most if not all the information needed to prepare that report, and functions as project record material for the biennial MER.

Each monitoring item in this document is organized into five main sections:

- **Introduction:** Key information from the monitoring plan (i.e. indicators, plan component being monitored, data source/collection)
- **Methods:** Detailed information on how the monitoring will be accomplished, the intent of the selected indicators, data sources and confidence levels, etc.
- **Results:** Summary of the monitoring data used and the results for the current biennial monitoring report.
- **Discussion of Results:** A fact-based discussion of results. Potential questions are provided to help frame the discussion.
- **Evaluation of Results for Adaptive Management Finding:** evaluation of what the results mean in terms of management decisions. This information is incorporated into the Biennial Monitoring Evaluation Report.

## SOILS MONITORING (MON-SOIL)

### MON-SOIL-01. To what extent are vegetation management activities not causing irreversible damage to soil conditions?

#### Introduction

The desired condition FW-DC-SOIL-01 states “Soil function and long-term productivity is conserved.” Productivity is maintained by establishing soil quality standards and guidelines.

The forest plan component being monitored for consistency is FW-STD-SOIL-01, which states “Vegetation management activities do not create detrimental soil conditions on more than 15 percent of an activity area. In activity areas where less than 15 percent detrimental soil conditions exist from prior activities, the cumulative detrimental effect of the current condition and proposed activity must not exceed 15 percent following project implementation and restoration. In areas where more than 15 percent detrimental soil conditions exist from prior activities, the effects from project implementation and restoration must address currently impaired soil functions to improve the long-term soil condition.”

**Table 1. MON-SOIL-01 plan components, indicators, data source, collection interval and point of contact**

Plan Component(s)	Indicator(s)	Data Source / Partner	Data collection interval	Point of Contact
FW-DC-SOIL-01 FW-STD-SOIL-01	IND-SOIL-01: Number of harvest units surveyed and percent that meet the soil quality standard post-harvest	R1 Biennial Soils Report	Annually	Forest soil scientist

#### Methods

This monitoring would occur on sales where project level decisions have been made since the adoption of the plan (November 2018), and where there has been harvest activities conducted on the ground based on those decisions. Post-harvest field inventory of a sample of harvest units is conducted annually to assess impacts to soils from harvest activities. Units are typically selected at random, but in some cases there is a desire to target specific units to verify the efficacy of soil design features. Detailed protocol for monitoring of forest soil disturbance is provided by USDA Forest Service General Technical Reports WO-82a and WO-82b, published in 2009 (Page-Dumroese, Deborah; Anne M. Abbott, and Thomas M. Rice. Forest Soil Disturbance Monitoring Protocol, Volumes 1 and 2).

#### Results

**Table 2: Monitoring results for MON-SOIL-01, Harvest treatment consistency with soil quality standard**

Indicator	Monitoring date and data results		
	2021		
IND-SOIL-01: Number of harvest units surveyed and percent that meet the soil quality standard post-harvest	No data – Veg Mgmt projects with decisions since adoption of the plan are not yet completed on the ground, and/or have not yet been surveyed		

**Discussion of Results**

- *Are the treatment prescriptions meeting anticipated results in terms of soil disturbance? Results are used to verify success in protecting long-term soil productivity and also to feed the results into the long-term monitoring data set to improve future predictions of treatment disturbances in our project analyses.*

The vegetation mgmt. projects that have had decisions since adoption of the plan (decisions in 2019 or 2020) are the following: Taylor Hellroaring; Crystal Cedar; Salish Good, and Hellroaring Basin Improvements Project (Whitefish Mountain ski area improvements).

These projects are still progressing and not fully completed on the ground; no surveys have yet been completed and no results are available to report for this monitoring cycle. Results will likely be available to report in the next monitoring cycle.

**Evaluation of Results for Adaptive Management Finding**

The following findings and recommendations resulted from the evaluation of monitoring results as documented above.

**Table 3. Summary of Findings for Monitoring Item MON-SOIL-01**

<b>1. Plan Monitoring Results:</b> Does the monitoring question and indicator(s) provide the information necessary to understand the status of the associated plan component listed above?
YES –
Recommendations – NA
<b>2. Plan Implementation Status <sup>1</sup>:</b> Do monitoring results demonstrate progress of the associated plan components for this monitoring item?
UNCERTAIN. (B) – No data yet. More time/data are needed to understand status or progress of the Plan Component
<b>Recommendation</b> – NA
<b>3. Type of change under consideration <sup>2</sup>:</b> If corrective action/change was indicated under either #1 or #2, <u>where</u> might that change might be needed?
NA

<sup>1</sup> **PLAN IMPLEMENTATION STATUS:** (A) **Uncertain** - Availability of data or Interval of data collection beyond this reporting cycle (*indicate date of next time this monitoring item will be evaluated*); (B) **Uncertain** - More time/data are needed to understand status or progress of the plan component(s); (C) **Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s) (D) **NO** - Implementation of plan component(s) ARE NOT trending, progressing, and/or conducted as desired; (E) **YES** - Implementation of plan component(s) ARE trending, progressing, and/or conducted as desired

<sup>2</sup> **CHOICES for where change may be needed include:** Monitoring program, plan component, management activity, plan assessment, program strategy or approaches documents, public engagement strategy

## MON-SOIL-02. How many miles of temporary road are constructed and rehabilitated?

### Introduction

The desired condition (FW-DC-SOIL-01) is to “Conserve function and long-term productivity of soils.” Productivity is maintained by establishing soil quality standards and guidelines. FW-STD-SOIL-03 states “Soil function shall be restored on temporary roads (and decommissioned road prisms used as temporary roads) when management activities that use these roads are completed. Restoration treatments shall be based on site characteristics and methods that have been demonstrated to measurably improve soil productivity.” MON-SOIL-02 addresses the consistency of management activities involving temporary roads with this standard.

**Table 4. MON-SOIL-02 plan components, indicators, data source, collection interval and point of contact**

Plan Components	Indicator	Data source/partner	Data collection interval	Responsible person
FW-DC-SOIL-01 FW-STD-SOIL-03	IND-SOIL-02. Miles of temporary roads constructed IND-SOIL-03. Miles of temporary roads rehabilitated	Sale admin notes and contracts gPAS - Instructions to acquire data summary	Biennial	Primary: Soil scientist Secondary: Timber sale administrators

### Methods

This monitoring would occur on sales where project level decisions have been made since the adoption of the plan (December 2018), and where there has been harvest activities conducted on the ground based on these decisions. Sale administration notes would be used to determine status of temporary road construction activities. If any such activities have occurred during the monitoring period (previous 2 years, since the last monitoring report), then the miles of temporary roads constructed or rehabilitated would be recorded. Field review of a subset of rehabilitated temporary roads may occur if determined needed, which would provide data on whether rehab activities were conducted as planned and achieved desired results.

### Results

The vegetation mgmt. projects that have had decisions since adoption of the plan (decisions in 2019 or 2020) are the following: Taylor Hellroaring; Crystal Cedar; Salish Good, and Hellroaring Basin Improvements Project (Whitefish Mountain ski area improvements).

**Table 5: Monitoring results for MON-SOIL-02, Miles of temporary roads constructed or rehabilitated**

Indicator	Monitoring date and results		
	2021	2023	
IND-SOIL-02. Miles of temporary roads constructed	Holbrook Unit 44C; 1000 ft, constructed 8/25/2020		
IND-SOIL-03. Miles of temporary roads rehabilitated	Holbrook Unit 44C; 1000 ft, rehab 10/13/2020		

**Discussion of Results**

- *Are temporary road construction/rehab activities meeting anticipated results in terms of soil conditions?*

Road rehabilitation for the temporary road in Holbrook Unit 44C was designed to be consistent with FW-STD-SOIL-03. Field review to confirm results will occur in the spring – too late for documentation in this monitoring cycle. Results will be documented in the next monitoring cycle.

**Evaluation of Results for Adaptive Management Finding**

The following findings and recommendations resulted from the evaluation of monitoring results as documented above.

**Table 6. Summary of Findings for Monitoring Item MON-SOIL-02**

<b>1. Plan Monitoring Results</b> Does the monitoring question and indicator(s) provide the information necessary to understand the status of the associated plan component listed above?
YES –. With minor edit to monitoring question
Recommendations –rewrite of monitoring question to clarify purpose for why we are tracking miles of temporary road constructed/rehabilitated. Change to “ <b>How many miles of temporary road are constructed and rehabilitated, and was soil function successfully restored as a result?</b> ”
<b>2. Plan Implementation Status</b> <sup>1</sup> : Do monitoring results demonstrate progress of the associated plan components for with this monitoring item?
UNCERTAIN. (B) No data yet. More time/data are needed to understand status or progress of the Plan Component. Rehabilitation results will be available in the FY23 reporting cycle
<b>Recommendation</b> – NA
<b>3. Type of change under consideration</b> <sup>2</sup> : If corrective action/change was indicated under either #1 or #2, <u>where</u> might that change might be needed?
Forest Plan Monitoring Program –

<sup>1</sup> **PLAN IMPLEMENTATION STATUS:** (A) **Uncertain** - Availability of data or Interval of data collection beyond this reporting cycle (*indicate date of next time this monitoring item will be evaluated*); (B) **Uncertain** - More time/data are needed to understand status or progress of the plan component(s); (C) **Uncertain** - Methods inadequate to assess the status or progress toward achieving plan component(s). (D) **NO** - Implementation of plan component(s) ARE NOT trending, progressing, and/or conducted as desired; (E) **YES** - Implementation of plan component(s) ARE trending, progressing, and/or conducted as desired

<sup>2</sup> **CHOICES for where change may be needed include:** Monitoring program, plan component, management activity, plan assessment, program strategy or approaches documents, public engagement strategy