WALLOWA WHITMAN FOREST COLLABORATIVE MULTIPARTY MONITORING STATUS REPORT

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Introduction

By explicitly addressing stakeholder questions and concerns about forest restoration, multiparty monitoring can allow controversial projects to move forward with the understanding that undesirable effects will be identified and addressed. Multiparty monitoring has been shown to support an increased rate and scale of restoration work when stakeholders observe that best management practices are being followed and concerns about negative effects are not being realized.

At meetings in winter and spring 2015, the Wallowa Whitman Forest Collaborative (WWFC) monitoring subcommittee identified two primary monitoring goals for the collaborative: 1) to build trust and social agreement and 2) to inform adaptive management.

This report is organized around the four types of monitoring proposed by the subcommittee: project implementation, project outcomes, the functioning of the collaborative group itself, and landscape-level indicators of social, economic, and ecological resilience. Each section includes a description of the type of monitoring, how it will address the groups monitoring goals, proposed monitoring questions, and next steps for selecting monitoring questions and developing monitoring protocols.

Contents

WWFC monitoring goals and types of monitoring

At meetings in winter and spring 2015, the WWFC monitoring subcommittee identified two primary reasons for the Collaborative to engage in monitoring:

1. To build trust and social agreement through mutual learning
2. To inform adaptive management by providing feedback on project activities and outcomes

The subcommittee plans to address these goals through four kinds of monitoring:

Project implementation monitoring – tracking whether projects are being implemented in accordance with plans and prescriptions

Project outcome monitoring – comparing conditions before and after treatment to determine how well desired results are being achieved

Collaboration functionality monitoring – tracking how well the collaborative group is functioning and making progress toward its mission and goals

Landscape-scale monitoring – tracking trends in indicators of social, economic, and ecological resilience to strengthen WWFC members' common understanding of the group's mission and provide a context for future project planning

General principles

The subcommittee also discussed some general principles they bring to monitoring:

Use monitoring to learn, not for performance evaluation. Monitoring should be used not to point fingers but to learn and apply that learning to future actions.

Be respectful of others' perspectives and open to new learning. In order to learn from monitoring, participants must be willing to question their assumptions about established practices and expected outcomes of restoration activities.

Capture and use feedback on what's working as well as what's not working. Monitoring should track successes as well as areas needing improvement or adjustment. Monitoring data can be a rich source of information for telling the WWFC and forest restoration story.

Focus monitoring on areas of concern or controversy. It is not necessary or desirable to monitor every treatment. Monitoring is most useful when focused on experimental activities or activities that are outside of some people's comfort zone. For the WWFC, priorities for monitoring include treatments in riparian areas, large and old structure forest stands, and cool moist mixed conifer forest type.

Use a multiparty process to select monitoring questions and interpret monitoring results. Data collection and analysis are often more efficient and reliable when they are conducted by subject matter experts. However, for the purposes of building trust and social agreement as well as informing adaptive

management, monitoring questions should be developed and analyzed results reviewed through a multiparty process involving Forest Service decisionmakers and collaborative group members working together to reach a common understanding.

Use an appropriate level of rigor. In most cases, monitoring data does not require research-level experimental design and methodological rigor.

Be prepared to adapt based on monitoring results. Some monitoring results, including many ecological outcomes of project activities, may not be evident for a year or even several years after actions have been taken. In other cases, monitoring results provide immediate feedback that can be used to make mid-stream changes. When there is agreement on monitoring results and the reasons for those results, there is no need to wait for monitoring results from several different treatments or projects before taking action based on what has been learned.

Criteria for selecting monitoring questions and indicators

This document represents the first step toward developing a monitoring plan for the Wallowa Whitman Forest Collaborative – identifying proposed monitoring questions. The WWFC monitoring subcommittee discussed using the following criteria to select monitoring questions and indicators.

Useful

- Does the question address an issue of high consequence to WWFC members?
- Will answering this question inform future planning and/or management actions?
- Will answering this question help build trust and agreement?
- Is this something the WWFC can affect through its projects or group process?

Feasible

- Can the question be reliably answered using available methods?
- Can the question be answered using existing WWFC resources (people, time, and money)?
- Can the question be answered with data available from other sources?
- Does WWFC have access to the resources necessary to answer the question?

Appropriate scale

- Will change be measurable at the spatial scale of the question?
- Will change be evident soon enough to provide useful feedback?

Project implementation monitoring

Project implementation monitoring tracks whether projects are being completed as expected. The Forest Service conducts some implementation monitoring by inspecting units during and after marking and treatment. The WWFC's implementation monitoring would build on the Forest Service's implementation monitoring through qualitative multiparty field reviews of selected treatment units.

The WWFC's primary purpose for conducting implementation monitoring is to build trust in and a common understanding of restoration practices and effects. Collaborative groups often report that the best learning happens during discussions in the field among Forest Service resource specialists, planners, and decisionmakers; contractors; and other collaborative group members. In addition, lessons learned through project implementation monitoring may be used to improve future project implementation.

Proposed implementation monitoring questions

1. Did the treatment follow prescriptions and contract specifications? If not, why not?
2. Were there unanticipated effects? If so, what?
3. Have all parts of the project been implemented? If not, which parts have not been implemented and why?
4. Is the stated project purpose being achieved?

Proposed implementation monitoring method

The subcommittee discussed using multiparty field reviews as WWFC's primary implementation monitoring method. Multiparty field reviews involve agency resource specialists and decisionmakers as well as collaborative group members representing different stakeholder interests collectively comparing conditions at treated project sites to what was planned and anticipated. Field review sites are selected to be representative of the project's ecological conditions and treatment types.

Multiparty field reviews typically focus on project implementation (e.g., Is marking hitting prescription targets? Are mitigation measures being followed? Is implementation proceeding as expected? Who did the work, and how was it paid for?). However, discussions can be wide-ranging and allow for observation and recording of unanticipated outcomes. The discussions may be informed by contractor observations, sales administrator's records, pre-treatment photographs, and other data. Through discussion, participants identify what they perceive to be working well and areas needing improvement and may make recommendations for continued or future work based on their collective assessment.

Unless projects are quite small, multiparty field reviews will only cover a small portion of the overall project area. Therefore, care should be taken when drawing conclusions and extrapolating results to similar activities and sites.

Implementation monitoring - next steps

Field reviews should be structured around pre-set questions about desired project activities and outcomes. Discussion points, and particularly areas of agreement, should be recorded so they can be referenced later and, where appropriate, used to inform future project implementation.

Appendices I, II, and III provide three examples of multiparty monitoring field review forms used by other collaborative forest restoration groups. The Blue Mountains Forest Partners (BMFP) and Deschutes Forest Collaborative Project (DCFP) both base their multiparty monitoring field review discussions on questions about project purpose, need, and proposed actions drawn from NEPA documents, silvicultural prescriptions, and collaborative group recommendations. The Bankhead Liaison Panel (BLP) uses a standardized checklist to evaluate site conditions, rather than linking questions to project specifications. BLP also visits sites both pre- and post-treatment and uses photopoints to inform their discussions. All three groups use facilitators to guide group discussions and record collective observations. The WWFC monitoring subcommittee can use the examples in the Appendices to review and revise their proposed monitoring questions and develop a process for structuring and recording field reviews.

Project outcome monitoring

Project outcome monitoring tracks change in conditions that may be affected by project activities. The WWFC monitoring subcommittee developed the following list of monitoring questions that are important to members of the collaborative. The subcommittee also identified possible indicators – variables that could be measured before and after project activities take place to answer the monitoring question. This list is intended to be used as a checklist to guide selection of project-specific monitoring questions and indicators. Some of the questions and indicators below will be relevant to most projects and sites, and some will apply only to specific locations or project activities. To inform adaptive management, project-specific monitoring questions and indicators should tier to a desired outcome or potential undesirable outcome of the project.

In addition to providing feedback for adaptive management, project outcome monitoring builds trust and social agreement by answering collaborative group members' questions about potential project effects.

Proposed project outcome monitoring questions

1. What are the project's effects on local economies?
   Possible indictors:
   - Employment for local individuals and businesses
   - Merchantable wood supply to local wood products processing facilities
   - Contracting mechanism used and dollars contributed to local counties
   - Contractor's county of residence

2. What are the project's effects on wildfire conditions?
   Possible indicators:
   - Fire condition class
   - Fire behavior model outputs (flame lengths, crown fire potential, etc.)
   - Fuel loads (ground and ladder)

3. What are the project's effects on forest structure and composition?
   Changes in forest structure and composition are of particular interest in underrepresented vegetation types including hardwood communities, riparian communities, shrub communities, late and old structure, understory plant communities, and cool moist mixed conifer forest types.
   Possible indicators:
   - Species composition
   - Stem density or basal area
   - Cover or canopy closure
   - Dead & down wood
   - Structural complexity

4. What are the project's effects on wildlife habitat?
   Species of interest will depend on project location and project activities. Specific indicators usually will be key habitat elements for selected species and may include some of the indicators of forest structure and composition listed above.
   Possible indicators:
   - Threatened and endangered species habitat attributes
   - Management indicator species habitat attributes
   - Habitat attributes for "habitat limited" species (wolverines, wolves, lynx, etc.)

5. What are the project's effects on aquatic conditions?
   Possible indicators:
   - Shading
   - Water temperature
   - Streambank stability or erosion
   - Sedimentation, especially during pulse events
   - Key aquatic habitat elements (e.g. large woody debris, pools, cover, etc.)
   - Aquatic habitat connectivity

6. What are the project's effects on domestic and wild ungulate activity?
   Possible indicators:
   - Ungulate sign (deer, elk, cattle)

7. What are the project's effects on water retention?
   Possible indicators:
   - Snowpack retention
   - Soil water storage
   - Pools, stream channel morphology

8. What are the project's effects on soils?
   Possible indicators:
   - Stability/erosion
   - Compaction
   - Coarse woody debris retention (which affects nutrient cycling and long-term productivity)
   - Fire effects (e.g., organic matter, hydrophobicity)

9. What are the project's effects on public access?
   Possible indicators:
   - Trails (open, closed, etc.)
   - Roads (open, closed, motorized, non-motorized, etc.)

Project outcome monitoring - next steps

To identify project-specific monitoring questions and develop an outcome monitoring plan:

1. Review project documents to determine which of the proposed outcome monitoring questions are relevant and important to monitor.
2. Meet with subject matter experts and review secondary data sources to identify available resources for answering each question. (What is already being measured in the project area? What baseline data already exist? What are feasible and accepted monitoring indicators and methods? Who has the capacity to gather and analyze the monitoring data?)
3. For each monitoring question selected, discuss the level of methodological rigor needed to answer the question to the satisfaction of the WWFC.
4. Develop a monitoring protocol for each question that describes:
    - The specific question to be answered
    - The monitoring indicators and methods that will be used
    - The sampling design (when and where data will be gathered)
    - Parties responsible for data collection, data analysis, and data management
    - How much the monitoring will cost and how it will be paid for

For example, for the Lower Joseph Creek Restoration Project, the subcommittee could begin by reviewing the Lower Joseph Creek Restoration Project EIS to determine which monitoring questions are important to this project. Then, for each selected monitoring question, review the Lower Joseph Creek Watershed Assessment and resource specialists reports and work with subject matter experts to identify existing baseline data, recommended monitoring indicators and methods for each selected question and individuals or organizations with the capacity to do the data collection and analysis.

Collaboration functionality monitoring

Monitoring the functioning of the collaborative group itself will help the WWFC evaluate levels of trust and social agreement and identify aspects of the group process that are helping or impeding progress toward goals.

Proposed collaboration functionality monitoring questions

The WWFC monitoring subcommittee identified the following questions about the functioning of the collaborative group.

1. Is the collaborative group representative of the full range of public interests?
2. How effective is communication (among members, between the Forest Service and other stakeholders, between the collaborative group and the public/media…)?
3. What are the changes in level of trust (among stakeholders, between the Forest Service and collaborative group members, …)?
4. What are the changes in level of agreement (among collaborative group members, between the Forest Service and stakeholder groups, ...)?
5. How effective are the group's structure and administration?
6. How much progress has been made toward stated goals?

Proposed collaboration functionality monitoring methods

Collaborative group functioning is monitored using surveys, interviews, or focus groups to gather opinions of people knowledgeable about the collaborative. If the same individuals are asked to periodically provide their opinions on the same set of factors, for instance by completing an annual survey, the results can be used to track changes in the collaboration functionality as well as identify opportunities for improvement. The WWFC plans to use survey and interview methods in 2015 to measure collaborative group functionality.

Alyssa Cudmore, a graduate student at the University of Michigan and intern at Wallowa Resources and Sustainable Northwest, has drafted specific survey and interview questions and will administer the survey and interviews.

Collaboration functionality monitoring -next steps

1. Finalize interview and survey questions.
2. Agree on sampling design and sampling schedule (i.e., who will be interviewed, who will be surveyed, and how often will these be repeated?).
3. Administer the interview and survey and analyze results.
4. Convene a multiparty meeting to review and interpret survey and interview results and discuss implications, including any recommendations for adapting WWFC functions.
5. Identify parties responsible for data management (i.e., who will store the monitoring results?).

Landscape-level resilience monitoring

WWFC monitoring subcommittee members are interested in tracking indicators of social, economic, and ecological resilience at the landscape scale to provide a context for the work of the collaborative. Most WWFC projects will not be large enough to have measurable effects on landscape-level conditions. However, identifying and measuring landscape-scale indicators of resilience will make the collaborative's mission more tangible and build mutual understanding of and agreement on the group's mission and goals. Establishing and tracking these indicators also will allow the WWFC to determine whether projects are being designed to meet the collaborative group's goals for ecological, social, and economic resilience.

Proposed resilience monitoring questions

Subcommittee members began drafting resilience monitoring questions in spring 2015. Their draft monitoring questions with rationales for answering each are provided in Appendices IV-VI. Paraphrased, they include the following

Ecological resilience monitoring questions

1. What are the trends in vegetation types, structure and composition, and spatial pattern across the landscape?
2. What are the trends in risk of (e.g., modeled response to) disturbance, such as large wildfire and insect outbreaks?
3. What are the trends in wildlife habitat conditions?

Social resilience monitoring questions

1. What are the trends in social capital (the ability and willingness of local communities to mobilize in response to opportunities or needs?)
2. What are demographic and land ownership trends in northeastern Oregon counties?
3. What are the trends in public attitudes and behaviors toward restoration projects and toward the Forest Service?

Economic resilience

1. What are the county-level trends in income, employment, poverty, and education statistics?
2. What are the trends in forest and watershed-sector businesses and jobs in northeastern Oregon counties?
3. What are the aggregate economic effects of WWFC projects?

Landscape-level resilience monitoring - next steps

1. Revisit and revise the draft lists of resilience monitoring questions. Use criteria of usefulness, feasibility, and appropriate scale to prioritize questions for monitoring.

2. Identify secondary data sources and individuals or organizations with the capacity to do the monitoring. Subcommittee members have identified the following potential sources of secondary data (partial list):
   - U.S. Census and State of Oregon – demographic and economic trend data
   - U.S. Forest Service (Region 6 Ecologists, Wallowa-Whitman National Forest, Pacific Northwest Research Station) – Forest Inventory and Analysis plot data, condition and trend plots, landscape-level and Forest-level vegetation, wildlife, and fuels databases and model outputs
   - Oregon Department of Forestry – annual insect and disease surveys and maps
   - Oregon Department of Fish & Wildlife – wildlife data
   - Nez Perce Tribe – wildlife data
   - The Nature Conservancy – landscape analysis research and models
   - University of Colorado-Boulder – Climate change condition and trend data
   - University of Oregon's Ecosystem Workforce Center's socioeconomic monitoring – see White, E.M., E.J. Davis, and C. Moseley. 2015. *Socioeconomic Monitoring Plan for the U.S. Forest Service's Eastside Restoration Efforts.* University of Oregon Ecosystem Workforce Program, Eugene OR
   - Oregon State University – Oregon Explorer Indicators of Vitality for social capital - see the *Wallowa County Indicators of Vitality Report* at http://oregonexplorer.info/data_files/OE_topic/rural/documents/Wallowa%20County_Indicator_Summary_2-8-10.pdf

3. Develop a monitoring plan that includes landscape-scale monitoring questions, indicators, methods, sampling designs, responsible parties, and budgets.

Resource assessment and research questions

The WWFC monitoring subcommittee identified the following questions as of interest but beyond the scope of the collaborative's monitoring plan because they are research-level or pre-planning resource inventory questions.

- What is the status of current road locations, conditions, and use patterns?
- What are the effects of roads on ecological conditions?
- What are the ecological effects of stand-replacing fires?
- What are local communities' and adjacent landowner's concerns about potential project effects?
- How effective are national/regional standards and best management practices to minimize soil disturbance?
- What are project effects on non-vascular plant diversity and fungi?
- How do treated areas respond to subsequent disturbance? What are observed fire effects? Do subsequent disturbances result in positive impacts to aquatic species and their habitats?

Next steps:

1. Maintain and continue to add questions to this list.
2. As opportunities arise, share the list with researchers interested in conducting work on these issues in and around the Wallowa Whitman National Forest.

BMFP Field Trip Survey

Project name: [INSERT PROJECT NAME]
Field trip date: [INSERT DATE]

1 = Not at all
5 = Absolutely
NA = not applicable

Name: _____ Organization (if any): _____

Stop #1 (describe): _____

Did treatments meet the Forest Service's objectives for this site?	1	2	3	4	5	Too soon to tell	Not sure	NA
Did treatments implement the BMFP's recommendations?	1	2	3	4	5	Too soon to tell	Not sure	NA
Did treatments meet my expectations for how to best manage this site?	1	2	3	4	5	Too soon to tell	Not sure	NA

Optional: What should have been done differently to meet my expectations for how the area should be treated?

Did the treatment do a good job restoring forest resiliency in the face of expected future conditions?	1	2	3	4	5	Too soon to tell	Not sure	NA
Did the treatment do a good job supporting the local economy?	1	2	3	4	5	Too soon to tell	Not sure	NA
Did the treatment do a good job providing appropriate wildlife habitat?	1	2	3	4	5	Too soon to tell	Not sure	NA
Did the treatment do a good job providing for recreational opportunities or other amenities?	1	2	3	4	5	Too soon to tell	Not sure	NA

Optional: What could have been done differently to improve any of the above outcomes (resiliency, economy, habitat, recreation, or other)?

Stop #2 (describe): _____

Did treatments meet the Forest Service's objectives for this site?	1	2	3	4	5	Too soon to tell	Not sure	NA
Did treatments implement the BMFP's recommendations?	1	2	3	4	5	Too soon to tell	Not sure	NA
Did treatments meet my expectations for how to best manage this site?	1	2	3	4	5	Too soon to tell	Not sure	NA

Optional: What should have been done differently to meet my expectations for how the area should be treated?

Did the treatment do a good job restoring forest resiliency in the face of expected future conditions?	1	2	3	4	5	Too soon to tell	Not sure	NA
Did the treatment do a good job supporting the local economy?	1	2	3	4	5	Too soon to tell	Not sure	NA
Did the treatment do a good job providing appropriate wildlife habitat?	1	2	3	4	5	Too soon to tell	Not sure	NA
Did the treatment do a good job providing for recreational opportunities or other amenities?	1	2	3	4	5	Too soon to tell	Not sure	NA

Optional: What could have been done differently to improve any of the above outcomes (resiliency, economy, habitat, recreation, or other)?

Deschutes Collaborative Forest Restoration and COPWRR Project-Level Ecosystem Monitoring Report Form

Project: Sisters Area Fuels Reduction Project (SAFR)	
NEPA Authority Used: Environmental Assessment	
Date: June 21, 2011	
Interdisciplinary Team / Forest Service Members Participating:	
Other Participants in Field Evaluation:	
Units: Comet Unit #2 (EA Unit #115)	**Acres in Units:** 139
Other Units being Monitored: Cosmo 999 – old growth and black bark areas	

Background

Purpose and Need

The purpose of the SAFR project is to protect structures, property, and human life and safety; improve forest health; and restore the role of fire within the Greater Sisters Area Wildland-Urban Interface. Existing fuel loadings are outside the historic range of natural variability. There is a need to reduce the threat of high intensity wildfire by reducing high levels of unwanted hazardous forest fuels. This could be accomplished by moving the project area to the desired future condition of a more open, large tree dominated ponderosa pine forest that is less susceptible to large-scale, stand-replacing fires.

Three goals were established for the area to meet the purpose and need for this project:

1. Improve forest health, sustainability, and resiliency and promote the development of old growth forest stands and large trees by reducing the uncharacteristically high levels of competing live vegetation and reintroducing the more natural role of low intensity ground fire.
2. Reduce the risk of high intensity wildfires to nearby communities, private properties, and special natural places by reducing uncharacteristically high levels of hazardous fuels in ground, ladder and canopy vegetation.
3. Reduce the risk of high intensity fire to public and fire fighter safety.

Reference: SAFR Environmental Assessment, Record of Decision, and Implementation Plan

Management Objectives for Unit

1. Maintain old growth trees.
2. Maintain and increase numbers of large trees.
3. Reduce risk of high intensity stand replacing wildfire.
4. Reduce stand density to improve forest health.
5. Maintain and improve long-term scenic quality.

References: Comet Project Silviculture Prescription

Treatment Summary for Unit

This unit is dominated by second growth/black bark ponderosa pine. There are widely scattered old growth overstory ponderosa pine throughout the unit. Western juniper can be found throughout the unit in all structural size classes from old growth to seedlings. The unit is in both MA-7 Deer Habitat and Biological Winter Range for deer.

Treatment will be thinning from below, removing smaller second growth trees and favoring ponderosa pine over western juniper. Landing piles will be burned and 7 of the 139 acres will be masticated and broadcast burned to remove brush and small trees.

Thinning trees 8-20.9" dbh: Thin from below to create a "gappy, patch, clumpy" arrangement. Patch/clump size can vary between 1 and 2 to as many as 10 or 20 or more trees. Resultant tree densities will vary widely; however, averages will be: 63 trees per acre, 26-foot spacing between trees, Basal Area 50-60.

All old growth trees and trees over 21 inches diameter at breast height will be retained. Thinned trees will always be the smaller trees at any particular location with three exceptions: 1) a smaller tree is healthier than a larger tree (has a better chance for long-term presence on the landscape), 2) a smaller tree is a more desired species than a larger tree, 3) a smaller tree has desirable old-growth characteristics.

Leave the largest, healthiest trees available with the least bole defect. Trees with bole defects can be left if needed to meet density or spatial arrangement specifications.

Remove second growth trees from around old growth trees to leave no more than 20 basal area around old growth trees.

Only leave second growth western juniper when needed to meet density or spacing objectives.

Thinning trees under 8" dbh: Reduce ladder fuels by removing trees <8" dbh adjacent to overstory trees and breaking up the crown spacing of small trees. Trees <8" dbh should be spaced 25 feet off larger residual trees. Where there are no trees greater than 8" dbh, smaller trees should be spaced from 5 to 40 feet apart.

Selection of species to leave, from most desirable to least desirable, is: ponderosa pine, western juniper, and white fir. Retain rare species such as Engelmann spruce, white pine, and lodgepole pine. Retain western juniper and white fir only when there are no healthy ponderosa pine to leave.

Retain small old growth trees with healthy crowns, especially those adjacent to or mixed in with larger old growth trees. Retain the largest, healthiest, most disease-free trees available from mainly the dominant and co-dominant crown classes. Remove younger trees under 8" dbh that are adjacent to overstory trees. Reduce dwarf mistletoe infection if found.

Mule Deer cover and forage and Forest Plan Amendment: This unit is in Biological Winter Range and Deer Habitat (MA-7). Deer winter range consists of pine-juniper/sagebrush-bitterbrush/fescue, pine/bitterbrush/fescue, and pine/bitterbrush-

manzanita/fescue ecotypes. Deer Habitat is managed for thermal (canopy) cover, hiding cover, travel corridors, and forage.

To effectively treat hazardous fuels and defensible space around private property, the Forest Plan Standards and Guidelines for Deer Habitat have been amended as described below.

Defensible space: Areas within 600 feet of private property are treated to reduce hazardous fuels. Percent cover and forage requirements for Deer Habitat do not apply in these areas. Also, blocks treated with mastication and burning may be larger and more closely spaced than allowed in the Forest Plan, so that fuel loadings can be reduced adjacent to private holdings.

Forage: Outside of defensible space areas, Deer Habitat in the SAFR project should be managed for 33% of shrubs in an early seral condition, 33% in a mid seral condition, and 33% in a late seral condition. Defensible space will remain in an early seral stage and not be included in the 33% calculations. The amendment removes the Forest Plan standard limiting the use of prescribed fire to 2% to 2.5% of Deer Habitat in a year.

Cover: Deer Habitat in the SAFR project shows very few areas that can support a crown cover greater than 40% as recommended in the Forest Plan. Instead, different qualities of thermal cover will be recognized and managed for, including hiding cover. No-treatment clumps have been identified to provide hiding cover for a total of 40% cover. Canopy cover will be retained in all stands having 30% or more canopy cover.

References: SAFR Environmental Assessment, SAFR and Comet Implementation Plans, Comet Silviculture Prescription

Selected Implementation Guidelines, Management Measures, and BMPs to Evaluate

An extensive list of design elements drawn from relevant laws, policies, standards, and guidelines apply to all of the action alternatives. Photocopies of this section of the EA will be available on the day of the field visit, including mitigation measures for:

Air Quality	Recreation/Social Concerns
Wildlife	Plants (TES species and invasives)
Soils	Scenic Quality
Hydrology/Fish	Cultural (Heritage) Resources)

Reference: SAFR Environmental Assessment, pages 66-75

Unit Evaluation

Were the treatments implemented as described in the decision document or Record of Decision? Were the treatments implemented in accordance with the Selected Implementation Guidelines, Management Measures, and BMPs identified above? If not, please explain why.

For each Management Objective for this Unit, please evaluate whether the objective has been achieved. If the objective has not been achieved, please comment on barriers, constraints, limitations, etc. and what might be needed for future projects to achieve the objective.

Project Evaluation

Were the results of this project what was anticipated and intended? Have treatments addressed the Purposes and Needs for this project? If not, why not?

Please share any observations or comments about the project planning, implementation, or results that are important to understanding management of this unit or important for improving future management in similar projects.

Check List for Timber Thinning Site Evaluations

Inspection Date: _____ Time: _____ Age: _____
Location: Compartment: _____ Stand: _____ Acres: _____ DFC: _____
Coordinates: Latitude: _____ Longitude: _____ Altitude: _____
Original Treatment Date: _____ Original Treatment: _____
Additional Treatment Date: _____ Additional Treatment: _____

Review Team:
_____
_____
_____

General Site Description [ground surface, access control, protection, roads, active operations, vegetation age, natural community type, forest class, burned, etc]:_____
_____
_____

General Description of Operation Being Reviewed [Thinning, type of logging, equipment used, etc]:_____
_____
_____

S= Satisfactory U= Unsatisfactory NI = Needs Improvement NR = Needs Remediation NA = Not Applicable

I Stream Course Protection
a. Stream Buffer protected BMP/SMZ ___
b. Mechanical impacts /rutting evidence; % ___
c. Debris removed or prevented from entry ___
d. Cutting of allowable trees ___
e. Culverts, rock, fill materials, silt fences ___
f. Presence of stream crossings ___
g. Contract Specifications met? (USFS input) ___
h. Evidence of siltation or soil movement ___
i. Evidence of water quality degradation ___

II Erosion Prevention
a. Gully or sheet erosion present ___
b. Slash on scarred areas ___
c. Provisions for long term protection ___
d. Water bars/ locations and function ___
e. Reseeding on erodible areas ___

III Protection of Feature and Elements
a. Cultural or Historic Resources ___
b. Rock Shelters, Caves, Outcrops ___
c. Special Areas and plant communities ___
d. T&E Species site-specific habitat ___
e. Recreation Trails, facilities etc ___
f. Property Boundaries, fences, corners ___

IV Logging Operations
a. Timing of operations ___
b. Operations in compliance with boundaries ___
c. Only designated trees, sizes and species ___
d. Damage to residual stand ___
e. Damage to leave trees ___
f. Hung trees remaining ___
g. Damaged trees removed ___
h. Excessive rutting by operations ___
i. Equipment use orderly, workmanship ___
j. Trash left on site, oil spills ___
k. Evident site impacts ___
l. Directional felling ___

V Slash Disposal Adequacy
a. Residual stump height ___
b. Tops removed from trails, roads, special areas, stream courses ___
c. Slash piles size & extent ___
d. Distribution of slash on erodible areas ___
e. Size of Slash deposited ___
f. No slash against leave trees ___
g. Bark thickness at staging areas ___

VI Roads, Skid traces, Staging Areas
a. Appropriate locations and size ___
b. Maintenance and slope protection ___
c. Entrance to public roads protected ___
d. Logger follow-up for seeding ___
e. Culverts and physical improvements ___
f. Minimal roads ___

VII Vegetation Impacts
a. Groundcover impacts – grasses, leaf litter ___
b. Woody under-story impacts ___
c. Residual Tree Canopy condition ___
d. Revegetation – natural ___
e. Revegetation – artificial ___
f. Visual aspects ___
g. Invasives ___

VIII Burn Adequacy
a. Remain within boundaries ___
b. Burn intensity ___
c. Fire breaks ___

Remarks [Referenced by Item Above]

Confirmation of USFS Administration Appropriateness [All public notifications, bidding protocols, NEPA requirements, Contract and Forest Plan compliance, traffic control incidence, fire protections, required USFS inspection reports and verification, Documentation of enforcement, Contract restrictions, documented problems and non-compliance issues, etc.]

NEPA and Silviculture Prescription Implementation Appropriate [on-ground Sale Area layout follows approved plan, contract implementation appropriateness, sale administrated according to terms, violations listed, OSHA compliance, etc]

Additional Comments, Recognitions and Remarks:

Observation Summary; Date: _____
Consensus of Review Team Established; Date: _____
Observations Presented to USFS District Ranger; Date: _____

Recommended Follow-up Actions and Schedules:

Recommendations agreed to: _____ Date: _____
USFS

Bankhead Liaison Panel Timber and Thinning Team

Inspection Date: _____ Time:_____
Location: Compartment: _____ Stand: _____ Acres: _____ DFC: _____

Photo Spots:

Description	Archive number	Latitude	Longitude	Azimuth
1.				
2.				
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V Meleski January 13, 2005,Rev 2/18/05, Rev 8/12/05,Rev 9/14/06,10/20/06

WWFC Monitoring Subcommittee Draft Landscape-Level Economic Resilience Questions

Proposed definition:

For the Wallowa Whitman Forest Collaborative, landscape-scale economic resiliency means: Building a diverse, prosperous resilient economy by enhancing the quality of place, advancing job creation, creation of sustainable strategies, and creating economic opportunities through natural resource management and production.

For the Wallowa Whitman Forest Collaborative landscape-scale economic resilience refers to the ability of the Northeast Oregon regional and local economies to respond to significant changes, both positive and negative, in availability of assets (including natural assets), production factors, output, employment, or consumption. This resilience includes the ability to limit immediate production losses or adapt to production increases without significantly transforming the custom and culture of the region or local communities. Economic resilience also limits the welfare impacts of any shock or larger economic transitions on vulnerable households.

Proposed indicators of landscape-level economic resiliency:

	Indicator	Rationale for using this indicator
	Is the measure of economic resilience germane to Northeast Oregon – this is a not an indicator, but is a good criterion for selecting indicators	If it does not help the overall economic conditions of Northeast Oregon, then it would not be considered as enhancing economy.
1	Is the work of the WWF collaborative or the project developed providing economic benefit to Northeast Oregon – So it seems that this would be an aggregate measure of project-level economic monitoring data – i.e., number of jobs supported, volume of material delivered to local mills, and modeled direct, indirect, and induced income from all projects on the Wallowa-Whitman. Same as #3 below.	If the work or the project is not providind economic benefit to Northeast Oregon, then we would not consider it.
2	Is the work or the project of the WWF collaborative adaptive to changing events and conditions – How would you measure this? Diversity of projects or flexibility of contracts?	If the work or the project is “set in stone”, than unforeseen events will stop or derail the effort.
3	Is the work or the project of the WWF collaborative showing measurable improvement to the economy of Northeast Oregon. – merge with #1	If not showing measurable economic improvement, i.e. increased direct jobs, increased indirect jobs, more dollars invested in infrastructure, than the effort is a a failure.
4	Income and Employment: Household income, Percent of income from wages, Average wages, Labor force size, and Unemployment rate for each county	These indicators help establish the baseline of economic vitality in each county and are indicators of micro-economic resilience.

Commented [S1]: Only those projects that the collaborative works on and should be done on each project not the aggregate measure. This one may fall out because of cost but should be discussed.

5	Education: K-12 school population, % on Free lunch program, % on I.E.P's, Graduation rates for each county	These indicators speak to the social structure of each community, and potential economic impacts on families.
6	Forest / Watershed sector: Number, size and type of wood processing facilities; Number, size and type of contractor businesses Percent of labor force in forest and watershed related work. Average wages paid in forest sector	These indicators speak directly to a key economic sector that is influenced by the work of the WWFC. If these indicators trend downwards it highlights rising risks to the capacity for cost effective forest management. If these indicators grown very large, it may reflect a decrease in economic diversity and increasing risk to future economic shocks.
7	Recreation sector: Gross recreation earnings per year by county, Percent of labor force in recreation related work. Average wages in recreation sector	These indicators speak to another economic sector influenced by the work of the collaborative. If these indicators trend downward it may reflect declining recreation opportunities resulting from poor resource management, inadequate investment in supporting infrastructure, etc. Downward trends would put many service sector businesses at risk – lodging, food, bars / entertainment, guiding, etc. Significant increases could possibly reflect a loss of diversity.
8	Government sector: Employment in NR agencies by federal and state government in each county Operating budgets of each office in each county Change in outputs from federal lands supporting the local communities including: timber delivered to the mill, firewood gathered or cut, AUM's grazed, recreational days, mushrooms harvested, fruit /berries collected, etc. – I would include outputs in #1. But I wonder whether these data, other than timber volume, are readily available? If not, are they important enough to invest money to collect them?	Current concern is adequate staffing and operating budgets to manage public lands and service local community and landowner needs. But this must be balanced with attention to efficiency and results – staffing and budgets needs to be assessed against their relevant outputs and services.
9	Business resilience: Flexibility to operate at different production levels; Raw material inventories and secondary supplies; Average age of workforce – ability to recruit / train new labor.	

Commented [S2]: If no one identifies the need for the data, it is many times not collected, many times it could be if requested without additional cost. We always want to throw something out because we may not have the budget. It is always better to define what you would like and then balance it with the budget and the staffing. After that has been done we can at least know what has been left on the table.

I like #1/3 because it is clearly central to WWFC's mission. Gathering and analyzing these data would require some primary data collection and analysis, but perhaps it can be folded into work already being done by EWP?

I like #s 4, 5, 6, 7, and the employment and operating budget portion of #8, because they are measurable using available data. Gathering and compiling the data for WWFC use would require some investment of time by someone familiar with this sort of information, but it seems feasible. The challenge with these data is that for the most part they are not likely to be measurably affected by WWFC's activities, so the results will have limited utility to the Forest Collaborative beyond providing a context for its work.

I like that #2 and #9 both directly address ability to respond to changing conditions, but these would also require more primary data collection – and work to identify reliable methods - and there is a cost associated with that.

Commented [S3]: NEPA requires both an ecological view as well as an economic view. We have always investing many dollars in the collecting ecological info but never invest in the economic. We need to begin balancing these issues. It will improve government efficiency and shine light on the cost of these actions.

Proposed definition:

For the Wallowa Whitman Forest Collaborative, landscape-scale social resiliency means:

Social resilience *is the ability of the human communities surrounding the Wallowa-Whitman National Forest to withstand and recover from stresses and shocks, such as environmental disturbances (e.g. climate change, uncharacteristic wildfire, drought, etc.) and social, economic or political upheaval (e.g. recession, civil strife, harvest failure, etc). Socially resilient communities maintain a diverse range of stakeholder interests and institutional affiliations and cultural values; and promote engagement that fosters the development of social capital and innovation (Adapted from Stockholm Resilience Centre 2015 http://www.stockholmresilience.org/21/research/what-is-resilience/resilience-dictionary.html).*

Proposed indicators of landscape-level social resiliency:

The following indicators and metrics aim to build a common understanding of conditions, detect change over time, and provide a basis for adaptive management. The metrics represent proxies for aspects of the social resilience of the communities surrounding the Wallowa-Whitman National Forest.

Stakeholder interests and institutional ties *– participants directly involved in collaborative efforts represent a broad range of community perspectives and values. Measures of stakeholder interests and institutional ties include:*

- ***Representation –*** *different interests, representative of a broad range of perspectives, occurs at three levels: 1) full group, 2) operations committee, and 3) sub-committees.*
- ***Network connections –*** *as a whole, the collaborative shares a large network of local, state, regional, national, and international connections that provide sources of expertise and resources*

Does this apply to the WWFC specifically? If so, is it really a measure of resilience across communities on the landscape? Should it be merged into the collaboration effectiveness survey?

Forest uses *– recreational, cultural, and commercial uses of the forest inform the types of management approaches that may be most appropriate. Measures of forest uses include:*

- ***Recreation use*** *- number of hikers, number of OHV riders, and number of overnight camping permits, number of mountain bikers? Number of bird watchers? How do you choose activities and where do you stop?*
- ***Cultural use****- number of historic sites and culturally important places, number of personal wood cutting permits, and number of hunters, fisherman, and berry pickers*
- ***Commercial use*** *– number of people employed in the forest products industry, number of acres treated, and number of commercial wood cutting permits*

From our March 19 discussion I know local culture and sense of place are closely tied to access to natural resources, so these may be important to the WWFC. But note that several of the metrics listed would require primary data collection and to get reliable results the methods (and therefore cost) would be a challenge. My question is, what will you do with these data once you have them? Once you know the number of hours spent berry picking in a given year, then what? And what does that tell you about ability to withstand and respond to stressors? Will people move away or will vacationers stop visiting and spending money in local communities if they can't pick berries/mountain bike/etc.?

Social Capital *– members of the collaborative are committed to the process and one another, and develop and implement management actions through honest and thoughtful dialogue. Measures of social capital include:*

> ***Level of trust among members –*** *feelings of trust and reciprocity that members of the collaborative maintain for one another and the collaborative process*
> ***Degree to which Forest Service utilizes collaborative input –*** collaborative input is reflected in management decisions made by the agency
> ***Volunteer hours –*** *number of hours collaborative members spend traveling to and from and attending in meetings, field tours, and events*

This only looks at social capital in the collaborative group itself, which is good, but is not a measure of social capital in the communities that are part of the WWFC landscape. Might you want to know about at things like levels of participation in civic activities related to natural resources, e.g. environmental education camps or firewise groups or emergency response…?

Innovation – *approaches that foster learning and advancement of new or previously contentious management actions. Measures of innovation include:*

> ***Common understanding*** *– the group's collective understanding of an issue is inclusive of multiple and diverse perspectives that reflect an understanding of the best available science and social and cultural values*
> ***Innovative approaches*** *– number of collaborative agreements and "experiments" that result in on-the-ground implementation and continued project monitoring*

Something to include in a collaboration effectiveness survey?

All-lands management –*the Blue Mountains ecoregion encompasses forestlands across private ownership and federal and state management. Measures of all-lands management include:*

> ***Coordinated actions –*** *the degree to which federal and state agencies and the collaborative are working across ownership boundaries to promote cohesive and strategic forest management*
> ***Private landowner participation –*** *the number and percent of private landowners engaged in cross-boundary land management and collaborative efforts*

Get PNW research station to gather data on these for you?

Public attitudes and behaviors related to forest management – The ability of communities and agencies to respond to change depends in part on levels of public support for and cooperation around forest management and governance. Measures of support and cooperation could include:

> **Comments on, objections to, and litigation of agency management plans** –you can just count them or do a content analysis; ditto with letters to the editor, etc.
> **Public attitude surveys** (percent of respondents who agree/disagree with statements about forest management, federal/state/local land management agencies, etc.

Demographic trends – These get at social capital, the ability and willingness of community members to mobilize in response to opportunities. Measures could include:

> Levels of in-migration and out-migration
> Population age classes (i.e., are you losing or not attracting young adults)

School enrollment (what's happening to young families & youth)
Percent of homeowners that are permanent residents / % of secondary homes
Tenure of landowners, especially large landowners

The Wallowa County Indicators of Vitality Report provides a good baseline of social capital in Wallowa County:
http://oregonexplorer.info/data_files/OE_topic/rural/documents/Wallowa%20County_Indicator_Summary_2-8-10.pdf

WWFC Monitoring Subcommittee Draft Landscape-Scale Ecological Resilience Questions

Proposed definition:

For the Wallowa Whitman Forest Collaborative, landscape-scale ecological resiliency means:

Ecosystem resilience for the Wallowa-Whitman Forest Collaborative is the capacity of the local forest and range ecosystem to respond to disturbance and maintain its ecological state and function and provide ecosystem services (e.g. clean water, forest products, wildlife habitat, etc) that support the well-being of biotic communities, including human communities, within and surrounding the Wallowa Whitman National Forest.

Proposed indicators of landscape-level ecological resiliency:

Indicator	**Rationale for using this indicator**
Heterogeneity and multi-functionality of forest and range ecosystem across the landscape - is this the same as heterogeneity of vegetation structure and composition? Acres of forest in each plant association group (PAG), Acres of each PAG in each successional class, Acres of each PAG categorized by Vegetation Condition Class (i.e., departure from reference conditions)	Heterogeneous landscapes offer a diversity of habitats and land-use types and well connected ecosystem patches. I know it's possible to get measures of heterogeneity of vegetation types across the Forest, but I think it will be hard to measure connectivity at the landscape scale (it's hard at the project scale). DCFP has, with a lot of work by TNC and WWETAC, monitored change in S-classes and VCCs, by PAG, at the landscape level using GNN data. It's not perfect (S-classes are based on canopy closure and tree size; they do not reflect understory vegetation) and was expensive (tens of thousands of dollars) but people find it useful. Getting a baseline for the WWNF using 2009 GNN data should be less expensive.
Vegetation management strategies improve conditions tolerant of disturbance I don't see veg management strategies as the indicator, but desired outcomes of those strategies – the things listed on the right So metrics could be mapped and summed acres in different vegetation condition classes, successional classes, and fire regime condition classes, and modeled fire behavior (FlamMap outputs).	Retain and release old trees, shift tree composition towards fire and drought tolerant species, and restore a mosaic spatial pattern across the landscape in order to increase forest resilience to disturbance Drawing on the notes from the 3/16/15 meeting, it seems the objective here is to get a measure of resilience to disturbance, and particularly resilience to wildfire and insect outbreaks. DCFP used LandFire data and FlamMap to model fire behavior and give measures of fire hazard at the landscape level, by PAG It's possible to get tree size (not age) from GNN data. I'm not sure about shift in species composition - ask about that
Rate of recovery from disturbance (e.g. wildfire, insect outbreaks, etc.)	Recovery is related to the ecological state of the disturbed area and the severity of the disturbance. More resilient conditions reduce the risk of environmental degradation (e.g. erosion, sedimentation,

I'm guessing you don't want to go out and measure response over decades after a disturbance, so it seems the indicator would be modeled response to disturbance based on existing veg conditions and hypothetical weather/climate/insect conditions?	hydrophobic soils, etc.) due to uncharacteristic disturbance. The severity of the disturbance is likely to affect the amount of time it takes for a system to return to previous levels of functionality. So here again it seems the indicator is resilience to disbturance – i.e., faster recovery from = more resilience to fire and insect events.
Protection of areas for ecological importance, biodiversity, and cultural values Acres and mapped location of land under different types of protection?	Wilderness or other protected areas provide ecological corridors for wildlife and ensure traditional and culturally significant places are not susceptible to undue human influence. So you would be tracking acres protected via various legal or management designations, and their connectivity?
Reintroduction of natural disturbance regimes I.e., number and size of prescribed and natural fire management events?	Management actions will work to reintroduce fire at a scale that will reduce the risk of uncharacteristic fire and the costs associated with fire suppression activities

References:

Stockholm Resilience Centre. (2015) "What is resilience?" http://www.stockholmresilience.org/

U.S. Forest Service (2014). Lower Joseph Creek Draft Environmental Impact Statement. http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3822296.pdf