

**Washington State
Cooperative Monitoring, Evaluation, and Research Committee
(CMER)**

Protocols and Standards Manual

State of Washington Forest Practices Board's
Adaptive Management Program

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1 Introduction

1.1 *Cooperative Monitoring, Evaluation, and Research Committee*

The purpose of the Cooperative Monitoring, Evaluation, and Research Committee (CMER) is to advance the science needed to support adaptive management. CMER also has ongoing responsibility to continue research and education in terrestrial resource issues. CMER is made up of members that have expertise in a scientific discipline that will enable them to be most effective in addressing forestry, fish, wildlife, and landscape process issues. Members represent timber landowners, environmental groups, state agencies, county governments, federal agencies and tribal governments from a scientific standpoint, not a policy view. CMER members are approved by the Washington Forest Practices Board (Board). Board approval does not preclude others from participating in and contributing to the CMER process or its subcommittees. CMER develops and manages as appropriate:

- (A) Scientific advisory groups and subgroups;
- (B) Research and monitoring programs;
- (C) A set of protocols and standards to define and guide execution of the process including, but not limited to, research and monitoring data, watershed analysis reports, interdisciplinary team evaluations and reports, literature reviews, and quality control/quality assurance processes;
- (D) A baseline data set used to monitor change; and
- (E) A process for policy approval of research, monitoring, and assessment projects and use of external information, including the questions to be answered and the timelines.

(WAC 222-12-045(2)(b)(i))

1.2 *Purpose of the Manual*

The CMER Protocols and Standards Manual (PSM) provides an organizational framework, guidance, and instructions for CMER participants. Portions of the PSM will also be useful to recipients and technical reviewers of CMER products, and observers of the regulatory adaptive management process. The PSM provides guidelines for operating and governing the organization; developing its work plan; operating Scientific Advisory Groups that report to CMER; proposing, conducting, and documenting research studies; adhering to budget and contracting requirements; storing information; and providing information. Where templates, forms, or examples are provided, they are intended as tools, not as requirements.

Standards and protocols in this manual promote and protect both scientific rigor and administrative accountability. The AMP for forest practices involves a large number of stakeholders and interested parties, including large and small forest landowners, tribes, state and federal agencies, counties, conservation groups, and the research community. Because the AMP was created by the Forest Practices Board – a regulatory rules-making state agency, the AMP must be conducted in an open and transparent manner and must follow administrative procedure guidelines. Furthermore, CMER and its scientific products are publicly funded and are, therefore, subject to fiscal scrutiny and demands for efficiency. With all of these demands and the normal and expected turnover among the personnel of agencies and other interested parties, a thorough and usable Protocols and Standards Manual (PSM) for CMER operations is needed to maintain a consistent and efficiently functioning organization.

Additional guidance for CMER activities can be found in Section 22 (Guidelines for the Adaptive Management Program or “AMP”) of the Forest Practices Board Manual. The AMP board manual and the CMER PSM together are intended to fulfill the requirements of the forest practices rules (WAC 222-12-045(2)(b)(i)).

1.3 *Protocols and Standards Manual is an Evolving Document*

This manual has been created and compiled from stakeholder experience. The PSM reflects an evolving process within the regulatory context of the Forest Practices Board’s adaptive management program. The chapters vary in style and in extent of development. This variation is mainly the result of two factors: (1) the involvement of various writers and (2) varying firmness of agreement on procedures. Over time, CMER will refine and improve this manual to better serve the needs of CMER and the various users of the manual.

Continuing experience and the use of the procedures outlined in this manual may lead to suggestions for modification of CMER’s structure, governance, operation, protocols, or activities. An AMP participant can initiate requests for changes to this PSM. Requests are directed to a CMER co-chair or the adaptive management program administrator (AMPA) for discussion and consideration of action at a CMER meeting.

Formal recommendations for substantive changes to the PSM should be provided in writing to CMER for approval by consensus at a CMER meeting. Minor changes for clarification and technical editing may be made orally at a CMER meeting. New versions of the PSM will be produced as needed. Changes approved between versions will be noted by errata sheets for hard copy and by notes added to electronic files.

2 Overview, History, and Context

2.1 Adaptive Management Program

The Washington Forest Practices Board (Board) established the Forest Practices Adaptive Management Program (AMP) in concurrence with the Forests and Fish Report¹ (FFR) and subsequent legislation (RCW 76.09.370). In 2006, the US Fish and Wildlife Service and National Marine Fisheries Service accepted a 50-year Forest Practices Habitat Conservation Plan² (FP HCP) from Washington State based on the Forest and Fish rules that resulted from the 1999 Forest and Fish Report and RCW 76.09.370. As a component of the FP HCP, the AMP is responsible for providing, "...science-based recommendations and technical information to assist the Board in determining if and when it is necessary or advisable to adjust rules and guidance for aquatic resources to achieve resource goals and objectives." (Forest Practices Rules, WAC 222-12-045)

Forest practice regulations as a whole address a broad range of objectives including protecting forest soils, fisheries, wildlife, water quantity and quality, air quality, recreation, and scenic beauty (RCW 76.09.010(1)). However, resource objectives listed in the WAC which guide the AMP are more narrowly focused to ensuring that "...forest practices, either singularly or cumulatively, will not significantly impair the capacity of aquatic habitat to:

- (A) Support harvestable levels of salmonids;
- (B) Support the long-term viability of other covered species; or
- (C) Meet or exceed water quality standards (protection of beneficial uses, narrative and numeric criteria, and anti-degradation)."

(WAC 222-12-045(2)(a)(ii))

An additional outcome of the AMP is to ensure the application of quality controls to study design and execution and to the interpretation of results.

(Board Manual Sect 22 part 1 overview)

To provide the science needed to support the AMP, the Board established CMER to "...impose accountability and formality of process, and to conduct research and validation and effectiveness monitoring to facilitate achieving the resources objectives."

(Forest Practices Rules, WAC 222-12-045).

2.2 Governing Statutes and Rules

The Legislature established the Washington Forest Practices Board in 1974 to consider and adopt rules to govern forest practices in the State of Washington. The Board operates to fulfill the provisions of the Forest Practices Act, RCW 76.09.³ In 1999, as part of the Forests and Fish legislation, the Legislature added a provision to the act that requires the Board to establish a scientifically based adaptive management process. The Act now states, with the exception of changes required by legislative or court action, that "new rules covering aquatic resources may be

¹ Forest and Fish Report. 1999. Washington Department of Natural Resources.
(<http://www.dnr.wa.gov/forestpractices/rules/forestsandfish.pdf>)

² Washington DNR. 2005. Final Forest Practices Habitat Conservation Plan. Washington Department of Natural Resources, Forest Practices Program, Olympia, Washington.
(http://www.dnr.wa.gov/BusinessPermits/Topics/ForestPracticesHCP/Pages/fp_hcp.aspx)

³ The complete text of the Forest Practices Act, RCW 76.09, can be found in the back of the Forest Practices Rule Book published by DNR.

adopted by the Board only if the changes or new rules are consistent with recommendations resulting from the scientifically based adaptive management process established by rule of the Board.” (RCW 76.09-370(7))

The Board responded in July of 2001 by adopting rules for a science-based adaptive management program (WAC 222-12-045). The Board left open the opportunity to use the prescribed adaptive management process to address resource issues other than those identified in the Forests and Fish Report.

2.3 Historical Context

CMER began in 1987 as the technical arm of the Timber, Fish, and Wildlife Agreement (TFW). Under TFW, CMER’s tasks were similar to its current ones, though aquatic issues did not take precedence over other potential resource impacts of forest practices. Research and monitoring projects were initiated to address concerns raised at the TFW policy table or by the Board. From 1987 through 1997 CMER operated much as it does today, through a number of subcommittees organized around either a task, such as the Field Implementation Committee, or a resource function, such as the Sediment Hydrology and Mass Wasting Steering Committee. Each subcommittee planned, contracted, and reviewed research in its area of specialization. Although there was no formal independent peer review of the research products, CMER performed a technical review of each paper brought forward by the subcommittees. After approval, final papers were published by the Department of Natural Resources (DNR) as a series of Timber/Fish/Wildlife reports. From 1987 through 1996, CMER and its subcommittees produced 86 reports on the physical and biological relationships between forest practices and fish, water, and wildlife resources.

During the Forests and Fish negotiations of the late 1990s, CMER suspended its functions. It reorganized as soon as there was policy agreement on the 1999 Forests and Fish Report. In July of 2001, the Board formally established the reorganized CMER, giving it the role of advancing the science needed to support the Board’s adaptive management program.

2.4 Goals and Objectives

The goals of the Forest Practices legislation as they relate to regulating forest practices on non-Federal and non-tribal forestlands are (1) to provide compliance with the Endangered Species Act for aquatic and riparian-dependent species on nonfederal forest lands, (2) to restore and maintain riparian habitat on nonfederal forest land to support a harvestable supply of fish, (3) to meet the requirements of the Clean Water Act for water quality on nonfederal forest lands, and (4) to keep the timber industry economically viable in the State of Washington (Washington DNR 2005, pg 1). As part of the adaptive management program, CMER conducts research to further the first three of those goals.

The Board has adopted a series of key questions, resource objectives, and performance targets related to the aquatic resource issues pertinent to the Forests and Fish Report. These are collectively known as Schedule L-1 (see Appendix B of this PSM).

2.5 Overview of the Adaptive Management Process

The adaptive management process is a continuous loop. It includes the Board, the TFW Policy Committee (Policy), the adaptive management program administrator (AMPA), Washington Department of Natural Resources (DNR), CMER, and a process for independent scientific peer review (ISPR). The AMPA, an employee of the Washington Department of Natural Resources (DNR), administers the entire process.

Adaptive management research begins by posing resource-based questions that can be addressed by using accepted scientific methods. Adaptive management research topics which guide CMER research were originally listed in the 1999 Forests and Fish Report schedule L-1. Each year CMER develops a work plan describing how these topics are being addressed, along with additional questions that emerge as studies are developed and study results become available.

The Forest Practices Board manual directs CMER to ‘maintain and update for Policy review and Board approval the Forests and Fish key questions, resource objectives and performance targets (Schedules L-1 and L-2) and CMER work plan.’ (Forest Practices Rules, Board Manual, section 22, 2.2).

Each year, CMER submits the CMER work plan and budget to Policy, which in turn recommends to the Board a funding package for individual research projects. The Board is responsible for allocating state and federal adaptive management funds to specific research projects.

The Forest Practices Board manual directs CMER to produce “...credible, peer-reviewed technical reports based on best available science and guided by the Monitoring Design Team report⁴” (Forest Practice Rules, Board Manual section 22, 2.2).

The Board Manual defines best available science as:

“...relevant science from all credible sources including peer-reviewed government and university research, other published studies, and CMER research products. Applicable historic information, privately produced technical reports, and unpublished data may have value and are considered as long as they can be assessed for accuracy and credibility. CMER is responsible for understanding available scientific information that is applicable to the questions at hand, selecting the best and most relevant information and synthesizing it into reports for Policy and the Board.” (Board Manual section 22, 2.2)

Policy reviews CMER reports, considers the political and economic elements of the Forest Practices Act and the Board’s goals, and develops recommendations to the Board for rule or guidance changes. Under the Forest Practices Act, the Board is responsible for establishing forest practices rules that are “consistent with sound policies of natural resource protection” and that “recognize both the public and private interests in the profitable growing and harvesting of timber” (RCW 76.09. 10) and that are expected to meet the state water quality standards (RCW 90.48.420(1)).

2.6 Role and Responsibilities of CMER

CMER conducts objective scientific inquiry into questions posed by the Board and Policy and to provide technical information and consensus-based recommendations to the Board.

To meet its responsibility, CMER will:

1. Maintain and update for Policy review and Board approval the Forests and Fish key questions, resource objectives and performance targets (Schedules L-1) (Board Manual, Section 22, Part 2.2).
2. Maintain and update for Policy review and Board approval the CMER work plan (including budget recommendations) (Board Manual, Section 22, Part 2.2).

⁴ Monitoring Design for the Forestry Module of the Governor’s Salmon Recovery Plan. 2006. Benkert, K., B. Bilby, B. Ehinger, P.Farnum, D. Martin, S. McConnell, R. Peters, T. Quinn, M. Raines, S. Ralph, D. Schuett-Hames.

(http://www.dnr.wa.gov/Publications/fp_am_mdt_rprrt_final_18Jul02.pdf)

3. Forward to Policy and the Board research proposals (Forest Practices Rules, WAC 222-12-045(2)(d)(ii)).
4. Conduct research and validation and effectiveness monitoring to facilitate achieving the resource objectives⁵ (WAC 222-12-045(2)(b)(i)).
5. Conduct periodic reviews of the design of the Forest Practices Program compliance monitoring program(s) to ensure that it will provide requisite information to support the effectiveness and validation monitoring components of the Adaptive Management Program (Board Manual Section 22, Part 2.2).
6. Produce credible, peer-reviewed technical reports⁶ based on best available science (Board Manual, Section 22, Part 2.2).
 - a. Synthesize research results into coherent analysis of rule effectiveness.
 - b. Use generally accepted scientific and statistical techniques.
 - c. Include technical recommendations and a discussion of rule and/or guidance implications (Forest Practices Rule, WAC 222-12-045, (2)(d)(v)).
7. Develop a findings report that includes the CMER approved final study report, answers to the CMER/policy framework questions 1 through 6 and all technical implications generated through the CMER consensus process. Findings reports should be completed within 3 months of CMER approval of the final study report (Board Manual, Section 22, Part 3.3).
8. Develop and manage a set of protocols and standards to define and guide the CMER process (Forest Practices Rule, WAC 222-12-045(2)(b)(i)(C)).

The scientific inquiry CMER conducts typically falls into the following general categories:

1. *Effectiveness Monitoring*:
 - Evaluates the performance of forest prescriptions (harvest patterns, road construction/maintenance, etc) in achieving resource goals and objectives.
2. *Extensive Status and Trend Monitoring*:
 - Evaluates the current status of key watershed input processes and habitat condition indicators across FP HCP lands.
 - Documents trends in these indicators over time as the forest practices prescriptions are applied across the landscape.
3. *Intensive Monitoring and Cumulative Effects*:
 - Evaluates cumulative effects of multiple forest practices at the watershed scale.

⁵ “Resource objectives are intended to ensure that forest practices, either singularly or cumulatively, will not significantly impair the capacity of aquatic habitat to:

- (A) Support harvestable levels of salmonids;
- (B) Support the long-term viability of other covered species; or
- (C) Meet or exceed water quality standards (protection of beneficial uses, narrative and numeric criteria, and antidegradation).” (WAC 222-12-045(2)(a)(ii))

⁶ “Products that must be reviewed include final reports of CMER funded studies, certain CMER recommendations, and pertinent studies not published in a CMER-approved, peer reviewed journal. Other products that may require review include, but are not limited to, external information, work plans, requests for proposals, subsequent study proposals, the final study plan, and progress reports.” (WAC 222-12-045, 2 (c))

- Integrates the effects of multiple management actions over space and through time within the watershed.
 - Evaluates the effects of individual actions on a site and the interaction of those responses through the system.
4. *Rule Implementation Tool Development:*
 - Develops, refines or validates tools used to implement forest practices rules.
 - a. Methodology Tool Development Projects: Develop, test, or refine protocols, models, and guides used in forest practices rule–specified management guidelines.
 - b. Target Verification Projects: Verify performance targets developed during FFR negotiations.
 5. *Literature reviews to help with study design and the synthesis of study findings.*
 6. *Other forest-practices-related research as directed by the Board.*

2.7 Findings Reports

Upon finalization of technical reports, CMER produces findings reports which provide “...technical recommendations and discussion of rule and/or guidance implications analysis” (Forest Practices Rules, WAC 222-12-045(2)(d)(v)). Findings Report should include technical reports and answers to the 6 questions from the ‘CMER/Policy Interaction Framework.’ See chapter 7, section 7.8.3 for more information on what is included in Findings Reports. Findings are provided to the Forests and Fish Policy Committee or to the Forest Practices Board who make the public policy decision on whether or not to use the findings as a basis to establish or revise forest practices rules or guidance.

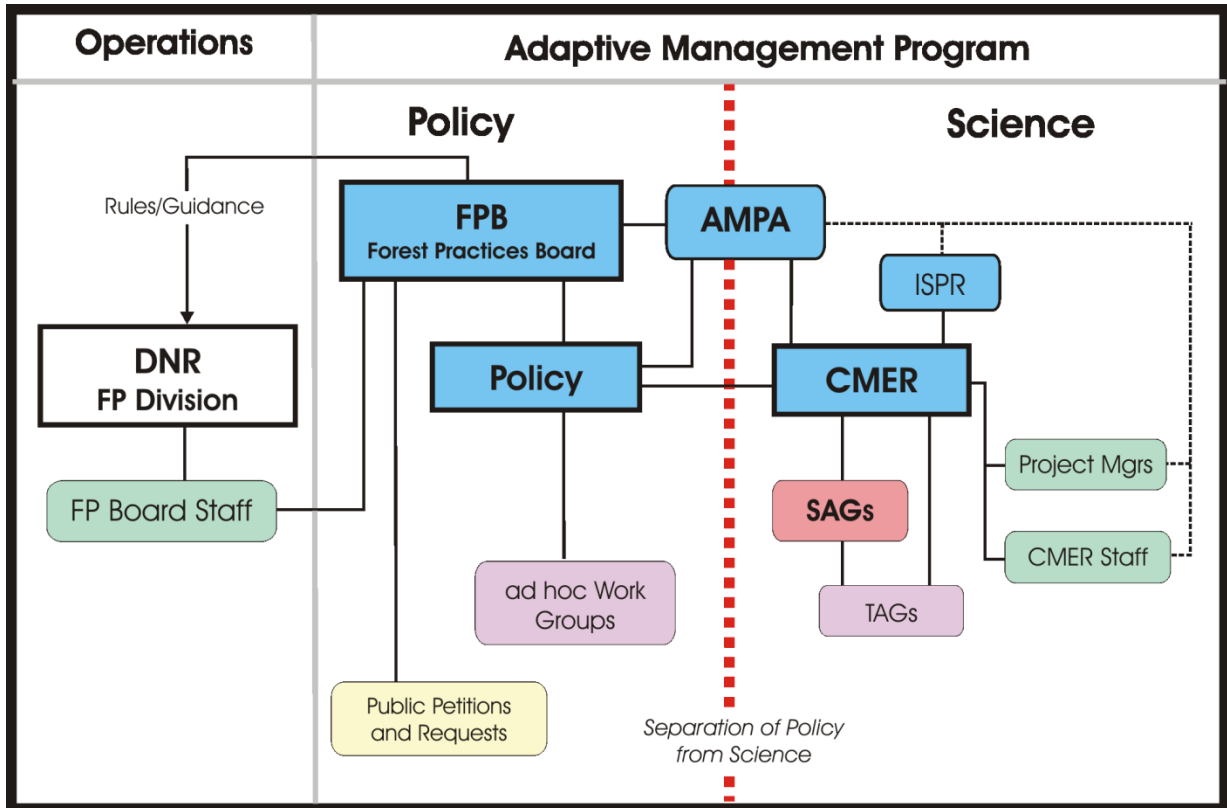
All final reports are available to the general public.

2.8 Relation of CMER to Other Committees

The following chart provides a general overview of the relationships among the committees and groups currently involved in the Board adaptive management process. For more information on participant relationships, please refer to WAC 222-12-045.

The general public can provide input directly to the Board at its regular quarterly meetings or by public petition for rule making or by oral or written request at any time. In addition, science developed outside the CMER adaptive management process may be brought into the process through a Scientific Advisory Group, CMER (FFR Appendix L.2(b)(i)), or by public comment at a Board meeting.

Relationships between Adaptive Management Program (AMP), Operations, Policy, and Science Participants



Key to Short Names and Acronyms

DNR	Department of Natural Resources		WAC defined group
Policy	Forests and Fish Policy Committee		DNR Operations
AMPA	Adaptive Management Program Administrator		Science Advisory Groups
CMER	Cooperative Monitoring, Evaluation, and Research Committee		Support staff
SAGS	Science Advisory Groups		Specially appointed work groups
TAGS	Technical Advisory Groups		Integrated process relationships
ISPR	Independent Scientific Peer Review		Managerial relationship

3 CMER Organization

This chapter contains a description of CMER's structure and functions, the roles and responsibilities of its participants, and the way it governs itself.

3.1 Structure

The CMER committee is made up of Forest Practices Board (Board)-approved scientific representatives of the Timber, Fish, and Wildlife (TFW) caucuses (forest landowners, tribes, state agencies, county governments, federal agencies, and environmental organizations). Committee members have expertise in scientific disciplines that enable them to be effective in addressing forestry, fish, wildlife, and landscape process issues. The official composition of the committee will not preclude others from participating in and contributing to the processes of CMER or its subcommittees.

Responsibility for CMER leadership is shared by two co-chairs and the adaptive management program administrator (AMPA). A CMER Coordinator helps facilitate CMER meetings and events and maintains records of decisions by CMER.

CMER appoints subcommittees called scientific advisory groups (SAGs) to provide advice, develop proposals, and provide scientific oversight and integrity. CMER also appoints other subcommittees to complete necessary tasks as needed.

3.2 Roles and Responsibilities

3.2.1 Members and Participants

The CMER core members, who are official CMER voting members and represent the various Washington State Forests and Fish caucuses, are approved by the Forest Practices Board. However, participation is open to all who are interested in CMER scientific and administrative discussions and subcommittee activities. All participants are expected to contribute time and professional expertise to the adaptive management program.

All members and participants in CMER are expected to agree to the ground rules, which are provided in Section 3.3.1.

3.2.2 CMER Co-Chairs

CMER co-chairs provide scientific and administrative leadership to CMER to help the committee accomplish its tasks in a timely and efficient manner. Many of their responsibilities are shared with the Adaptive Management Program Administrator (AMPA). It is up to the individuals in these positions to work out the appropriate working relationship and task assignments.

In general, the CMER co-chair duties are as follows:

1. Facilitate the preparation, revision, and implementation of the adaptive management research work plan in accordance with the research priorities of Policy and the Board.
2. Maintain an atmosphere of high-quality, unbiased science in the development, implementation, analysis, reporting, and technical review of CMER work products.
3. Maintain a regular meeting schedule with a posted agenda at least a week in advance.

4. Communicate with key CMER participants between meetings to ensure that issues of concern are placed on the agenda and topics are properly framed for discussion at the meetings.
5. Facilitate CMER meetings and strive to manage a consensus process for decision-making.
6. Ensure that meeting notes are recorded, reviewed, approved and distributed.
7. Communicate with the AMPA to maintain a working knowledge of the status of CMER budget and spending issues.
8. Collaborate with the AMPA to prepare and present reports to Policy, the Board and other interested parties.
9. Maintain open communication with the AMPA, CMER participants, Policy co-chairs and DNR Forest Practices Board staff.
10. Facilitate Scientific Advisory Group support/coordination.
11. Communicate the results of research and monitoring studies clearly and accurately, in a timely fashion to AMPA and Policy.
12. Ensure CMER ground rules and other CMER rules, protocols, and guidelines are followed.
13. Facilitate and coordinate dispute resolution.

3.2.2.1 CMER Co-Chair Term

The term for a CMER co-chair is two years, with each co-chair starting and ending on alternate years. Ideally, terms will start on July 1 and end on June 30 to coincide with the start of each new fiscal and work plan year. This will provide the highest level of continuity in the transition of these positions. Incumbents may serve more than one term, but must be nominated and approved each time. When a co-chair cannot fulfill the two-year commitment, a minimum two-month notice is desired. An interim co-chair may be appointed or a new selection process started to find a person to complete the remaining term. If there is no consensus on an interim co-chair, CMER may choose to function under one chair until the next nomination cycle or may request that Policy make a decision.

3.2.2.2 CMER Co-Chair Qualifications and Skills

Desirable qualifications for co-chair are:

1. Advanced degree (masters or PhD) and experience in related natural resources science.
2. Experience in designing, implementing, and reporting on research in natural resources sciences.
3. Experience in oral and written communications, project management, and public meeting facilitation and management.
4. Experience working in contentious situations and working with diverse groups to find solutions.
5. Approval to commit at least half time to the position.

Critical knowledge, skills, and abilities (KSAs) for co-chairs are listed in Appendix F to this PSM.

3.2.2.3 CMER Co-Chair Nomination and Selection Process

Nomination Process

CMER core members (Board-approved) may nominate one person, preferably from a different caucus than the remaining co-chair, by April 1 of each year in anticipation of the selection process. Candidates do not need to be Board-approved CMER members during the selection period, but will become members if approved by the Board. CMER will submit the list of candidates, including qualifications and time and funding commitments by the organizations they represent, to the AMPA. CMER should strive to nominate a minimum of three viable candidates. Where three candidates are not forthcoming, CMER should inform Policy of the reason.

CMER Co-chair Selection Process

When there are multiple candidates for a co-chair position, the AMPA will call for a special meeting by a seven-member committee to select the CMER co-chair. The committee will comprise the following members: (a) the AMPA; (b) the current CMER co-chairs plus one CMER core member volunteer; and (c) the current Policy co-chairs plus one Policy member volunteer. This committee will then recommend a CMER co-chair for CMER approval. Policy and the Board will be updated on the co-chair selection process, but Policy and the Board approval of CMER co-chairs is not required.

A CMER co-chair does not need to be a Board-approved core member to serve. However, if the candidate is not a core member, it is recommended the candidate's caucus nominate the candidate to the Board for approval as a core member.

3.2.3 Adaptive Management Program Administrator (AMPA)

The AMPA is a DNR employee assigned full time to the Forest Practices adaptive management program. In conjunction with the responsibility for overseeing and managing the full adaptive management program, the AMPA is the lead administrator for CMER. The AMPA is responsible for managing an efficient, unbiased research and monitoring program.

The AMPA's CMER-related tasks are as follows:

1. Transmit CMER reports and funding recommendations to Policy.
2. Answer questions during Policy discussion of CMER monitoring and research reports.
3. Communicates CMER research results, reports and recommendations to Policy and the Board.
4. Assess the implications of CMER research on forest practices rules and/or board manual guidance and report to Policy and the Board.
5. Communicate pertinent information to the adaptive management participants.
6. Manage the adaptive management program, including research projects, monitoring projects, contracting, budgets, and work plans.
7. Coordinate with the Board to ensure that its guidance and priorities are implemented, and effectively communicate to the Board information and results produced by the adaptive management program.
8. Ensure the scientific integrity of the program, and facilitate appropriate scientific peer review.
9. Bring project results forward promptly, and effectively communicate the activities of the program and the project results. (This duty is shared with the CMER co-chairs.)

10. Oversee the work plans of AMP Project Managers.
11. Coordinate and facilitate, as needed, dispute resolution.
12. Track projects and budgets in consultation with Project Managers.
13. Implement DNR and Office of Financial Management (OFM) contracting procedures.
14. Coordinate website postings and manage the content of the site with the assistance of the CMER coordinator.
15. Ensure the WAC, Board Manual, and CMER Protocol and Standards Manual are adhered to by Policy, CMER and the SAGs.
16. Coordinate with other major monitoring organizations related to forest practices.
17. Identify appropriate potential outside funding opportunities.
18. Oversee the work plans of CMER staff and assign projects.

More details of the AMPA's functions in relation to CMER are in Chapter 8, "Support Services and Requirements."

3.2.4 CMER Coordinator

A CMER Coordinator is responsible for the following:

1. Schedule CMER regular monthly meetings and arrange locations.
2. Distribute correspondence and information to the CMER committee upon approval by the AMPA.
3. Assist CMER co-chairs and AMPA with agenda development.
4. Ensure that meeting agendas are distributed one week in advance of regularly scheduled CMER meetings.
5. Receive and organize all background materials relating to the agenda, and ensure that these materials are distributed, whenever possible, one week in advance of the CMER meeting.
6. Record and distribute meeting minutes and decisions.
7. Assist with CMER meeting management (i.e., remind people of previous decision points when needed).
8. Assist in scheduling CMER-related meetings (e.g., CMER Science Conference).
9. Maintain records of all CMER meetings and any SAG distributions that are important for the record or CMER activities.
10. Assist CMER co-chairs and the AMPA with other administrative tasks as needed.
11. Assist with website postings and content management of the site.

3.2.5 CMER Staff

CMER staff provides scientific support to CMER and the SAGs. Direction and work priorities are provided by the AMPA in consultation with the SAG and CMER co-chairs, PMs, and CMER staff. CMER staff duties may include:

1. Providing technical scientific support with project scoping, design development to final reporting.
2. Selecting sites and implementing projects.
3. Assisting with literature reviews.

4. Acting as Principle Investigator of projects.
5. Acting as Project Manager.
6. Preparing field protocols and conducting QA/QC.
7. Training field crews, collecting and analyzing data, and/or providing over site of data collection/analysis.
8. Analyzing data, writing reports, and responding to peer review comments.
9. Assisting CMER when revising work plan.
10. Providing general scientific support under the direction of the AMPA.

3.2.6 CMER Project Managers

The CMER Project Managers (PM) report to the Adaptive Management Project Administrator (AMPA). The AMPA is principally responsible for ensuring all aspects of project management, as described in Chapter 7, are assigned and carried out effectively.

A key to successful project management is the assignment of a Project Manager who provides project management oversight of the project and its individual steps in consultation with the SAGs and CMER. The AMPA oversees the work plans of PMs and assigns projects according to workload capacity, PM expertise, geographic considerations and other factors.

3.2.7 Scientific Advisory Groups (SAGs)

The Forest Practices Board has given CMER authority to appoint subcommittees, including scientific advisory groups (SAGs) to design and implement research and monitoring programs within specific areas of expertise. SAGs conduct or manage studies on behalf of CMER. The formation, composition, governance, and operation of SAGs are discussed in more detail in Chapter 5.

3.2.8 General Public Participation

Meetings of CMER are open to the general public in accordance with RCW Chapter 42.30.

3.2.9 Other CMER Roles

As a whole, CMER shall also develop and manage:

- SAGs/sub-groups,
- research and monitoring programs,
- sets of protocols and standards,
- a baseline data set used to monitor change, and
- a process for Policy approval of research, external science, and critical questions to be answered.

3.3 CMER Internal Relations

3.3.1 General

The core values of CMER are predicated upon the agreement of each CMER participant that adaptive management is based upon sound science and it is the responsibility of every participant to follow sound scientific principles and procedures. Participants will also adhere to the purpose of the adaptive management program, as defined in WAC 222-12-045(1):

... provide science-based recommendations and technical information to assist the Board in determining if and when it is necessary or advisable to adjust rules and guidance for aquatic resources to achieve resource goals and objectives....The goal of the program is to affect change when it is necessary or advisable to adjust rules and guidance to achieve the goals of the forests and fish report or other goals identified by the Board.

Individual policy positions should not be the basis for CMER decisions; if they are, the credibility of CMER research can be questioned and CMER will fail in its function to provide impartial results to the adaptive management program.

Participation in CMER is predicated upon adherence with the ground rules below, which were developed collectively by CMER to insure that CMER produces credible scientific results that have a broad base of support.¹ The following Ground Rules are specific to CMER and do not apply to any other portion of the adaptive management program.

3.3.2 CMER Ground Rules

CMER participants will engage in actions that promote productive meetings and will encourage the active participation of each individual member. Examples of these actions are:

1. Speak to educate, listen to understand.
2. Pursue win/win solutions.
3. State motivations and justifications clearly. Discuss issues openly with all concerns on the table.
4. Avoid hidden agendas.
5. Ensure that each individual has a chance to be heard.
6. Help others move tangent issues to appropriate venues by scheduling a time to discuss these issues later.
7. Start and stop meetings on time.
8. Take side conversations outside – listen respectfully.
9. Define clear outcomes for each agenda item and designate a discussion leader.
10. Respect discussion leaders.
11. Be trusting and trustworthy.
12. Acknowledge and appreciate the contributions of others, even when you disagree.

CMER participants agree to spend the time necessary to prepare for meetings so that their participation is both meaningful and relevant, and to refrain from participation when they are unprepared.

When choosing to review documents, CMER participants will provide their comments to the appropriate person in the agreed upon review timelines. If they cannot provide their comments within the agreed upon timelines, they will notify the appropriate person to make other arrangements if possible. If comments or notification is not provided within the agreed upon review timeline, they will not delay the document from moving forward.

CMER participants agree to participate in the adaptive management program's scientific dispute resolution process when consensus cannot be reached and to make a good-faith effort to resolve the dispute.

¹ CMER ground rules are expected to be refined and added to as necessary over time by CMER consensus.

CMER participants recognize that information and results are preliminary until the final report is approved by CMER. Products must be clearly labeled and presented as DRAFT until approved by CMER as a final product.

At no time shall any potential contractor² for a project be involved in the drafting of an Request for Proposals, (RFP), Request for Qualifications (RFQ), or Scope or statement of Work (SOW)³, unless part of a formal pre-RFP/RFQ meeting. No bidding contractor can be part of the selection process for the specific project.⁴

3.3.3 CMER Dispute Resolution Process⁵

CMER, as part of the Washington State Forest Practices Adaptive Management Program, is mandated to "...strive to use a consensus-based approach to make decisions at all stages of the process," (WAC 222-12-045(2)(b)).

CMER interprets consensus-based approach to mean that committee deliberations in both CMER and SAGs are:

- Agreement seeking
- Collaborative
- Cooperative
- Egalitarian
- Inclusive
- Participatory

Decisions during regular deliberations in CMER and in the SAGs only move forward after consensus is reached. During regular deliberation a single no vote (i.e. thumbs down) can prevent 'consensus' until that vote changes or until formal dispute resolution is conducted. The CMER process allows individuals to abstain or 'step aside', thereby consenting to let a decision/process move forward without that individual necessarily agreeing to the decision (i.e. thumb sideways), so that disagreements do not always result in blocking decisions or progress.

If during regular SAG or CMER deliberations it becomes clear to SAG/CMER participants or to the AMPA that progress towards making a decision has stalled, any participant or the AMPA can invoke the Guided Decision-Making Process (i.e. dispute resolution). Initiating the Guided

² For the purposes of this ground rule, "contractor" is defined as owner or employee of a private business and is restricted to contracts identified as open to public bid. These contracts are different from tasks and contracts directed to CMER staff, interagency agreements, and cooperative participation where availability, specialized knowledge and skills, timeliness, and advantage of in-kind contributions are deemed important to project success.

³ This ground rule applies unless the SOW drafting is awarded as part of the contract.

⁴ *The intent of this ground rule is to comply with state law and DNR contracting procedures.* Chapter 19.36 RCW, Statute of Frauds; Chapter 39.19 RCW, Office of Minority and Women's Business Enterprises (see also Title 326 WAC); Chapter 39.29 RCW, Personal Services Contracts; Chapter 39.34 RCW, Interlocal Cooperation Act (Interagency Agreements); Chapter 40.14 RCW (WAC 434-635-010), Destruction, Disposition of Official Public Records or Office files and Memoranda; Chapter 1.06 RCW, State Civil Service Law; Chapter 42.17 RCW (WAC 32-10-020-170), Public Records; Chapter 42.53 RCW, State Ethics Law; OFM Regulation (chapter 3, Part 4, Section 1), State of Washington Policies, Regulations, and Procedures; OFM Guide to Personal Service Contracting; DNR Policy Number P004-001, Interagency Agreements and Memoranda of Understanding; and the DNR Contract Manual

⁵ "The CMER co-chairs, with the guidance and assistance of the Administrator, are responsible for setting up a dispute resolution discussion and can employ a variety or combination of methods to attempt to resolve the dispute." (Board Manual Part 5. Dispute Resolution, Sect. 5.4 Guidance for Dispute Resolution Stage 1, paragraph 5)

Decision Making Process sets into motion a series of steps and check-in points with deadlines to facilitate resolution of an impasse in a timely manner.

3.3.4 Guided Decision-Making Process

(Please refer to accompanying flow chart below)

The general approach of the Guided Decision-Making Process is to divide CMER decision making into 3 broad steps. The first step is to convene an informal meeting between the parties to determine if the dispute(s) can be resolved outside of a regular SAG or CMER meeting. If this is not successful, the second step is for the AMPA and CMER co-chairs to assign the issue(s) that are in dispute into one of four categories: Stylistic, CMER Process, Policy, and Technical. The process to resolve issue(s) in step 2 depends on to which category(s) the dispute has been assigned (see below). If the issue is categorized as Technical and there is still no consensus at the end of step 2, a third step is to refer the issue to Policy.

3.3.4.1 Step 1: Convene an informal meeting

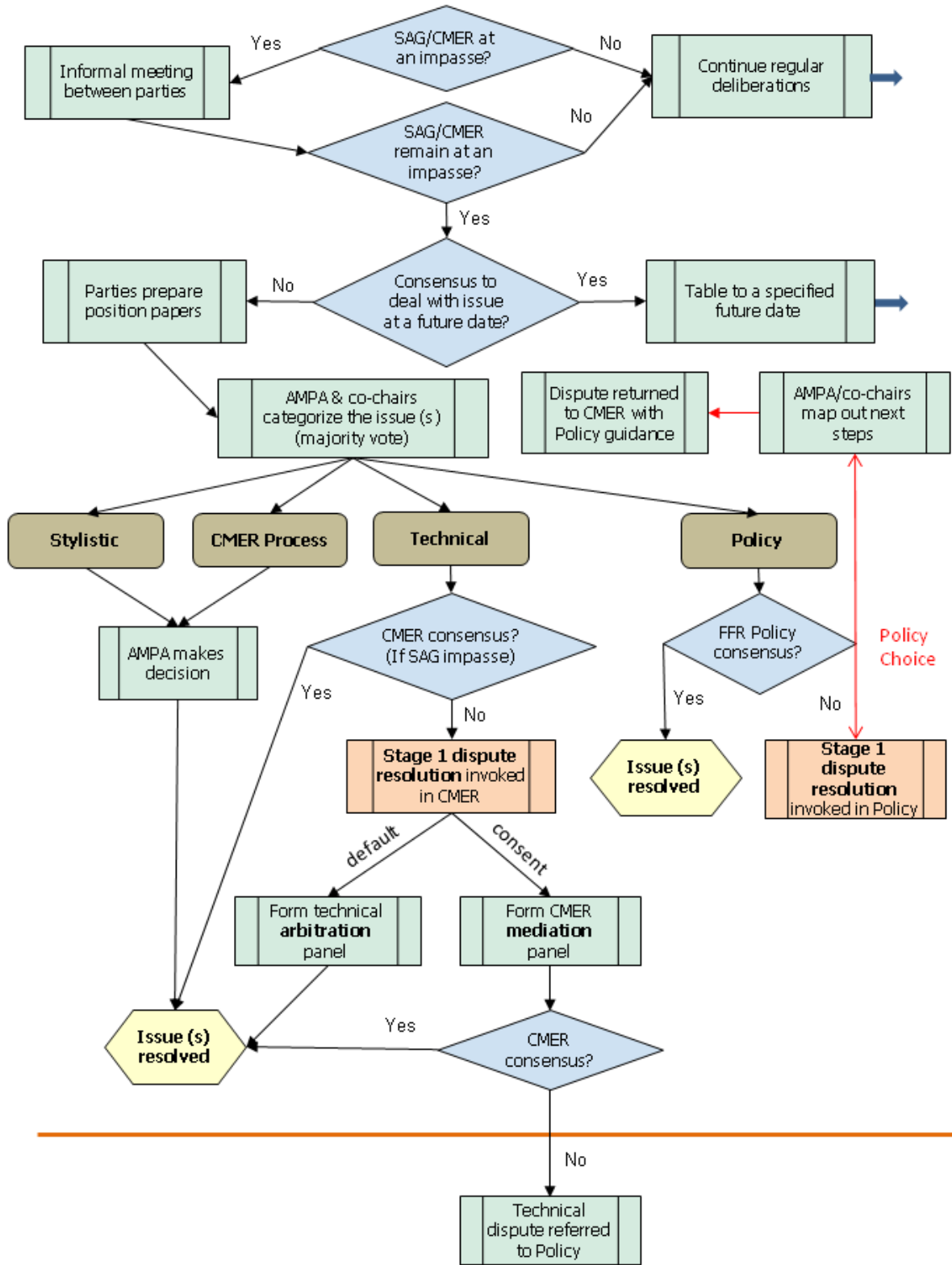
When there is an impasse at CMER or in a SAG and decision making breaks down and becomes insoluble or unacceptably slow using regular deliberations, any participant or the AMPA can initiate the formal Guided Decision-Making Process. The first step is for representatives on both sides of the non-consensus issue/question to meet together and with the AMPA and other interested parties within 30 days to attempt to resolve the impasse.

If the issue/question cannot be resolved at this meeting, tabling the discussion and resolution to a future date should be discussed. Some issues may not be time-sensitive or critical for moving them, or other CMER work, ahead. If a better time can be identified to resolve the issue/question and there is consensus within CMER or the affected SAG to table the issue, a future date should be specified for re-engaging the discussion.

3.3.4.2 Step 2: Categorize and resolve the issue

If the issue/question cannot be resolved at the 'informal' meeting and there is no consensus to table the issue/question, then the disputing parties need to clearly articulate in position papers their interpretation of the issue/question and their positions. If the non-consensus is occurring in a SAG, the issue is elevated to CMER to continue the guided decision making process. The position papers should be submitted to the AMPA and CMER co-chairs within 14 calendar days after the decision to move forward, but no later than in time for the next CMER meeting mail-out if within the 14-day

Guided Decision-Making Process



blocking consensus is unable or unwilling to provide this document in this time frame, it will be treated going forward the same as if the individual stood aside, and that consensus has been reached.

If all parties submit position papers, the AMPA and CMER co-chairs will assign the issue/question(s) to one (or more) of four categories based on the position papers: Stylistic, CMER Process, Policy, or Technical.

Resolving Stylistic Issues: Stylistic issues include format or other non-technical issues related to reports or other documents. The basis for categorizing issues/questions as stylistic rests on the interpretation of the position papers that the issues/questions do not affect the integrity of a study's results or are not technically substantive in nature.⁶ Documents may include charters, scoping documents, study designs, maps, tables, figures and other work product. When the AMPA and co-chairs categorize an issue/question as stylistic, the AMPA makes the final decision (thus resolving the dispute) after consulting with the author(s) or creators of the document or work product. At this point, the CMER/SAG Guided Decision-Making Process has been completed. The AMPA should make a decision and inform the affected SAG or CMER in writing no later than 14 days after receiving the position papers.

Resolving CMER Process Issues: CMER process issues include questions or disputes that relate to 1) interpretation of CMER process guidelines (as described in the PSM), including whether ground rules were followed (see PSM, Chapter 3, section 3.3.2), and 2) whether comments on a CMER product (scoping document, study plan, charter, study report, comment matrix, etc.) relate to an issue that has already been decided by CMER. For example, a dispute over appropriate field methods during review of a draft final study report may be classified as a CMER Process Issue. When the AMPA and co-chairs categorize an issue/question as a CMER Process Issue, the AMPA makes the final decision (thus resolving the dispute). At this point, the Guided Decision-Making Process has been completed. The AMPA should make a decision and inform the affected SAG or CMER in writing no later than 14 days after receiving the position papers.

Resolving Policy Issues: Policy non-consensus includes issues/questions that relate to rule interpretation, board manual interpretation, or to research priorities/questions that are primarily policy in nature or are directions from policy. When the AMPA and CMER co-chairs categorize an issue/question as policy, there are several steps in the guided decision-making process. The AMPA will inform the parties which issues have been categorized as policy issues and inform them of the date the issue(s) will be discussed at Policy. The AMPA will write an introductory statement to provide background on the issue/question and describe the kind of guidance that SAG/CMER is requesting. This will be done within 14 days after the issue has been categorized as a policy issue, using the original or revised position papers. The AMPA will combine all the policy issues into a single document and identify critical timelines for resolution. The non-consensus representatives will have 7 days to review and comment on this document.

The next step includes the AMPA forwarding the document to the FFR Policy Committee along with a recommendation. The disputing parties and other interested CMER/SAG participants should attend the Policy meeting when the issue/question is discussed. At the conclusion of this meeting, Policy will be asked to make a decision by no later than the next Policy meeting. At this stage, Policy can:

⁶ Examples of causes of stylistic issues: People have varying writing styles, which should generally be left up to the discretion of the author, unless unclear, etc. Some people are splitters, while others are lumpers – neither is right or wrong. Some people want to include the bare minimum necessary, while others prefer more context and details – again, neither is right or wrong. These are matters of personal choice.

1. Resolve the issue and inform CMER,
2. Choose to initiate Stage 1 dispute resolution within Policy, or
3. Return the issue to CMER with guidance for resolution.

Resolving Technical Issues: Technical issues are scientific in nature. When the AMPA and co-chairs categorize a non-consensus issue/question as technical, the first step is to forward the issue/question to CMER voting members for their consideration if the dispute/question arose in a SAG/TAG and has not yet been discussed in CMER. CMER voting members should come prepared to vote at the next CMER meeting after receiving the dispute, unless the AMPA agrees to an alternate timeline. If CMER voting members are in consensus on an issue/question, then a final decision has been made and the Guided Decision-Making Process has been completed.

If CMER voting members are not in agreement and non-consensus remains over a technical issue, the party that wants a project or recommendation to move forward to the next step (for example scoping documents, study designs, reports, charters, work plans, etc.) should invoke formal (CMER) dispute resolution. This is the party that objects to another CMER/SAG participant blocking a decision to move forward.

If formal dispute resolution is invoked, CMER has up to six months to resolve the dispute. The initial step is for CMER to decide whether to form an arbitration or mediation panel. The default is for the AMPA to convene an arbitration panel. The arbitration will be binding, and will have up to 3 months, or the shortest practical time frame, to resolve the question/issue. At the conclusion of the arbitration step the issue(s) will be considered resolved.

If however there is consensus in CMER to form a mediation panel instead, the AMPA will form an ad hoc committee made up of SAG/CMER participants to work on resolving the issue/question outside of CMER meetings. Depending on the issue/question, the AMPA may pull together an external panel (using DNR contracting if necessary) to provide expertise for the ad hoc committee to sort out the technical questions and issues. The ad hoc committee will have up to 3 months, or the shortest practical time frame, to resolve the question/issue (i.e. no blocking vote). If the ad hoc committee does come to consensus, the decision is brought back to CMER for formal adoption and the Guided Decision-Making Process is complete. If the ad hoc committee does not come to consensus by the assigned deadline, the AMPA and CMER co-chairs make the decision and forward it to CMER. Again, the expectation is that this would complete the Guided Decision-Making Process.

3.3.4.3 Step 3: Refer Technical disputes to Policy

At the conclusion of the above CMER Guided Decision-Making Process for issues categorized as Technical, the steps of stage 1 dispute resolution have been followed within CMER. If at this point a voting CMER member does not accept the decision, the dispute is referred to Policy, as described in the Board Manual (Section 22, Part 5). The dispute remains in stage 1 and Policy has up to an additional six months to resolve the dispute within stage 1 within Policy. If that does not occur the dispute may be elevated to stage 2.

4 CMER Meetings and Meeting Management

This chapter outlines the frequency and content of CMER committee meetings, the procedures for calling and holding meetings, and the roles of CMER co-chairs, coordinator, the AMPA, and members in meetings.

4.1 Meeting Requirements

4.1.1 Regular Monthly Meetings

Regular meetings are held once a month (typically the fourth Tuesday of each month). Meeting dates for the year are determined at that year's January meeting and are included in the meeting minutes. Meeting dates shall be scheduled so as not to conflict with predetermined Forest Practices Board meetings and Forests and Fish Policy meetings. All CMER meetings are public, and public notice is required.

4.1.2 Special meetings

Special meetings can be called by the co-chairs, by the AMPA, or by consensus of CMER members. Notice of special meeting location, time and agenda is to be distributed to CMER participants no less than seven days prior to the special meeting. Only topics detailed on the distributed agenda are to be addressed at the special meeting.

4.2 Meeting Process

Agendas are developed for all CMER meetings by the AMPA, CMER co-chairs, and CMER Coordinator. CMER's agenda generally includes the following items:

- Introductions
- Agenda review and alterations
- Approval of minutes
- Review of CMER work items
- Scheduled science session
- Budget update
- SAG requests
- Independent Scientific Peer Review (ISPR) update
- SAG issues and updates
- Work plan prioritization
- New business
- Review of new decision points and action items, and topics for Policy update

Along with regular business, CMER meetings often include science sessions. If scheduled, the science session is typically a presentation or discussion of a scientific topic relevant to CMER research and monitoring.

4.3 Meeting Coordination

Meeting arrangements are made by the CMER Coordinator (see Chapter 3).

4.3.1 Notices of Meetings

Monthly meeting locations are posted on the DNR website a year in advance. The CMER coordinator sends an agenda and meeting material to the CMER listserv one week before each scheduled meeting. This includes the time, location, and background information needed for that month's meeting.

4.3.2 Dissemination of Agenda Items and Decision Points

The meeting information that the CMER Coordinator sends out will include an agenda detailing new business and decision points. Any decision points for any topic on the agenda should be highlighted on the agenda (with an asterisk), and background information for these decisions must be made available prior to the meeting.

For CMER requests (from CMER subgroups (e.g., SAGs, TAGs), a standard form, the CMER Request Form – see appendix XX, will be used to present the request to CMER. The SAG co-chairs (or project leads) should complete or facilitate the completion of this form and send it to the CMER Coordinator for distribution through the CMER listserv no less than one week prior to the CMER meeting.

CMER participants are expected to review materials before the meeting and contact sponsors of items where there are questions that may be resolved before the meeting.

4.4 Meeting Management

Meetings are managed by the CMER co-chairs. The CMER co-chairs start and adjourn the meeting, ensure that the meeting follows the agenda, introduce the agenda topic presenters, and guide the discussions. When many members want to speak on the same topic, the co-chairs recognize the speakers in order and prevent interruptions. The co-chairs ensure that everyone present has an equal opportunity to participate in the conversation.

Action items, issues, and proposals are presented or reviewed consistent with the agenda distributed before the meeting (unless a change in the agenda is agreed to at the start of the meeting). The presenters elaborate on the facts as necessary and answer any clarification questions that members ask. The group then discusses issues and identifies concerns. Individuals expressing concerns are responsible for working productively with the group to resolve them. The co-chairs formally call for consensus on the decision/action being discussed, and read the specific language that will record the decision/action.

4.4.1 Decision Making

Decisions are made by consensus. The goal is for all opinions or positions to be shared, and all members to agree to allow an action to proceed. Full agreement by all participants by all participants is ideal. When consensus cannot be reached among all participants at a CMER meeting, co-chairs will seek consensus of the Board approved CMER members. The possible outcomes of the consensus process are as follows:

1. Full consensus, in which the proposal is unanimously supported
2. Stand-aside consensus (abstention) in which one or more Board approved CMER members abstain from voting and allow the proposal to move forward. Members are not to stand aside if they have concerns that may affect their ability to support the proposal/project at later stages. See 3 (below).

3. No consensus in which at least one Board-approved CMER member votes no on an issue or proposal, resulting in one of the following:
 - a. The action is blocked (unless a consensus alternative proposal can be identified at the meeting), or;
 - b. The issue is submitted for CMER internal dispute resolution - Guided Decision-Making Process (see chapter 3).

4.4.2 Documenting CMER Decisions/Actions Items and Discussions¹

4.4.2.1 Decision and Action Item Table

Every CMER related committee (CMER, SAG, TAG) is expected to maintain a record of decisions and actions items by filling out and updating, as necessary, a running table listing all decisions, action items and relevant updates. The CMER/SAG co-chair(s), or the identified leader of the TAG or other CMER sub-group / is responsible for making sure the table is filled out appropriately. Information in the table should include the following fields:

Date	Date that the decision or action item was made. Include what type of meeting: (i.e. monthly meeting, conference call, ad-hoc meeting, etc).
Project/Issue	Name of project, or issue or topic that the decision/action item refers to. If the committee is a TAG or other CMER sub-group, focus on specific topic(s) related to the project/issue. If committee is a SAG or CMER, list the project or issue as well as the specific topic (eg, “Soft Rock Study/Site selection criteria”)
Decision	Concise (1 to 3 sentences) summary of decision or action item(s).
Person responsible	List the group or individual identified as being responsible for carrying out the decision or action item (if appropriate).
Date to be completed	Date that an action item, deadline or resolution of issue is to be completed (if appropriate).
Consensus? Note/update	Add either the phrase ‘consensus reached with no stand asides,’ or ‘consensus reached with stand asides,’ to emphasize to all in attendance that the decision was by consensus. Also include any qualifying or relevant information about the decision/action item, or any update related to the decision.

An example template for the Decision and Action Item table can be found in Appendix

The Decision and Action Items table is to be continuously updated as meetings occur and decisions are made. A SAG/TAG lead, or the CMER Coordinator for CMER decisions, will be responsible for filling out and updating the table during meetings or phone conferences. When a decision is reached, the lead (or an alternatively designated note taker) will discuss with everyone in attendance how the decision will be recorded in the table. If a decision is rescinded or changed, that should be noted in the table both as a new decision, and with a note by the old decision.

The updated table should be reviewed before each meeting/phone conference adjourns. A copy of the table should accompany meeting minutes when the minutes are distributed and approved. If

¹ This guidance applies to all CMER related committees.

there are no meeting minutes, then the Decision and Action Item table should still be maintained and distributed for review.

4.4.2.2 CMER Meeting minutes

Minutes are taken by the CMER coordinator who is responsible for taking notes that include a list of all attendees, action items, decision points, and key discussions.

The CMER Coordinator submits the draft minutes to the CMER Co-chairs and AMPA for initial review of decisions and topics/issues discussed during the meeting. The coordinator incorporates comments from the CMER Co-chairs and AMPA, and then sends the draft minutes out to the CMER listserv. The coordinator receives and documents comments from those in attendance at the CMER meeting. The goal is to bring the revised minutes to the next CMER meeting for approval. Revisions are described, and minutes are approved as amended. Disputes concerning the minutes can be dealt with in the dispute resolution process. The CMER Coordinator is responsible for presenting minutes for approval and old business for consideration according to the agenda. Before adjournment of a meeting, the CMER coordinator will restate all decision points and action items recorded during the meeting.

5 Scientific Advisory Groups (SAGs)

Scientific Advisory Groups (SAGs) are subcommittees formed by CMER to recommend, manage, conduct or facilitate, and evaluate scientific research projects and programs to help CMER fulfill its mission. This chapter outlines the formation, roles, responsibilities, operation, and dissolution of SAGs.

Examples of SAG's include:

- LWAG-Landscape/Wildlife Advisory Group
- UPSAG- Uplands Scientific Advisory Group
- RSAG-Riparian Scientific Advisory Group
- WETSAG-Wetlands Scientific Advisory Group
- SAGE- Scientific Advisory Group Eastside

5.1 Formation

CMER may create a SAG whenever it determines a need for a subcommittee to address a particular science-related question or set of questions. CMER will define a clear purpose, desired outcome and focus of the SAG. CMER may recommend the type of expertise required of participants in the SAG. All caucuses are encouraged to appoint representatives to each SAG. SAG participants are scientists and practitioners qualified in the scientific discipline that the SAG is intended to address. No confirmation is necessary for participation; however, the SAG should provide CMER a list of participants and their qualifications.

5.2 Roles and Responsibilities

5.2.1 Committee

SAGs conduct or facilitate research and monitoring to answer questions posed by the Board or Policy, or as otherwise articulated in the CMER work plan. SAGs may propose programs and projects to be considered for inclusion in the work plan. All SAG recommendations and results are provided to CMER for review and further action. (See Section 2.6 on Roles and Responsibilities of CMER)

Specifically, responsibilities of SAGs include:

1. Developing research and monitoring strategies;
2. Updating the CMER work plan as needed;
3. Developing project budgets;
4. Working with contractors and AMP Project Managers to meet project objectives;
5. Responding to requests from CMER;
6. Reviewing, approving, and forwarding study designs, reports, and other research and monitoring related documents to CMER; and
7. Initiating the guided decision making process in Chapter 3

5.2.2 Members

Members are expected to follow the CMER ground rules (see CMER Internal Relations in Chapter 3, "CMER Organization"), read materials in preparation for meetings, attend meetings of the SAG, contribute to discussions, participate in decision making, take on assignments, and, when needed, serve as a scientific advisor to AMP project managers. SAG members should keep their CMER

and/or Policy committee counterparts informed on SAG business, as needed. SAG members may also participate in CMER research.

5.2.2.1 SAG Co-chairs Election and Term

Each SAG shall choose a chair or co-chairs through a process agreed upon by the SAG and determine the term of the SAG chair or co-chairs. Notify the AMPA and CMER co-chairs of SAG co-chair names.

5.2.2.2 Duties

Duties of SAG Co-chairs include:

1. Be sufficiently familiar with the CMER Protocols and Standards Manual to
2. Be able to facilitate research and monitoring activities, including review and approval of documents, SAG requests, direction to project principal investigators and contractors, etc.
3. Maintain contact lists of members and interested parties for notification of meetings and providing minutes.
4. Ensure that meeting agendas and other materials are provided to members at least one week before each meeting.
5. Conduct SAG meetings.
6. Ensure that action items and decisions are recorded as per guidance in Section 5.3.4 below and minutes are taken and distributed at least one week prior to the next meeting.
7. Assist with locating expertise from outside the SAG when needed.
8. Appoint ad hoc committees as needed.
9. Attend CMER meetings.
10. Present to CMER proposals, reports, SAG requests and any other documentation required for any phase of a project or program.
11. Facilitate updates to the CMER work plan for all projects being overseen by the SAG.
12. Appoint SAG members to be contacts for each SAG project.
13. Convey to the SAG any relevant information and decisions from CMER, Policy, and the Board.

The duties of a SAG Co-chair may be assigned to SAG members or shared with CMER Co-chairs, AMP project managers, CMER voting members or others. However, the SAG Co-chair is responsible for ensuring that duties are completed.

5.3 Meeting Management and Decision Making

Each SAG uses a consensus-based decision process. Consensus means that all opinions or positions are shared and a mutually agreed-upon solution can be reached and supported by all members. When consensus cannot be achieved, SAG members are to follow the dispute resolution – Guided Decision Making Process described in section 3.3.4. CMER is responsible for ensuring that SAG recommendations represent consensus among all caucuses active in CMER.

SAG meetings should follow the guidelines for CMER meetings (described in Chapter 4). Each SAG, by consensus of all its members, may modify the CMER meeting guidelines to suit its needs.

5.3.1 Regular Meetings

Each SAG is encouraged to hold regular meetings at consistent intervals. Monthly meetings are recommended. The number of projects or timeline of a particular project may determine the frequency of meetings.

5.3.2 Special Meetings

When a decision is needed between regular meetings, or a topic/issue needs additional discussion, the co-chairs may call a special meeting. This could be an extra SAG meeting or a standing Technical Advisory Group (TAG) meeting, etc. One week's notice should be provided if possible. If a face-to-face meeting cannot be arranged, the SAG may meet by teleconference, conference call, e-mail, or other electronic means. As in regular meetings, decisions must be by consensus. Not all regularly participating members of a SAG need to attend a special meeting for it to occur; however, before the special meeting convenes, the SAG will decide whether decisions reached at the special meeting need to be reviewed at a regular SAG meeting before becoming final. Any decision made in a special meeting must be communicated to all interested parties before the next regular SAG meeting.

5.3.3 Notices of Meetings

Notice of each meeting shall be provided to all members of the given SAG and CMER at least one week before the scheduled meeting date. In addition, annual publication of all meeting dates and times for a year may facilitate participation. A list of agenda issues should accompany the notice of meeting. The agenda should clearly indicate which issues require a decision. Background materials to be read before the meeting should be attached, linked to an electronic location, or directions for obtaining them should be provided.

5.3.4 Meeting Minutes

Meeting notes or minutes of key topics and issues are preferred. At a minimum, SAGs and other CMER sub-groups are expected to maintain a record of decisions and actions by filling out and updating, as necessary, a running table listing all decisions, action items and relevant updates. See 4.4.2 Documenting CMER Decisions/Actions Items and Discussions for further guidance.)

5.4 Dissolution

SAGs may be dissolved or integrated into another SAG when:

1. A SAG has completed the work for which it was formed,
2. CMER finds that a SAG is not performing its duties adequately,
3. Workload changes. CMER may split one SAG into two or merge two SAGs into one,
or
4. The programs on which a SAG is working receive a low priority or are dropped from the work plan.

6 CMER Work Plan Process

The CMER work plan is a document that describes AMP research and monitoring programs, critical questions, and individual projects. The work plan contains completed projects, projects under development, and currently active projects as well as projects identified for future design and implementation. The CMER work plan provides the backbone for establishing CMER research and monitoring priorities for a given fiscal year.

The cycle of work plan development follows the fiscal year calendar of the State of Washington government, which begins on July 1 and ends on June 30 of the following year. Each fiscal year, CMER prepares a project list and associated budget for submission to the Board for approval. Within the overall AMP cycle, revisions to the work plan and project list generally starts September 1. Under this schedule, proposed changes to the work plan and associated project list are approved by CMER in January, and sent to Policy by April for concurrence. It comes before the Board in May for consideration. In the subsequent fiscal year, CMER members and SAGs proceed with implementing the Board-approved project list contained within the CMER work plan.

This chapter describes the process for revising the work plan. The nature of the work plan and the types of information it contains are summarized, including the criteria and the process CMER uses to rank proposed projects according to their relative importance for meeting FFR goals and objectives.

To view or download the current CMER work plan, follow the link at

http://www.dnr.wa.gov/BusinessPermits/Topics/FPAdaptiveManagementProgram/Pages/fp_am_program.aspx

6.1 Purpose of the CMER Work Plan

The purpose of the work plan is to outline an integrated strategy for research and monitoring of the effectiveness of Washington State forest practices rules, guidance, and department policies as prioritized by Policy and the FP Board. The work plan is critical to conducting CMER business, fulfilling the priorities of the Board's adaptive management program, and informing the general public who are interested in CMER's activities.

6.2 Organization of the Work Plan Document

The work plan is organized in a hierarchical format (Figure 6-1). Forest practices rule groups form the highest level, programs occur within rule groups, and projects are defined within programs.

Research and monitoring questions are identified at the rule group level and are assigned to programs. Then projects are developed within each program. In the remainder of this section, we further define the rule groups and programs and introduce the monitoring task framework that is being used by CMER.

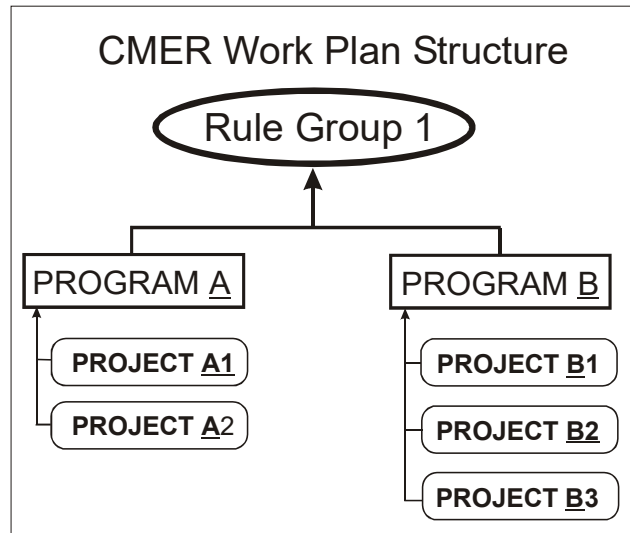


Figure 6-1. Work plan structure

6.2.1 Rule Group Structure and Definition

A rule group is a set of forest practices rules relating either to a particular resource, such as wetlands or fish-bearing streams, or to a particular type of forest practice, such as road construction and maintenance.

The rule groups are organized along the lines of the Forests & Fish Report (FFR) appendices, including:

1. Riparian Strategy (FFR, Appendix B), which includes five subgroups:
 - a. Stream Typing
 - b. Type N Streams
 - c. Type F streams
 - d. Bull trout
 - e. Channel Migration Zones (CMZ)
2. Unstable Slopes (FFR, Appendix C)
3. Roads (FFR, Appendix D)
4. Fish Passage (included in FFR, Appendix D, Roads)
5. Pesticides (FFR, Appendix E)
6. Wetland Protection (FFR, Appendix F)
7. Wildlife (FFR, Appendix M)

6.2.2 Program Structure and Definition

A program is a combination of one or more projects designed to address the scientific questions underlying a specific rule group. Four general types of programs may be identified for each rule group: rule tools needed to implement the rules, effectiveness monitoring, extensive (status and

trends) monitoring, or intensive monitoring. A description of each current program, including its purpose and objectives and the strategy for accomplishing them, is in the current work plan (see Appendix G for URL).

6.2.3 Project Structure and Definition

One or more projects comprise a program within the rule group structure. A CMER or SAG project is defined as one research or monitoring task resulting in a final report or product. Each project is often comprised of several steps including scoping paper, literature review, study plan, implementation plan, field and data management, in-progress reporting, and final reporting. Project management of those steps is discussed in Chapter 7 of this PSM. The process by which CMER programs and projects are proposed and developed is described in this section.

6.3 Proposal Initiation

The term *proposal* is used generically here to identify anything whose end product is intended to inform FF Policy or the Board about forest practices rules or guidelines, or otherwise meet one of the AMP's goals and objectives.

Research and monitoring proposals enter the AMP through several pathways.

1. CMER developed and ranked the original work plan programs and project list based on the FFR Schedule L-1.
2. CMER work may also lead to additional studies proposed to Policy by CMER. These may additionally be prioritized and included in the work plan and annual budget approved by the FPB.
3. Some CMER work originates from questions from Policy or the FPB. These projects are written up, prioritized and included in the work plan.
4. Research gaps identified by SAGs or CMER can lead to project proposals that are proposed to Policy and added to the CMER work plan.
5. Formal proposal to the Forest Practices Board – anyone can make a proposal to the FPB which may enter the AM process, be evaluated by the AMPA as to relevance and priority, with AMPA recommendation to the Policy on how to address the proposal. It may be added to the CMER work plan and prioritized. WAC 222-12-045 (2) (d) describes this pathway in detail. Board Manual 22, also describes this pathway.

6.4 Setting Program and Project Priorities for the Work Plan

The Adaptive Management Program focuses its research and monitoring efforts on critical areas by ranking and prioritizing its research and monitoring programs and projects. The original Schedule L-1 in the 1999 Forests and Fish Report contained an unprioritized list of research and monitoring needs. At the time, CMER prioritized the various research and monitoring programs (not individual projects at that point) in order to direct limited human resources toward the highest priority programs. No programs were eliminated. Because research funding has become even more limited, CMER continues to focus on completing the highest priority work. Projects are worked into the work plan based on either their scientific priority (i.e., scientific uncertainty and resource risk) or their priority as determined by the Policy or the Board based on political, economic or social needs.

6.4.1 CMER Strategy for Setting Priorities

The original CMER strategy for annual program ranking and work priority was based on discussions with Policy. Although the Forest Practices Board is the final approving authority, Policy has been given oversight responsibility for reviewing CMER priorities and budget. The program prioritization strategy is as follows:

1. Rank at the program level (as opposed to the project level).
2. Provide a separate ranking of effectiveness/validation monitoring programs on the basis of scientific uncertainty and risk to aquatic resources.
3. Provide a separate ranking of extensive trend monitoring programs on the basis of scientific uncertainty and risk to aquatic resources.
4. Determine the importance or priority of individual projects within a program on a case-by-case basis.
5. Consult with DNR on ranking of rule tool programs, with DNR taking the lead.
6. Proceed with scoping of the intensive monitoring program.

This section presents CMER's original criteria and process for ranking effectiveness/validation and extensive trend monitoring programs. Policy and the Forest Practices Board have reviewed and accepted the rankings presented herein. Consultation with DNR facilitated ranking of rule tool programs

6.4.1.1 CMER Ranking Criteria

The ranking approach applied to effectiveness monitoring, validation research, and extensive trend monitoring programs was designed to assess the merit of each program by asking two questions:

1. How certain are we of the science and/or assumptions underlying the rule?
2. How much risk is there to the protected resource if the science and/or assumptions underlying the rule are incorrect?

In an attempt to obtain a uniform set of scores, the ranking approach constrains subjectivity by carefully defining the two assessment criteria and by establishing a numerical evaluation scale for each criterion. The sum of the assessment scores indicates the project's importance.

The ranking process is firmly rooted in the FFR. The rules established during the FFR negotiations are based on science as well as certain assumptions as to the application of the known science to the forest practice. The authors understood that uncertainties and gaps existed in the scientific foundation of the rules and that consequently some of the underlying assumptions contain uncertainties. CMER was charged with reducing these uncertainties through effectiveness and validation monitoring and research. Any necessary modifications to the rules would then go through the adaptive management process.

A. Criterion 1: Scientific Uncertainty

Scientific uncertainty is defined by the following question:

How much is NOT known about the science and the assumptions on which the rule is

based?

Uncertainty is a measure of confidence in the science underlying a rule, including the scientific relationships providing the conceptual foundation for the rule, the assumptions incorporated into the prescription, or the response to the prescription when it is applied on the ground. High uncertainty (low certainty) indicates that little is known about the underlying science and the rule is likely based on speculation or poorly tested assumptions. It may also indicate that the prescription treatment is untested, and the performance under field conditions is unknown. Low uncertainty (high certainty) indicates that the science underlying the rule is well known and accepted, or that the prescription (or similar treatments) has already been evaluated under similar conditions. Examples:

High Uncertainty: Few studies describe the factors controlling the initiation of perennial flow in headwater streams, and the rule is based on assumptions derived from limited data. No studies have been done of the Type N patch buffer system (clear-cut strategy) relative to buffer survival or riparian functions.

Low Uncertainty: Numerous studies describe the effects of forest practices on slope stability and the unstable-slope rules have a firm scientific/technical foundation. (This firm foundation does not necessarily imply that all aspects of the unstable-slope rules have a similarly firm scientific foundation.)

B. Criterion 2: Risk to Resources

Risk to FFR resources is defined by the following question:

What is the potential impact on FFR resources if the rule is flawed?

A deficient rule has the potential for detrimental impacts on aquatic resources, impacts that can undermine the FFR goals. A high risk assignment indicates the rule component under study has a greater potential to alter the resource because of its high magnitude, frequency, or direct linkage to the resource. A low risk assignment indicates that the rule component has a lesser potential to alter the resource because of its low magnitude, frequency, or indirect linkage to the resource.

High Risk: Mass wasting is a major contributor of sediment to forest streams. Increased rates of mass wasting from forest practices can have a high impact on critical salmon and amphibian habitat, and thus the unstable slopes rule has a high risk ranking.

Low Risk: The Type F riparian prescriptions require a minimum leave tree requirement in the outer zone, however because of the small number of trees and their distance from the stream, there is only limited risk to riparian functions and aquatic resources from thinning in the outer zone.

6.4.1.2 CMER Scoring System

The range of scores for each criterion is 1 (lowest) through 5 (highest). To increase scoring consistency the high (5), medium (3) and low (1) scores were defined for each criterion. The intermediate scores (i.e. 2 and 4) allow for a more refined estimation of value or as a vehicle to resolve uncertainties.

6.4.1.3 CMER Ranking Process

Effectiveness/validation and extensive trend monitoring programs were ranked using the system described above by CMER members in attendance at the December 19, 2002, CMER meeting. The individual scores were averaged to obtain a mean score for risk and a mean score for uncertainty for each program. The mean risk and mean uncertainty scores for each program were multiplied to get a combined score, and programs were ranked on the basis of the combined scores.

6.4.2 Policy Strategy for Setting Priorities

Although CMER limits its focus to scientific uncertainty and technical issues during ranking, Policy and the Forest Practices Board may apply economic, legal, or other criteria before approving the final work plan and associated project list. For example, since 2009 CMER projects that address Department of Ecology Clean Water Assurances have been given top priority over other projects in the CMER work plan.

Example of Record of decisions and action items table

SAG/CMER/TAG: 'TheEternalTruth' Study TAG

#	Date	Project/ Issue	Decision/action item	Person responsible	Date to be completed	Consensus? Note/update
1	6/30/2009 In person meeting	Contract changes needed	Change contract to include: a report of the methods used to collect data, delivery of the 'raw' data for all 16 sites to CMER staff at the NWIFC, and field notes/ observations that are pertinent to the data collected.	Jane Doe, AMP PM	9/23/2009 CMER meeting	Consensus reached. Contingent on RSAG/CMER approval
2	6/30/2009 In person meeting	Final report	Though the analyses and the final report will be completed in-house by RSAG and CMER staff, the consultants will maintain co-authorship of the final report. They will provide specified sections, which will be incorporated into the report, and they will provide review of the draft report.	NA	NA	Consensus reached.
3	6/30/2009 In person meeting	RSAG communica tion	Write memo for July RSAG meeting, requesting approval of recommended changes.	RSAG member John Smith	7/16/2009	Consensus reached.
4						
5						
6						

7 Project Management

7.1.1 Project Management Overview

Successful completion of projects requires effective project management. This chapter provides guidance to Project Managers, Project Teams, SAGs, and CMER on how CMER research and monitoring projects should be managed to help meet the obligations of CMER: scientific credibility (e.g., applying best available science), operational efficiency, and fiscal accountability. These guidelines recognize that CMER is a collaborative and cooperative process. This process does not preclude any SAG or individual working on any of the project elements (i.e., scoping, study plan, literature review, or other elements) in advance of the formal project initiation process.

7.1.2 Project Development

Project management requires completing documents that initiate, develop, guide, update, and ultimately communicate results from the project to CMER, TFW Policy, and the general public. These documents are intended to accommodate regular CMER processes, products, or reports and facilitate appropriate review and approval by CMER.

This chapter discusses the following documents necessary for completion of research projects:

<u>Project Management Documents</u>	<u>Technical Documents</u>
Project Budget	Literature Review
Project Charter	Scoping Paper and Alternatives Analysis
Project Management Plan	Study Design Plan
Communication Plan	Site Selection and Data Collection plan
Risk Management Plan	Data Analysis
Document/Data Management and Closure Plan	Final Reports
Project Tracking Spreadsheet	

Some CMER projects do not require all above-listed documents, but all documents should be considered and explanations of omissions should be described in the Project Management Plan.

7.1.3 Adaptive Management Program Administrator (AMPA) Role in Project Management

The AMPA assigns Project Managers (PM) to CMER projects who, in turn manage projects. Details of PM responsibilities are presented in section 7.2.2. In a project management role, the AMPA has three general areas of responsibility:

- 1) Facilitation:
 - 1. Manages the dispute resolution process (see chapter 3, section 3).
 - 2. Oversees project proposal initiation development (see chapter 6, section 3).

2) Communication with TFW Policy:

The AMPA is the primary link between science emerging from CMER and the TFW Policy group, who evaluates and recommends whether that science justifies policy changes or changes in Forest Practice Rules. In this context, the AMPA:

1. Drafts cover letters and transmits findings report to TFW Policy (see section 7.6.3).
2. Presents biennial budgets for the AMP for TFW Policy and Board approval.
3. Determines if any CMER-approved revisions to project elements (e.g., problem/purpose statement, study objectives, or critical questions) of a project require additional approval by TFW Policy (see section 7.9.3).

3) Approves DNR and CMER staff participation in Project Teams and spending of AMP project funds:

1. Approves requests from SAGs or CMER to assign DNR Project Managers to Project Teams (see section 7.2.2)
2. Approves requests from SAGs or CMER for assignment of CMER staff to Project Teams, and works with SAGs and CMER to assemble effective Project Teams (see sections 7.2.3 and 7.2.4)
3. Approves selection of Principal Investigators and other Project Team members who require Adaptive Management Program funds (see section 7.2.3)

Categories and subcategories in this summary of the AMPA's project-related management role are not meant to be exhaustive.

7.2 Project Team

7.2.1 Project Team Overview

Scientific Advisory Groups (SAGs) and CMER work with the AMPA to assemble and maintain Project Teams to implement CMER research and monitoring projects. Project Teams report to the committee that created it and are responsible for completing all project tasks and milestones. Project Teams can be assembled in several ways and can include a mixture of Project Managers, SAG members, CMER members, CMER staff, outside cooperators and contractors. Project Teams should include members with appropriate technical expertise about the project topic. The DNR will manage the contracts of Project Team Members who are brought onto a team as paid consultants/contractors. The AMPA should insure there is no conflict of interest when a Project Team member becomes a contractor for a project.

All members of the Project Team are expected to commit to the timely success of the project, and as such will not raise concerns without also immediately providing sound alternatives and pathways for consensus. Team members are expected to work in a cooperative and committed manner to resolve issues as they develop, while providing solutions to problems/issues that both they and other members raise.

The Communication Plan section (section 7.6) includes specific guidance on Project Team member roles and responsibilities related to communication.

Participation in a project gives team members access to unpublished data – the expectation is that CMER and Project Team members will not present or publish these data without approval of the CMER committee and the AMPA. Agreements should be put in place to ensure that data collected in cooperation with private entities is jointly available to CMER and its cooperators.

Members of the team may change as project milestones are met and different skills and expertise are needed with new project tasks, individuals retire, or project team members are not fulfilling their obligations. Generally, the Project Team consists of the following:

7.2.2 Project Managers (PMs)

Pursuant to AMPA delegation, PMs help guide projects through the CMER process, and coordinate with CMER and SAGs to facilitate the work of Project Teams to successfully complete projects on behalf of the Adaptive Management Program. In this effort, PMs are responsible for managing program funds, budgets, and contracts to ensure projects are carried out as set forth in RCW 39.29 Personal Service Contracts, RCW 39.34 Inter-local Cooperation Act, the internal contracting requirements of DNR, and other rules and regulations indirectly related to contracting; ensure optimal and proper use of program resources; and pursue continuous improvement in program organization, consistency and accountability. In brief, PMs are responsible for facilitating project guidance through established steps as a project moves through its various phases to completion. Requests for a DNR PM to be assigned to a project team are made to the AMPA.

Project Manager responsibilities include:

1. Provide Oversight

1. Monitor project activities and the performance of Project Teams.
2. Communicate progress, problems, and problem resolution to the AMPA, CMER, and SAGs.
3. Work with the SAGs/CMER, and Project Teams to help develop Project Charters and Project Plans, and keep them updated as needed over time.
4. Work with the AMPA, SAGs/CMER, and Project Teams to develop and review proposals, RFPs or RFQs, review contractor proposals, monitor contract performance, and provide input on budgeting, schedule, scope changes, and contract amendments.
5. Work with CMER, SAGs, and Project Teams (including PIs, contractors, and Other Team Members) to resolve problems and build consensus.
6. As member of the Project Team, work with PI and Project Team members to develop interim and final draft reports.
7. Ensure communication between all team members is clear, concise, and consistent.
8. Ensure coordination between SAGs/CMER, Project Teams and landowners.
9. Coordinate with other PMs.
10. Coordinate all technical reviews and responses in a timely fashion.
11. Facilitate archiving of all data and documents.
12. See that contract provisions are followed.
13. Provide direction and support to the Project Team to achieve clear and specific scopes of work, schedules, and budgets within approved contracts.

2. Facilitate Communication with Contractors

Project Managers are responsible for communicating or authorizing communication with all project-related contractors. See Communication Plan (section 7.6) for guidance specifics on communication between PMs, Project Teams and contractors. The PM authorizes communication between Project Team members and Contractors on substantive project elements (see section 7.6.3)

3. Ensure Accountability

The PM maintains sole responsibility for all aspects of project management even if other individuals (meaning co-operators who may or may not be contracted under the project) are completing or helping complete parts of the project.

7.2.3 Principal Investigators (PIs)

Principal Investigators are responsible for executing the technical and scientific components of the project according to the project plan, and as such, take the lead in developing, writing and updating technical documents and plans. Principal Investigators can be CMER staff, a paid contractor, caucus scientists, or other appropriate individual. The sponsoring committee (SAG or CMER) generally selects/assigns PI for the Project Team, in consultation with the PM if the Project Team already has an assigned PM. Depending on the size or complexity of a project, a sponsoring committee may assign multiple PIs to a project. However, one of the PIs will serve as a lead contact for technical questions/issues. If a project spends Adaptive Management Program funds, PI selection is approved by the AMPA. Requests for CMER staff to be assigned to a project team as the PI are made to the AMPA.

Principal Investigator responsibilities include:

1. Help develop project charters;
2. Work with the PM and the SAG to identify additional technical expertise and time commitments needed for successful completion of the project;
3. Provide materials needed by the PM;
4. Develop/write scoping documents, literature reviews, and study designs;
5. Help implement study designs, including site selection, data QA/QC, managing field crews, collecting data;
6. Analyze data;
7. Write interim and final draft reports;
8. Present technical findings to CMER, TFW Policy, and at science conferences.

The lead PI is responsible for communicating project status and issues to the Project Team as described in the Communication Plan (see section 7.6).

7.2.4 Other Project Team Members

Project Teams typically include members who are not the PM or the PI who provide specific skills that contribute to the success of the project. Other Project Team Members can include CMER and SAG participants, volunteer (non-CMER) experts, paid consultants/contractors, and CMER staff. The PM and PI in association with the SAG and/or CMER will help identify additional personnel with the skills and expertise needed to successfully complete the project. The SAG will forward to CMER proposed Team Members for approval.

The PM and PI determine the minimum time commitments necessary for participation as a Project Team member. SAG or CMER members are encouraged to be Project Team members as long as they can meet these minimum time commitments. Requests for CMER staff to be assigned to work on a project as a project team member are made to the AMPA.

Other Project Team Members' responsibilities can include:

1. Help design and implement projects;

2. Provide expertise necessary for successful completion of projects;
3. Help write technical documents;
4. Assist in communicating with their caucus (if CMER member);
5. Provide constructive and timely feedback.

Project Team members should support consensus project decisions when discussed at CMER. Members should support consensus project decisions when discussed at CMER.

7.3 Project Budget

7.3.1 Project Budget Overview

Project budgets, listed in the CMER Master Project Schedule, are approved by the Forest Practices Board based on TFW Policy recommendations. Typically, these budgets are initial estimates based on prior project experience, and are revised once a project is scoped and designed. Any supplemental funding may need Forest Practices Board approval.

The PM maintains the most current budget estimates for a specific project, along with current allocations and total funds spent to date. This budget will include the following information: (1) the existing CMER Master Plan Project Schedule project budget total; (2) an estimate of the major budget components and tasks for each project year, and (3) total funds spent to date per task/deliverable. Project Teams should update budgets as necessary throughout the year and develop budgets for each fiscal year a project is active. In-kind contributions by participants should also be identified by the PM and communicated to the AMPA.

As work on a project proceeds, budget adjustments will occur. The PM will develop with the Project Team and sponsoring SAG/CMER updated budgets, along with any requests for additional funds. The PM will provide regular budget updates to the Project Team, SAG and to CMER. The SAG/CMER request should describe the need for the supplemental funds and present the reasons for the underestimation in the approved budget. If total cost estimates are substantially over the budget allocated in the CMER Master Plan, research/monitoring options for the project may need reevaluation or a request for a budget increase to the Forest Practices Board.

A detailed project budget includes, but is not limited to, accounting for costs associated with the following:

- A list of contractors and their associated compensation(s)
- Personnel benefits
- Travel expenses
- Equipment/Supplies
- Goods and services, including any field crew expenses

7.4 Project Charter

7.4.1 Project Charter Overview

The purpose of Project Charters is to describe the project and give the PM and the Project Team the authority to begin spending allocated project funds. The PM is responsible for writing the Project Charter and works with the coordinating SAG or CMER and the PI and other Team Members identified for the project. In general, Project Charters should be brief and updated as needed as the project is implemented to accurately, reliably and concisely communicate projects'

basic elements and objectives. TFW Policy, CMER and the Project Team are the primary audiences for the Project Charter.

Project Charters should be created even when incomplete information exists. SAG/CMER and TFW Policy review and approve Project Charters. Generally, as projects develop and are implemented, changes to scope, critical questions, objectives, or budgets will require additional approval by CMER and/or TFW Policy. The AMPA will determine whether such changes also require review and approval by CMER and TFW Policy.

The most recent draft of the approved Project Charter will be stored in the CMER Information Management System. Information contained in the CMER Work Plan should be used as the starting place for developing charters (e.g. problem statement, purpose statement, project objectives, critical questions).

7.4.2 Project Charter Approval Dates

List date(s) that CMER and TFW Policy approved and amended the charter.

7.4.3 Title

If the CMER Work Plan does not contain a title for this project and the project does not yet have a title, create one. Titles should strive to be brief, distinct from other projects, and descriptive of the project's purpose.

7.4.4 Problem Statement

Information contained in the CMER Work Plan should be used as the starting place for developing a problem statement. If the CMER Work Plan does not contain this project, does not yet have an approved problem statement, or has an outdated problem statement, the PM will work with the Project Team (if it exists), or CMER and/or the overseeing SAG to generate a new/updated problem statement. If the project being launched is in response to TFW Policy guidance for CMER to answer specific questions or address/inform a general topic or issue, either use the problem statement provided by TFW Policy or other available policy guidance to help generate a draft problem statement.

An effective problem statement for a CMER research project should concisely incorporate the following:

- State the issue/problem the project addresses.
- Provide background on the issue; explain why the issue/problem is important such as by describing the potential risk(s) to specific resources the project is intended to inform/address.
- Identify the spatial and/or temporal scope (e.g. regional/statewide, near/long term, etc.) the project will address, if known.
- Describe the scientific uncertainty about the issue.
- Describe how the problem can be solved.

7.4.5 Purpose Statement

Define the specific purpose of the project and how the project will help resolve the issues identified in the problem statement. The purpose statement is a specific accurate summary of the overall purpose of the project. It should relate directly to the problem statement. When drafting a purpose statement, one should generally start with a sentence that begins with something like, "The purpose of this study/project is..." Briefly explain how this project complements any other

projects that also address the issue/problem, if known. This may include any additional project phases or anticipated/potential follow-up studies.

Identify how the results of this project will inform the relevant resource objectives and/or performance targets outlined in the Forest Practices HCP.

7.4.6 Project Objectives

Describe the study objectives. Study objectives are clear, concise declarative statements that describe the pathway to addressing the problem statement. Study Objective(s) should summarize what the project will achieve. Project objectives may be revised during the scoping phase of the project.

7.4.7 Critical Questions

The CMER Work Plan contains critical questions at both program and project levels. Critical questions are the pivotal Adaptive Management Program questions that a project should answer, either in part or in full. Critical questions may be revised during the project's scoping phase. If an updated Charter includes revised Critical Questions, briefly explain why the Critical Questions were updated. If the project is not currently in the CMER Work Plan, the Critical Questions will be developed during the scoping phase.

7.4.8 CMER Rule Group and Program

Copy the Rule Group and Program to which the project is tied from the CMER Work Plan. If the project is not in the current CMER Work Plan, identify which rule group and program the project informs.

7.4.9 Project Deliverables and Project Timeline

List the expected project deliverables. Include a best estimate of the project timeline, recognizing that it may need revision as the project moves through the study design phase.

7.4.10 Budget

State the current total budget allocated for the project. This is an initial budget estimate that may change pending the scoping and alternatives analysis process. May include projected costs of potential future phases as a separate budget estimate.

7.4.11 Project Team

Provide names, titles, affiliations, and roles (i.e. PM, PI, Other Team Members) of the Project Team members, if available (see section 7.2 for descriptions of Project Team Members roles and responsibilities). If not available, identify specific expertise that will be necessary for successful completion of the project. The charter will note the level of time commitment expected from Project Team members.

7.5 *Project Plan*

7.5.1 Project Management Plan Overview

The Project Management Plan breaks down project work into logical steps to help provide a framework to efficiently allocate resources, reliably estimate project costs, and help guide schedule, budget development and project scope. The Project Management Plan documents and

tracks the progress of a CMER project through its various stages. The contents of the Project Management Plan will vary depending on the type and complexity of the project. The Project Team is the primary audience for the Project Management Plan; however, SAG/CMER members are encouraged to provide feedback on the plan.

An initial draft of the Project Management Plan is prepared once a Project Charter is completed. Project Management Plans are not static, but instead are iteratively revised and updated as needed through a project's life.

A Project Management Plan also lists the other complementary documents/plans (e.g., Scoping document, Project Risk Management Plan, Communication Plan, etc.) that currently exist or will be created to effectively plan and implement the project. The PM updates the Project Management Plan as necessary and stores the most recent drafts of this document in the CMER Information Management System for easy access and reference by Project Team members, and other CMER members.

7.5.2 Project Title

Record the project's formal title as it appears in the TFW Policy-approved Project Charter.

7.5.3 Project Milestones and Tasks

List the milestones and deadlines for the project, which will be updated as necessary. Examples of milestones include completion of a field manual, a QA/QC plan, site selection, fieldwork, data analysis, report writing, a pilot study, project phases, preparing an interim report, and SAG or CMER approval.

Identify tasks and schedule to be completed to meet each milestone.

The milestones and tasks can be represented in an outline format, organization chart, or just listed, depending on the size and complexity of the project (i.e., case study, pilot, or phasing). The milestones and tasks should be presented in sequence chronologically with expected dates of completion in a detailed schedule.

7.5.4 Project Deliverables

List all the deliverables for the project. Deliverables are the tangible products that result from the project, according to specified quantitative or qualitative measures of quality. For example: field data that is completed according to the field manual, submitted on a specific medium, and approved by the SAG or by CMER; an interim report approved by the SAG or by CMER; a SAG/CMER approved QA/QC report that will identify any deviations of the field protocol, and a final report reviewed by a technical editor and ISPR that is CMER approved; among others.

7.5.5 Project Team Members

List the Project Team members. Provide name, title, affiliation, contact information (phone number and e-mail address) and role (PM, PI, Other Team Member), of the individuals who are involved in completing the project, (see section 7.2) for descriptions of Project Team Members roles and responsibilities). Clarify, to the extent known, specific roles and responsibilities for each key player on the project.

Individuals may be added or dropped from a team with changes in project needs and the capacity of individuals to meet minimum time commitments. See section 7.2 for more information on Project Teams. Update the Project Plan when people join or leave a Project Team.

Identify which members are participating in the project through DNR contracting.

7.5.6 Project Constraints and Assumptions

Describe known project constraints and assumptions that will impact the project.

Project constraints are limiting factors (internal or external) that affect the initiation, planning, execution, monitoring and control, and close-out of a project. Constraints restrict or dictate the actions of the Project Team. Constraints may be organized into the following categories: schedule, budget, materials and equipment, access to study sites, and human resources. As the project evolves, constraints will materialize. In the planning phase, the identification of the project constraints are based on current scientific, policy, logistic, and budget considerations. If constraints within the categories below do not exist, state nonexistent or unknown.

Schedule constraints:

Limitations on the project schedule that affect when an activity can be scheduled. This is usually a fixed or imposed date or relationships with other projects that can strain resources.

Budget constraints:

Limitations on the project budget such as the availability of funds over time, fiscal year considerations, and grant considerations.

Human resource constraints:

Limitations on resource usage, such as what resource skills are limited during a specified time frame.

Resource constraints:

Limitations anticipated due to the lack of the technical resources, study sites, or product acquisitions necessary to complete the project.

Project assumptions are factors in the planning process that are considered to be true, real, or certain, without proof or demonstration and are outside the total control of the Project Team. It is important that the Project Team, SAG/CMER identify project assumptions and describe the potential impact the assumption could have on the project.

Project constraint and assumption information will be used to develop the Project Risk Management Plan.

7.5.7 Decision-Making Authority

Describe how decisions are made for the project. See also Communication Plan Tables 7.1, 7.3 and 7.4. The TFW Adaptive Management Program strives for a consensus decision-making process. Decision-making authority described in this section needs to be consistent with CMER process and ground rules (Adaptive Management Board Manual, Section 22).

- Describe the Project Team organization and approval authority (i.e. Project Team members, Project Manager, Principle Investigator, SAG, CMER, TFW Policy).
- Describe the decision-making procedures and timeline for the project. Identify when official reviews and approvals are needed to move the project forward. Describe the approval process of major decisions within the Project Team, the SAG, CMER, and TFW Policy.
- Describe how changes within the scope of work, contract, or study design will be addressed.

7.5.8 Project Resource Needs

List or describe any infrastructure or specialized equipment that will be necessary to complete the project (e.g., aerial photographs, orthophotos, special maps, vehicles, GPS unit, computer, software programs, field gear, thermographs).

7.5.9 Project Budget

Provide an estimated project budget that is linked to the project timeline, schedule and deliverables (see section 7.2).

7.5.10 Project Sites

Discuss what is known about project site selection to assess project resource and scheduling requirements. Much of this information may not be known until after the scoping and/or study design steps are done. Reference the location where this information is provided in detail if available.

7.5.11 Companion CMER Documents

List other stand-alone CMER documents that currently exist or will be created to complete the project, such as:

- Project Charter
- Communication Plan
- Literature Review
- Scoping Paper and Alternative Analysis
- Study Design Plan
- Site Selection and Data Collection Plan
- Risk Management Plan
- Final Results Report
- Document/Data Management and Closure Plan

With each document, include a completion date of the most recent draft, or a forecasted completion date. The remainder of chapter 7 describes the companion CMER documents.

7.6 Communication Plan

7.6.1 Communication Plan Overview

Transparent and accurate communication between the different adaptive management parties (Project Team/SAG/CMER/AMPA/TFW Policy) is critical for the Program to guide and oversee the work of the Project Team. The Communication Plan provides a framework to manage and coordinate the communications needed for all phases of a project. Project Teams should prepare a Communication Plan at the beginning of a project and update it as necessary over time increases the efficiency of project work at all stages.

Two primary pathways exist for project communication to occur when working on CMER projects – (1) between the Project Team and project oversight committees (i.e. SAGS/CMER/TFW Policy), and (2) communication within the Project Team. The primary audiences for the Communication Plan are CMER/SAG members and Project Team members. See Section 7.2 for more details on Project Teams.

The Communication Plan does not need to be archived in the CMER Information Management System but will be retained in DNR records in compliance with DNR policy.

7.6.2 Project Oversight Committee Communication

This section covers communication between the Project Team and the project oversight committees (CMER/SAG/TFW Policy). Project Teams work with SAGs or directly with CMER when completing projects. Communication within the Project Team is covered in subsection 7.6.3.

Project oversight communication includes three categories of documents/communication: 1) project management documents that enable oversight committees to understand how projects will be managed, 2) project tracking and communication to enable the oversight committees to track project progress and provide guidance and approvals to move projects forward, and 3) communication with contractors.

Project management documents

The PM is the lead author for the Project Charter, Project Management Plan, Communication Plan, and other project management documents (Table 7.1). If the PI has been identified at the time of project launch, the PM will work with the PI to draft the Project Charter and Project Management Plan, in consultation with the oversight committee.

Project management documents are described in more detail in other parts of this chapter.

Table 7.1. Project management/oversight documents and the primary authors

	Primary author	Collaborators	Final approval¹	Primary audience
Project management documents				
Project charter	PM	PI/Project Team (if identified)	CMER, TFW Policy	Project Team, TFW Policy, CMER/SAG
Project management plan	PM	PI	CMER	Project Team, CMER/SAG
Communication plan	PM	SAG/Project Team	NA	Project Team, CMER/SAG
Risk Management	PM	SAG/Project Team	NA	Project Team, CMER/SAG
Document management and closure plan	PM	PI	NA	Project Team, CMER/SAG
Project tracking and guidance documents				
Project updates	PM	PI	NA	Project Team, CMER/SAG, TFW Policy, AMPA
CMER quarterly and annual project progress reports	PM	PI	NA	SAG/CMER
CMER Requests	PM	Project Team	CMER ²	CMER
TFW Policy Requests/Check-ins	AMPA	Project Team	CMER	TFW Policy
Public presentations	PM	Project Team	NA	Public

¹ Committees that review and approve the document.

² CMER ultimately ‘approves’ CMER requests, but the actual wording of the request does not require CMER approval.

Project Tracking and Guidance

The first point of contact for a project is the Project Manager. Project Teams are expected to provide regular updates from the overseeing committee.

The PM is responsible for ensuring that all reporting tasks are complete and provided on schedule. When preparing progress reports, the PI is responsible for providing detailed and comprehensive costs, schedule, and project updates, in writing, to the PM consistent with prior written agreement. The PM, in turn, is responsible for summarizing project update information into progress reports, and presenting these progress reports to the overseeing SAG and to CMER per the project schedule or as requested by the SAG or by CMER. The PM may delegate preparation or presentation of progress reports to the PI or other Project Team members, with their consent.

The format of the communication between a Project Team and the oversight committee depends on which committee is involved, and the type of communication (Table 7.2).

Table 7.2. The different types of communication and documentation required when a Project Team communicates with the oversight committee.

Type of Communication	SAG	CMER	TFW Policy
Project Updates	Verbal (written may be appropriate)	Verbal/meeting minutes	Brief written report/presentation
Progress Reports	Brief written report	Brief written report	NA
CMER & TFW Policy Requests	Agenda Item	CMER Request form	TFW Policy Request form
Decision	Meeting minutes	Meeting minutes	TFW Policy Response form

Project Updates

Project updates are provided to the oversight committee (SAG(s)/CMER) per the schedule or as requested. Updates are verbal descriptions of the project’s current status and include information on project tasks, milestones (e.g., site selection, data collection, report writing). If an update to CMER or to SAG results in a substantive change to a project, the PM will maintain written documentation of the change. What constitute a substantive change will be determined on a case-case basis depending on specific project issues, and is determined by the Project Team.

Occasions may also exist when the PM or PI will be asked to provide an update on the project to TFW Policy beyond the regular CMER project updates.

Progress Reports

Project progress reports are brief quarterly and annual written reports on the progress of the project. The reports should describe progress on project tasks, milestones, and timelines, and the status of the current budget. Reports should be distributed to the overseeing SAGs and to CMER when the meeting agenda is distributed. Any problems or deviations from predicted timelines that arise during periods between progress reports should be included in the progress reports.

CMER Requests

CMER requests are written documents from the Project Team that with PM support formally seek project approvals, changes to prior agreed upon study elements, guidance and/or resources. The PM is responsible for preparing CMER requests, though depending on the nature of the request, may delegate this task to the PI, Project Team, or SAG co-chair, with prior agreement. For requests that ask for guidance on project direction, changes in scope, priorities, or any other substantive issue, the PM needs to consult with the SAG and Project Team when drafting the request. For CMER requests that are procedural in nature, such as asking for CMER review of a specific document, the PM will inform the SAG or Project Team when drafting the request prior to forwarding the request to CMER.

CMER requests are frequently accompanied by additional documents, such as a report that is to be reviewed/approved, or a short memo that describes in detail the issue surrounding the CMER request. Any attachments that accompany a CMER request will be distributed and approved by the SAG before forwarding to CMER, if the SAG is the Project Team oversight committee. Depending on the nature of the issue/request, either the PM or PI can be lead author on the memo, though ultimately it is the responsibility of the PM to ensure these memos are ready for distribution to CMER at the appropriate time (i.e. with the CMER mail-out).

CMER requests may also take the form of project issues/questions' that are brief summaries of issues or questions that the Project Team would like to discuss with the oversight committee as it relates to completing project tasks or milestones. This can include any problems or circumstances that may result in changes in project scope, budget or integrity (quality). The CMER request in this situation should be in the form of a short memo. Specific questions the Project Team would like answered should be listed with enough information so the members of the oversight committee(s) will have a basic understanding of the context within which the questions are being asked.

TFW Policy Requests

TFW Policy requests are written requests submitted by CMER seeking approval of a document (e.g., Project Charter, the scoping documents, final reports, project budgets); or asking for clarification or guidance on specific issues identified by the Project Team or CMER. The AMPA facilitates communication between CMER and TFW Policy, and depending on the nature of the request can delegate preparation/presentation of the request/update to either the PM, PI or other CMER member/Project Team member with prior agreement.

The AMPA works with members of the Project Team and CMER to draft the request in a way that clearly and concisely communicates the issues, purpose, and/or decision identified in the submittal. Often a TFW Policy request includes a presentation to TFW Policy about the CMER document, report or issue, which can be given by the PM, PI, or the AMPA, depending on the nature of the request. When a TFW Policy request originates from a Project Team, the PM consults with the AMPA and submits it to CMER for approval before forwarding to TFW Policy.

Contractor Communications

In all cases, the PM is primarily responsible for facilitating open and transparent communication between contractor(s) and Oversight Committee members. Committee members should generally not directly communicate with the contractor(s) about substantive project elements outside of formally organized meetings, conference calls or PM-facilitated group e-mail discussions unless specifically authorized in pre-established contract terms, or approved in advance to do so by the PM. The PM may verbally grant authorization, and the rest of the Project Team and Oversight Committee should be informed when this occurs. The PM is responsible for informing the contractor(s) of this policy as well.

7.6.3 Intra-Project Team Communication

The following section outlines expectations for open and effective communication among the team members. It is intended to guide communication, not restrict it. The expectation is that team members, including PMs and PIs, who communicate outside of normal project meetings, conference calls, and other venues will share substantive conversations they have with the rest of the team.

Project Manager

The PM provides assistance to Project Team members by coordinating communication (e.g. one-on-one and group meetings, conference calls, etc.) when needed as well as maintaining the e-mail distribution list for the Project Team. The PM also ensures that any communication resulting in a formal decision about the project occurs in a transparent and inclusive way.

In all cases, the PM is responsible for communicating any changes to a contractor's scope of work – other project Team members are not authorized to provide such guidance. Conversations

affecting the scope of a contractor’s work on a project, or a substantive change in project objectives or tasks, need to include the entire Project Team.

The PM is responsible for keeping track of the project status. To this end, the PM works with the Project Team members to develop a status and progress reporting schedule. These reports will be written memos prepared by the PM and presented at scheduled Project Team meetings/conference calls. Draft copies of the memos will be sent out to Project Team members via e-mail prior to the meeting. Status and progress reports should include information on the status of project, tasks, milestones (e.g., site selection, data collection, report writing), and budget as well as any issues that require Project Team input. With prior agreement, the PM may delegate preparation or presentation of the project status and progress reports to the PI or another Project Team member. These memos may also then be used later as updates and project status reports to CMER, as appropriate.

Principal Investigator

The PI is responsible for preparing and writing technical reports for CMER (Table 7.3). How the PI communicates and works with other Project Team members to produce these documents will vary based on the nature of the project and dynamics of the Project Team. The PI works together with the PM to coordinate communicate with other team members as described in the above section concerning the PM role in Intra-Team Communication.

The PI is responsible for communicating to the PM concerns or issues that may come up throughout project implementation.

Table 7.3. Technical project documents.

Technical Document	Primary author	Co-authors	Review/approval¹	Primary audience
Stand-Alone Literature Review	PI	Project Team	SAG, CMER	SAG/CMER
Scoping Document	PI	Project Team	SAG, CMER, TFW Policy	SAG/CMER, TFW Policy
Study Design Plan	PI	Project Team	SAG, CMER	SAG/CMER
Site Selection and Data Collection Protocols	PI	Project Team	–	SAG/CMER
Draft and Interim Reports	PI	Project Team	SAG	SAG
Final Project Reports	PI	Project Team	SAG, CMER	SAG/CMER, TFW Policy

¹ Committees which review and approves the document.

Other Team Members

Communication by individual team members includes participation at meetings and conference calls, providing feedback on draft documents, researching specific topics/issues, taking the lead on writing report sections, and/or acting as co-author(s) of CMER documents. The PM will document expectations on individual team member roles, responsibilities, tasks, deliverables, and levels of participation in the Communication Plan. Other Project Team members may engage in ‘off-line’ communications about the project with other Project Team members and/or adaptive management participants. In the spirit of transparency, team members will share the elements of any substantive, project-related conversation with the Project Team.

Project Findings

Once a final report has gone through ISPR and has final approval by CMER, the PM and PI prepare the answers to the ‘six questions’ document (see Chapter 2, section 2.7) in collaboration with the overseeing committee, that is ultimately delivered to TFW Policy (Table 7.4). The PI is responsible for ensuring the scientific findings communicated in the six questions document are accurate. The AMPA is responsible for writing the cover letter accompanying the answers to the six questions.

Table 7.4. Findings reports.

	Findings Report	Primary author	Co-authors	Final approval	Primary audience
1	Answers to Six questions	PI	Project Team/SAG	CMER	TFW Policy
2	Findings report cover letter	AMPA	--	--	TFW Policy
3	Final CMER-approved report	PI	Project Team	--	TFW Policy

Other Communication

Presentations

Findings from CMER studies are often formally presented at CMER science conferences, at CMER and TFW Policy meetings, as well as in other venues based on solicitations from outside groups and organizations. The PM works with the Project Team to identify the appropriate presenter based on the nature of the presentation. Any presentation that uses adaptive management funding should explicitly acknowledge CMER and Adaptive Management Program contributions. The Project Team should be part of the preparation/review of project presentations.

7.7 Literature Review

7.7.1 Literature Review Overview

‘Literature review’ in this manual refers to multiple types of reports and products that inform CMER on the currently best available science about a scientific issue, question, subject, available methods, and research approaches. The topics, issues, or questions in stand-alone literature reviews are developed by the Project Team, SAG or CMER, and are approved by CMER. A literature review may be used by other scientists and needs to be directed to the scientific community. Evaluation of the quality and applicability of literature cited in scoping documents, study designs and/or final reports is done as part of the review process for these documents.

Literature included in a review should be selected based on relevance, availability, and quality, with preference given to peer-reviewed publications that are publicly available. Gray literature should be used with caution, but is acceptable if the content can be evaluated for accuracy and credibility, and it is available to CMER and the general public. Internal reports, papers presented at conferences, articles in preparation, and other types of scientific information should be treated as unpublished and assessed for quality (accuracy and credibility). Regardless of source, authors of CMER reports may provide literature referenced in a study design or report if requested during a CMER review process.

The Project Team, SAG, CMER and TFW Policy members are the primary audiences for the literature reviews. The literature review needs to be properly organized and written to best facilitate scientific use.

Archiving: Completed stand-alone literature reviews should be treated and archived like final reports, including pre- and post-ISPR drafts and associated ISPR response letters, ISPR cover letters, comment matrices, etc. (See section 7.12 below). Literature review documents should be archived in the CMER Information Management System and in the DNR contract file if it is a contract deliverable.

Stand-alone literature reviews can be one of the following:

Annotated bibliography – An annotated bibliography is a broad list of citations to books, articles, and documents. Each citation is followed by the annotation – a brief description and evaluation of the citation that informs the reader of the relevance, accuracy, and quality of the cited source.

Literature synthesis – A literature synthesis identifies what is known and not known about a specific subject, but also typically distills information not necessarily readily evident from the literature upon which it is based. This information may be used to frame or evaluate a potential CMER project. A literature synthesis may either be a final product or an early phase of a more complex project. The “early phase” literature synthesis should be used to aid in project scoping and development of the study design.

Systematic literature review – A systematic literature review is similar to a literature synthesis but focuses on answering specific, carefully worded research questions by systematically identifying and synthesizing the most appropriate research evidence relevant to those questions. Depending on the question(s) asked in the systematic literature review, literature will be ranked for inclusion based on its strength, reliability and appropriateness to answering the question(s). The process of identifying and selecting literature for inclusion in the systematic literature review must be carefully planned and documented (See Pullin and Stewart 2006; Burnett et al. 2008).¹

7.7.2 Document Creation

Literature reviews as stand-alone documents are developed and written by Project Teams under the direction of either a SAG or by CMER.

Depending on the type and need, a literature review can include the following five elements: background, methods, results, discussion, and conclusions, depending on the type of literature review being produced.

7.7.3 Background

This section describes the need for the review, its purpose, and the questions to be answered.

¹ Burnett, K. M., G. R. Giannico, and J. Behan. 2008. A Pilot Test of Systematic Review Techniques: Evaluating Whether Wood Placements in Streams of the Pacific Northwest Affect Salmonid Abundance, Growth, Survival, and Habitat Complexity. Institute for Natural Resources, Oregon State University, Corvallis, OR.
Pullin, A. S. and G. B. Stewart. 2006. Guidelines for systematic review in conservation and environmental management. *Conservation Biology*. Vol 20, pg. 1647 – 1656.

7.7.4 Methods

The methods section should delineate the types of literature reviewed, the span of publication dates, and any other limits on the review. For all stand-alone literature reviews, the methods section should include how the literature sources were identified (search engines, key words, screens for relevance and acceptance). For systematic literature reviews, the methods section should additionally include explanation of how types of literature were ranked.

7.7.5 Results

The results section is generally either an alphabetical listing of annotated reviews, or a summary of the findings in a systematic or synthesis review. In systematic or synthesis reviews, it may be appropriate to combine the results and discussion sections.

7.7.6 Discussion

A discussion will place the findings in context and should include:

- Limitations
- Significance
- Generalizations
- Discuss the level of confidence in the answers to the questions provided by the literature.

7.7.7 Conclusions

State the salient conclusions drawn from the results of the review, or explain why conclusions cannot be drawn. Depending upon the purpose of the review, the conclusion may suggest a direction for further research or policy considerations.

7.8 *Scoping Paper and Alternatives Analysis*

7.8.1 Scoping Documents and Alternatives Analysis Overview

The purpose of a Scoping Paper and Alternatives Analysis is to facilitate the process of designing CMER projects. The scoping paper is a key communication tool for all levels of the Adaptive Management Program, and is the vehicle for the Project Team to communicate to the SAG, CMER and TFW Policy on how they would like to proceed to successfully meet a project's objectives.

The scoping document is submitted by the Project Manager to CMER for review and approval. Once approved by CMER, the scoping paper is submitted to TFW Policy for review and approval.

Writing the scoping paper allows the Project Team to work on and clarify how the project will meet CMER goals and objectives. During this process, the Project Team can review and propose updates as necessary to refine any existing Problem and Purpose Statements, Project Objectives and Critical Research Questions. However, in the case where these goals have been developed through prior consensus, the Project Team should get agreement by CMER and in some cases TFW Policy for any substantive changes prior to moving the project forward. A scoping paper will include an evaluation of alternative approaches for achieving the project objectives to determine a recommended approach. The scoping paper should include a general description of scientific, statistical and implementation issues to the extent known to facilitate a better understanding and evaluation of the project.

For projects where the opportunity for integration exists, compare the following:

- Rule Group critical questions that are comparable to both projects.
- Additional program research, or sub-questions to the rule group questions that are identified in the Work Plan that can be supported by both projects.
- Is work duplicated with other research? What work has been completed on this topic outside of the CMER program? Can other scientific research be incorporated into the project to reduce cost, improve effectiveness, and reduce duplication?
- Can multiple projects use the same study sites?

The final approved scoping document is archived in the CMER Information Management System and DNR records.

7.8.2 Context

This section contains the basic identification information for the project. It introduces the reader to the project and the adaptive management/regulatory context for the project.

Project Title: Record the project's title as it appears in the Project Charter.

Rule Group: Record the Rule Group and Program under which the project is listed in the Project Charter.

Forest Practice Rules: Identify the forest practices rules by Washington Administrative Code (WAC), guidance by board manual section number and part to be evaluated, tested, or informed by the project. Describe the scientific basis that underlies the rule, numeric target, performance target, or resource objective that the study informs and how much of an incremental gain in understanding the study results will represent.

Links to Adaptive Management: Describe the connection between the project and other projects, questions, and strategies identified in the master project schedule, CMER work plan, TFW Policy initiatives, Board proposals, etc.

Timeline: Identify the fiscal year(s) the project will occur. If during the scoping phase the Project Team recommends changing the project timeline from what was described in the Project Charter such that it would affect the budget, the Project Teams needs SAG and CMER to approve these revisions. These changes need to be brought to TFW Policy for review and approval in an amended charter.

Resource Objectives, Issues and Performance Targets: List, and describe as necessary, the Forest and Fish Report schedule L-1 resource objectives, performance targets, and L-2 projects this project will address upon completion. Describe the potential risks to resources and forest practices management effects.

7.8.3 Problem Statement

Include the problem statement that was approved by CMER and TFW Policy in the Work Plan or Project Charter. If during the scoping phase the Project Team recommends updating the Problem Statement, the Project Team needs SAG and CMER consensus for Problem Statement revisions. These changes need to be brought to TFW Policy for review and approval.

7.8.4 Purpose Statement

Include the Purpose Statement that was approved by CMER and TFW Policy in the Project Charter Purpose. If during the scoping phase the Project Team recommends updating the Purpose

Statement, the Project Team needs SAG and CMER consensus for these revisions. These changes need to be brought to TFW Policy for review and approval.

7.8.5 Study Objectives and Critical Questions

Include the Study Objectives and list the Critical Questions that were approved by CMER and TFW Policy in the Project Charter. If during the scoping phase the Project Team recommends updating or modifying either the Study Objectives and/or Critical Questions from what were included in the Project Charter, the Project Team needs SAG and CMER consensus for these revisions. These changes need to be brought to TFW Policy for review and approval.

7.8.6 Testable Research Hypotheses

The study objectives, as expressed through the specific critical questions may be reduced to a testable hypothesis or hypotheses, where applicable, to facilitate scientific resolution. A literature review or baseline monitoring project does not necessarily include a hypothesis.

7.8.7 Data Requirements

Identify the type of data/information needed to answer the objectives and critical questions.

7.8.8 Alternatives Analysis

Alternatives analyses use best available science² (BAS) to compare methods, study design frameworks, anticipated outcomes, acceptable accuracies, and costs to answer the critical questions.

If CMER has already conducted a BAS review relevant to the project in a stand-alone literature review, incorporate the appropriate elements in the alternatives analysis.³ Otherwise, review relevant literature and summarize the following:

- Current understanding of the topic based on information contained in available literature (from both within and outside of CMER).
- Approaches and general methods/analyses that have been used successfully in similar projects.

Based on the results of the BAS review, describe different options and approaches that could effectively answer the critical questions and accomplish the study objectives. Summarize the advantages and disadvantages of various approaches. Include logistics, cost, time, staffing, environmental or landowner limitations, and other appropriate elements, as well as scientific and technical merit. This comparison of the various options provides the basis for making and explaining key decisions concerning the project design. A table listing the various options is recommended.

Consider the following BAS elements in the alternatives analysis (BM22-9):

1. Information source
2. Spatial scale
3. Temporal scale
4. Study design
5. Methods

² See Appendix M for CMER memo on Best Available Science (2013).

³ See section 7.6, Literature Reviews.

6. Data
7. Quantitative analyses
8. Context
9. References
10. Logical conclusions and reasonable inferences
11. Level of peer review

7.8.9 Recommended Approach

State the Project Team recommended approach based on the alternatives analysis. Describe any trade-offs between expected costs and anticipated statistical power and inference, if known. Be specific about the reasons the selected approach will meet the project's stated objectives. This statement is the basis for the argument that the project is using the BAS.

7.8.10 Budget

Provide a budget range for each alternative and describe the underlying assumptions used.

7.9 Study Design

7.9.1 Study Design Overview

The study design provides the scientific design for a CMER project. The study design is based on the selected alternative from the scoping document. This is the primary decision document that supports funding the project and provides the guidance to develop the project. It needs to be detailed, scientifically correct, and suitable for technical scientific review. The study design is intended to assure adaptive management participants and others that the project is technically sound.

The study design is developed by the PI and Project Team under the direction of a SAG or another CMER-authorized group. CMER reviews and approves the study design.

Any substantial changes from the approved scoping document should be highlighted and explained in the study design. The study design should typically include the elements described in the following subsections.

7.9.2 Introduction

Explain the context within which this project will be conducted, including the relationship to AMP issues and existing research. Include in the introduction the problem statement from the scoping document.

7.9.3 Project Purpose/Study Objectives/Critical Questions

The Project Purpose, Study Objectives and Critical Questions should be consistent with the scoping document (See section 7.8). However, while writing the study design, the Project Team may recommend additions and refinements to the Study Objectives and Critical Questions. These proposed revisions should be forwarded to CMER for review and approval prior to transmittal to TFW Policy for their approval.

7.9.4 Literature Summary

Include a brief summary of the literature pertinent to the study design. This material should have largely been summarized in the scoping document.

7.9.5 Research/Monitoring Approach

Describe the research approach and explain how the objectives and critical questions will be addressed. If an experimental approach will be used, clearly state the hypothesis to be tested.

7.9.6 Study Population

Describe the study population that is being studied from which sampling will occur and how inferences will be made.

A. Site Selection

Describe the methods and procedures that will be used to identify the population to be sampled and to select a sample of that population. List any other factors that will be used to screen potential study sites, such as logistics and feasibility of data collection. Specific site selection protocols are described in the site selection strategy section 7.10 below.

B. Experimental Unit

Describe the unit of the population for which measurements will be taken and used in analysis.

C. Sample Size

Where sufficient data exist, identify the precision and confidence objectives for the data. Estimate the numbers of samples needed and the procedures or other basis used to develop this estimate.

D. Data Parameters

Identify the study variables and data that will be collected and used in the analysis. Indicate the role of various data parameters in the analysis (i.e., whether they will be used as response variables, covariates descriptive parameters, monitoring metrics).

7.9.7 Data Collection Procedures

Describe the general methods, procedures and tools that will be used to obtain the data. The description should be detailed enough for peer review. Specific data collection protocols are described in the Field data collection section 7.10 below.

7.9.8 Quality Assurance/Quality Control (QA/QC)

Describe the plan for conducting QA/QC, including protocols on how to ensure data are collected, processed and documented appropriately and correctly. Describe how the project will insure the quality data handling, how the project will minimize errors, recognize and correct developing errors and trends, quantify errors, and how errors will be handled during analysis and in conclusions.

7.9.9 Statistical Analysis Procedures

Describe the methods and procedures to analyze the data. Depending on the approach, these may include the use of descriptive statistics to characterize populations or statistical tests or analyses that will be used to test hypotheses. The description should contain enough detail for peer review.

7.9.10 Project Risk Analysis

Discuss any anticipated problems in data collection, the data, or data analysis. Contingencies for dealing with these problems should be offered and developed. Describe sensitivity of potentially losing study sites.

7.9.11 Budget

Provide the most current project budget. If the budget estimates are greater than the allocation in the CMER Master Plan, a revised budget may need to be approved by TFW Policy or the project re-scoped (see section 7.3).

7.10 Site Selection and Data Collection Plan

7.10.1 Site Selection and Data Collection Plan Overview

The project Site Selection and Data Collection Plan provides detailed logistical information about the project's site selection, field and data management, and in-progress reporting. It identifies any existing applicable cooperator agreements and new agreements that need completion as part of the project.

The Site Selection and Data Collection Plan describes how the project will be implemented, and what kind of logistical support the project might need. It provides guidance on identifying the equipment, human resources, and sequence of activities needed to effectively implement the study design. Writing the Site Selection and Data Collection Plan may begin after the study design has been reviewed and approved to minimize potential revisions.

The Site Selection and Data Collection Plan is primarily for the Project Team to review and use. It is not submitted to CMER for review and approval though CMER members are welcome and encouraged to provide comments and suggestions to the plan. However, any modifications to the Site Selection and Data Collection Plan that changes the study scope or increases the project budget will be submitted to CMER for review and approval.

Archiving: All site selection and data collection documents should be archived in the CMER Information Management System, including the most current draft of the Site Selection and Data Collection Plan, landowner/cooperator names and contact information, all versions of field manuals used to guide collecting data (including early manuals that were later updated as the data collection progressed) and any QA/QC reports.

7.10.2 Summary

Provide a brief summary of the study and site selection/data collection plans.

7.10.3 Site Selection Strategy

The site selection strategy section of the plan should include the following elements:

1. Study site criteria
2. Site selection process
3. Site access

1. Study Site Criteria

Describe specific site selection criteria already compiled in the study design (section 7.9). A contingency plan should describe how to address exceptions to the selection criteria, losing sites for unforeseen circumstances, and similar procedures.

- Explain whether the project needs sites or not (i.e. field study vs. literature review, modeling exercise).
- Briefly describe the geographic extent of the study area
- Describe the different strata that frame site selection
- List specific site selection criteria
- Describe the minimum number of sample sites needed for the study

2. Site Selection Process

Describe the process of identifying potential study sites, based on site selection criteria, and the process for accepting and rejecting sites. This may involve GIS, LiDAR, and other mapping tools to generate pools of potential sites.

Develop a schedule for site selection, identifying appropriate milestones for different steps in site selection process.

List the people who will be doing the site selection and their roles and responsibilities.

List any other projects that share any or all of the proposed study sites.

Describe what data/information needs to be collected/compiled for each site during the site selection process, either in the office and/or as part of site visits.

- Describe how site treatment responsibility will be continued/maintained.
- Identify the most likely risks to finding sufficient sites of the target population and how this potential outcome will be factored into the study's site selection process.

3. Site Access

The Project Team or representatives will work with landowners (private, state, federal, tribal) to get permission to use specific sites for CMER research. SAG members, agency staff, or contractors may make preliminary contact with landowners during the project development phase of a project. A brief description of the study, what data will be collected at the sites, an estimate of the duration of access to the sites, and how the data will be used in adaptive management will be helpful when communicating with potential cooperators. However, prior to landowner contact, a lead person should be identified as the focal point of landowner contact (with an alternative identified in case the lead becomes inaccessible) to minimize confusion that can occur if multiple project members are contacting landowners. The PM should send the formal request on CMER letterhead. A Project Summary that includes participant expectations will accompany the request (see Cooperator Agreement below). Landowner participation in CMER projects is voluntary.

Defining access requirements is the responsibility of individual landowners. CMER interaction with landowners is not limited to formal requests for permission to access research sites. Landowners may be requested to assist in site selection during project development.

The PM may want to communicate with the Washington Forest Protection Association and the Washington Farm Forestry Association when formal site access requests are being made. This will help them respond in case any of their members have questions about a specific request. Consider presenting the study site selection needs to these organizations.

Once permission to use a site is granted, it is the responsibility of the PM and his or her delegate(s) to maintain contact and process access agreements. It is the responsibility of the field teams to follow stipulations contained in the access permits.

Cooperator Agreements

Cooperator agreements should include (as appropriate):

- Time commitments.
- Landowner roles and responsibilities within the project.
- Operational and managerial contacts applicable to each site
- Site treatments (List the people/agency/company/etc. responsible for implementing any site treatments).
- Access (keys, and conditions of access) to research participants. Describe the expected frequency and timing of sampling/visits over the life of the project and expected date of data sampling completion
- Obtaining research exemptions (with assistance from DNR)
- Determining who will lay out sites
- Limitations on future use of the study sites (i.e. logging, road building, etc.) for pre-determined time period.

Because the time required to obtain sites and landowner access agreements is typically long, it may be advisable to conduct or contract site location and permission activities prior to and separately from negotiating with potential contractors who will complete field work. If site location or permission tasks are contracted, the inherent uncertainty of the time and effort required should be clearly noted, and arrangements negotiated to accommodate it without incurring excess costs to the project budget.

Landowner Access to Research Data

Upon request, the PM or the AMPA will provide the landowner with the QA/QC'd data collected on their property as part of a CMER project.

Permits

The Site Selection and Data Collection Plan will identify all of the permits required, such as Forest Practice Applications, Alternative Plans, Section 10 (a)(1)(A) Endangered Species Act, Hydraulic Permit Applications, or Section 404 Clean Water Act permits. Some projects may need Forest Practices Board approval as pilot/feasibility projects. The scope of landowner cooperation will be identified in order to inform landowners if any action, such as the timing and design restrictions on timber harvest expected.

The access permits/agreements need not be complete at the time the site selection and data collection plan is approved. However, permit processing is encouraged where possible prior to plan approval for permit requests with long lead-time requirements.

7.10.4 Field Data Collection

This section covers the following topics:

1. Equipment and materials
2. Field methods
3. Field crew training and safety
4. Quality control & management
5. Data collection and storage

The PI is responsible for oversight of preparation for data collection. The following guidance applies to all members of the Project Team that collect data.

1. Equipment and materials

The Site Selection and Data Collection Plan should provide a list of the equipment and material types and quantities needed for field implementation. In most cases, equipment will be gathered or provided from diverse sources. With support as needed from the PM, the PI will verify that all survey equipment and materials have been obtained, that measuring equipment is of the quality and accuracy required by the study and that equipment is in good condition. Which equipment has special calibration needs is also important and those needs should be reflected in the budget.

2. Field Methods

The PI is responsible for ensuring that the field crews start data collection on schedule and that data collection proceeds on schedule over the survey period. The field crew will be trained in and follow the approved data collection protocols. Logistical preparation is critical to efficient data collection and management. Common problems to anticipate during this part of the field and data management stage include:

- Loss of field crew members, either temporary (due to sickness) or permanent (due to resignation/termination)
- Equipment failure or loss
- Contracting problems
- Implementation schedule adjustments due to study site conditions and access
- Loss or rejection of study sites (due to, e.g., low or loss of water flow, disturbance, landowner complications)
- Questions about protocol application and data documentation
- Site access requirements

The PI is responsible for notifying the PM if any problems arise that may affect the data collection schedule or following the approved data collection protocol.

Data collection protocols

The quality of data collection protocols is directly related to the quality of the data collected. The general components found in comprehensive data collection protocols include:

- a) Pre-survey preparation instructions;
- b) Data collection methods;
- c) Data dictionary;
- d) Protocols for consistent application of methods for survey;
- e) Field forms with completed examples; and

f) Data management system and protocols.

The PI is responsible for preparing, obtaining, or collating the data-collection protocols as well as reviewing them for adequacy. The PI ensures that proper data collection protocols are followed, reviews them for accuracy and archives the protocols as described in the project closure plan. Once the protocols have been assembled, the PI will ensure that each field crew has a copy.

Existing data collection protocols may be suitable for use in the project with or without modification. In all cases, the protocols must be clear and specific so that different crews can replicate data collection procedures and interested parties can assess the robustness of data collection procedures.

Where protocols are unavailable or incomplete, the budget and schedule in the site selection and data collection plan must reflect the time and cost needed to finalize the protocols before beginning field data collection.

3. Field Crew Safety and Training

The PI in consultation with the PM will ensure that all crew members meet minimum qualifications. Crew qualifications must be clearly identified.

Crew training

Good training or evaluation of experience with the collection procedures provides confidence that the data collected represent actual field conditions and not crew variability in method interpretation or field application.

Crew safety

Field crew safety is paramount in any CMER study. Field locations are usually remote and rugged. It is ultimately up to the field crews to prepare adequately for these conditions.

The PM ensures safety procedures are in place that addresses personnel, vehicle, fire, and other specific site/environmental safety issues. The PI ensures that safety procedures are followed. Field vehicles should carry safety gear such as citizen band (CB) radio for use on forest roads. Field crews must follow any specific fire and safety protocols that landowners require. Significant problems with access to unsafe survey sites may require modifications to the study design, the Site Selection Data Collection Plan, or both. Such modifications should be resolved cooperatively among PI, PM, field crews and Project Team representatives, before data collection begins when possible.

4. Quality Control and Management

For each CMER project, the PI ensures a quality control (QC) plan is prepared so that data are collected according to data collection protocols. The scope of this plan depends upon the project type. The QC information must be documented and appear in the in-progress and final reports.

Several strategies exist to ensure quality control, including:

Field Assistance: The PI and/or their designee visit field crews during the field season—preferably more than once, to ensure consistency and understanding of methods, and to check for “protocol-drift.” These visits provide hands-on assistance and additional training as needed to ensure that the

field crews remain data collection competent. This will help ensure consistency in applying the protocols within and among field crews. Each visit must be documented in writing that briefly describes strengths and weaknesses of crews and protocols and steps taken to improve weaknesses.

Observational surveys: Observational surveys provide a higher degree of quality control. The protocols, including procedures and expectations for this QC survey, must be clearly identified before the survey is conducted. These are qualitative surveys and are most often conducted with prior notice to the crews. The general approach is for the expert to observe the field crews over a specified reach length or time and record strengths and weaknesses of their parameter-specific application of the protocol. After completion of the QA/QC survey, the expert immediately reviews their findings onsite with the field crews to discuss calls. This review is critical to understanding the underlying causes for variability and correcting any deficiencies.

Replicate methods: Replication provides the highest degree of quality control, and can help reduce the variability in field data measurements. Some protocols and parameters lend themselves better to replicate surveys such as habitat unit, large woody debris, and stream discharge. Replicate surveys take careful planning to ensure that comparisons between crews cover the exact same stream reaches and field conditions. Multiple types of replicate surveys can be employed, including open—where the field crew knows they are being tested, and blind—where the field crew are unaware of the testing.

Data entry and sampling error checking implementation and management: Data entry has the potential for introducing errors that are difficult to find once data entry is complete. Besides the common “typographical error,” errors can arise when field data are recorded in diverse or unspecified units of measure, on different coordinate systems, or by use of undefined notations. Ensure that collected data are recorded consistently, with limited and standard data entry options, double checking inputs in the field prior to leaving a site, and randomized checking of data entry. Make sure field equipment is appropriately calibrated and functioning properly.

For example, when collecting field samples for offsite analysis, double tag the sample(s) to ensure sample identification integrity, and use daily sample log(s).

Equipment: The PI is responsible for assuring that data collection/recording equipment are in good working condition and calibrated correctly. It is also important to identify and make contingency plans for critical equipment and material elements that would cause significant problems if broken or lost during data collection. Often a contractor will provide the necessary equipment, and in these cases, the PI or some delegate is responsible for assessing its condition and overseeing its proper calibration. In other cases, equipment will be gathered or provided from diverse sources, and the PI is responsible for determining its usability and calibrating it.

5. Data Collection and Storage

Describe how the data will be recorded and transcribed or transferred to spreadsheets or databases. Describe how field samples will be collected, stored, analyzed, and documented (see section 7.13). Describe how copies of the raw and QC data will be transferred to the PM as part of contract deliverables.

7.10.5 In-Progress Results Reporting and Strategy

Describe how the PI will inform the PM and CMER on site selection and data collection progress. A schedule of updates should be established based on project milestones (e.g., site selection completion, field season ending) that inform the PM and Project Team on project status. Any problems that arise during site selection/data collection should be reported, as necessary, to the PM.

The in-progress reporting strategy should agree with strategy outlined in the Communication Plan (section 7.6).

7.10.6 Budget

The budget contained in the Site Selection and Data Collection plan should provide a detailed breakdown of the expected cost to complete each part of the project. These parts include, but are not limited to, field and data management (including any equipment that needs to be purchased, sent to calibration, and repaired), data analysis, and report writing and revisions. This is a refinement of the budget in the study design, not an addition to that budget. This refinement is based on the project information developed during preparation of the Site Selection and Data Collection Plan.

7.11 Risk Management

7.11.1 Risk Management Overview

Project Teams assess potential risks (e.g. a lack of acceptable study sites, budget cuts, changes in landowner participation etc.) to projects and identify potential actions to reduce, avoid or mitigate impacts to projects. The level of detail needed in the risk assessment should reflect project complexity. Risk assessments can contain estimates of likely risks with both high and low impact, as well as mitigation strategies to help the project avoid being derailed should common problems arise. CMER will be consulted if the Project Team determines that risk(s) to the project could significantly impact the project scope, budget, timeline, results, or other elements.

Broadly, three potential strategies exist, with numerous variations. Projects may choose to:

- Avoid risk — Change plans to circumvent the problem;
- Control/Mitigate risk – Reduce impact or likelihood of risk (or both) through intermediate steps;
- Accept risk – Take the chance of negative impact, budget the cost (e.g. via a contingency budget line).

7.11.2 Elements to Consider When Assessing Project Risks

1. Identify Potential Risks and for each include a brief description and its anticipated consequences.
2. Prioritize risks and their likelihood of occurrence based on probability and impact. This process prioritizes identified risks and their probability of occurring along with the corresponding impact to the project objectives and other factors (time, budget, etc.).
3. Consider strategies to respond to the identified risks.
4. Select a strategy for risk response: Depending on how the SAG would like to proceed, at a minimum, a strategy should identify high-priority risks. In developing a risk response strategy, the Project Team should define the risk including the potential impacts to project timelines, budget, scope or quality of the project.
5. Monitor Risk. The PM and PI monitor current potential risks and identify new risks as the project develops. When a risk event occurs, the SAG or project manager can then refer to the risk assessment and respond appropriately. Elements for monitoring risks include:
 - Monitor for adequacy as project is implemented

- Monitor for unanticipated risks
- Report status at regular intervals
- Upon a risk event, execute the response strategy.

7.12 Final Project Reports

7.12.1 Final Project Reports Overview

Final reports inform CMER, TFW Policy and the FPB on what was learned during the course of the study, relative to addressing the problem statement, study research objectives and the extent to which the study was able to answer the critical questions.

All final report documents should be archived in the CMER Information Management System and in the DNR contract file. This includes the pre- and post-ISPR drafts and associated ISPR communication documents, comment matrices, finding reports and the answers to the six questions documents (See section 1.12).

Much of the information appearing in the final report can be obtained from the study and Site Selection and Data Collection Plan.

7.12.2 Executive Summary

Provide a short summary of the major elements of the study, including overarching objectives, high-level methods, and focal findings.

7.12.3 Introduction

Provide a concise description of the study purpose, objectives and background. Include recent and appropriate citations in support of the methodology and current understanding of the literature leading to the hypothesis statement. Avoid rewriting the literature review. The study purpose and objectives should match those listed in the study design.

7.12.4 Study Sites

Provide a description of the study site characteristics. Briefly restate the selection methodology from the study design and justification for any deviations. Site descriptions should also include information of the site condition that helps the reader analyze and interpret the results in the context of prior knowledge. A map is a useful way to show the distribution of the study sites and their relationship to the state boundaries.

7.12.5 Methods

The precise and thorough description of the methodology permits evaluation of the quality of the data and analyses and permits replication of the study. This section should be based on the methods section of the study design, and any modifications from that plan should be noted and explained.

Describe the overall study design, equipment, materials, protocols, data collection and quality control strategies, laboratory analyses, and statistical methods. Published descriptions of equipment or procedures may be cited rather than repeated. Complex protocols, equipment, or parameters can be displayed in a table, figure, or relegated to an appendix.

Document the sample selection criteria and screening process. This section should be based on the methods section of the study design, and any modifications from that plan should be noted and explained.

7.12.6 Results

Present the data in a meaningful form, using tables, figures, and text as appropriate, but avoid interpretation. Each figure and table should stand alone and be clearly understood without the need to search through the text for explanation. Large data sets are difficult for a reader to interpret, and they should be placed in one or more appendices, with summary statistics presented in the results section. Figures are useful for showing trends and summarizing categorical data. Figures and tables must be numbered in order and should be referred to by number in the accompanying text. The text should emphasize important aspects of the data but should not simply repeat what is in tables or figures.

7.12.7 Discussion/Conclusions

The Discussion/Conclusions sections is the place for interpreting the results. The merits of a report can be greatly enhanced by a fully informed discussion. This is the place to provide synthesis of results in relation to the available literature, to relate what has been learned to what is known, to identify important information gaps or limitations, to search for generalities, and to establish basic principles. In it, authors should indicate the significance of their research, levels of inference to the landscape, how it relates to current knowledge, and any avenues that it suggests for further research. Here the results can be placed in context with the current state of knowledge expressed in the literature review.

The Discussion/Conclusions section should include pertinent literature used when developing the project study design, as well as any pertinent literature published during the course of completing the study. Interpretations of the study results should draw on relevant CMER and non-CMER BAS. The literature incorporated in the Discussion is intended to integrate findings in the context of BAS to provide the most supportable answers to research questions. Throughout the Discussion, the tables and figures in the Results should be cited to unambiguously link the two sections and support focal assertions.

Avoid wordiness and speculation. Any speculation or extrapolation included should be clearly labeled as such and supporting evidence identified.

Authors should avoid merely restating their results and/or (re)summarizing the literature. The weakest discussions are brief literature surveys appended to mechanical restatements of the results.

The Discussion/Conclusions section should provide context as to how the results have improved knowledge beyond past research while addressing limitations of the projects. New hypotheses or scientific questions that are logical extensions of findings and conclusions may also be presented in this section. Finally, the section should close with an overview or summary of important points and/or conclusions of the study.

7.12.8 Recommendations

If recommendations are proposed, they may include, suggestions for further research, or potential follow-up studies. Technical recommendations may also be made depending on the study's objectives. Recommendations should not include rule change suggestions. See Findings Report (see chapter 2, section 7) for the process on communicating results to TFW Policy with potential policy implications.

7.13 Document/Data Management and Closure Plan

7.13.1 Document and Management Closure Plan Overview

The document management plan outlines which project documents, including data, are to be archived and in what locations – the CMER Information Management System and/or DNR records. The guidance provided here serves as the default document management plan for all CMER projects.

The following list of documents, reports, data and other products (e.g., photos, ISPR letters) serves as checklist of items to be stored. The PM is responsible for ensuring these products are forwarded to the appropriate contact person for archiving in either the CMER Information Management System and/or DNR records, as appropriate.

Some CMER projects may generate products not listed in the tables. It is up to the Project Team and/or CMER to determine whether to archive these products, and where.

7.13.2 CMER Information Management System (IMS)

A. Overview

1. Brief description of the project (few sentences), program strategy, link to CMER Work Plan TOC.
2. TFW Policy/CMER approved project charter(s)

B. Scoping

1. Final scoping document
2. Key documents and/or maps produced in the process of scoping the project.

C. Study Design

1. Pre-ISPR draft study design with watermark “Draft”
2. Letter of submittal to ISPR with review questions
3. ISPR response letters
4. CMER response matrix
5. Final Study Design

D. Site Selection and data collection

1. Site selection and data collection plan
2. Any stand-alone field guides
3. Site locations (lat/long)
4. Landowner contacts
5. Quality Assurance plans and reports

E. Final Reports (including stand-alone literature reviews)

1. Pre-ISPR Draft Final Report with watermark “Draft”
2. Submittal letter to ISPR with review questions
3. ISPR response letters
4. CMER response matrix
5. Final CMER-approved Report

F. Data

The Project Team and CMER will decide using regular CMER process the type and format of data that will be stored in the CMER Information Management System, taking into account DNR data archiving and public records access guidelines. The following types of data should be considered when determining what data will be stored in the CMER IMS:

- QA/QC data
- Data summarized to the primary metrics used in the analyses
- Data dictionary
- GIS data geo-referenced to sites in final report
- Raw data
- Field forms and notes
- Photographs (e.g., site, hemiview)

G. Link to Adaptive Management

1. Findings Report

H. Presentations (to CMER, TFW Policy, FP Board, CMER Science Conference)

1. Final results
2. Interim results/updates

J. Additional Information

1. Additional Project documents, maps, or other relevant items the Project Team or CMER deem appropriate for archive

7.13.3 DNR Records

The PM will ensure all relevant project related material, including data, documents, photos, contracts and contract addendums, RFPs/RFQs, or other relevant items are stored/archived as necessary in DNR records.

7.13.4 CMER Work Plan Updates

The PM will ensure the CMER Work Plan is updated with the most recent policy-approved project elements (e.g., problem statements, objectives, critical questions). The PM will also ensure that final study results and findings are incorporated into the CMER Work Plan. The PM may delegate as appropriate tasks related to updating the CMER Work Plan to SAG co-chairs, SAG members, or CMER co-chairs/members.

7.13.5 Contract Closure

The PM will ensure that all project-related contracts are closed out appropriately according to DNR contracting guidelines.

8 Adaptive Management Program Document Review and Approval Process

This chapter describes the requirements and process for review and approval of documents generated in the course of an Adaptive Management Program (AMP) project.

8.1 General Review and Approval Guidelines

This section describes the requirements and process for review and approval of documents generated in the course of an Adaptive Management Program (AMP) project. The AMP review process is typically comprised of Scientific Advisory Group (SAG) review, Cooperative Monitoring Evaluation and Research (CMER) Committee review, and then Independent Scientific Peer Review (ISPR) followed by CMER approval of the final document.

SAGs are typically assigned to review all project reports, including reports developed by Project Teams (See Chapter 7, Table 7.3). The SAG determines whether to conduct the review internally before forwarding to CMER for additional review (sequential review) or to complete concurrent review of the document with CMER. CMER review and approval is required for final documents, stand-alone literature reviews, study designs, project charters, reports with final results, and as specifically identified in project management plans if available. The ISPR (WAC 222-12-045(2)(c), Board Manual Section 22.4.1) process is applied on stand-alone literature reviews that are not part of larger research reports, study designs for projects whose final reports would require ISPR (and others as determined by CMER), and on all reports with final results that may be used to support TFW Policy (Policy) or Forest Practices Board (Board) decision making on rules or program guidance (see section 8.3 below for complete list). The authors are expected to respond to the review comments with the appropriate response documents and revise the document as needed to obtain SAG, CMER, and ISPR approval.

The Project Manager (PM), in coordination with the SAG and CMER co-chairs, is responsible for facilitating communication and logistics necessary to complete the SAG and CMER review process. The AMPA is responsible for facilitating the ISPR process. The PM, and AMPA when in ISPR, guides the process and ensures that products meet contractual requirements and quality standards prior to initiating SAG and/or CMER review. After a final report has been approved by CMER, a Findings Report¹⁷ (defined in section 8.6) is prepared to inform Policy on implications to forest practice rules¹⁸. Policy then decides whether to make an adaptive management recommendation to the Board.

¹⁷ Refer to the Framework for successful CMER/Policy Interaction established in the Forest Practices Board Manual Section 22.

¹⁸ The findings report may inform numeric targets, performance targets, resource objectives, Forest Practices Board Manual guidelines, or Schedules L-1 or L-2.

Table 8.1 Roles and responsibilities in the review process

Responsible	Role
Adaptive Management Program Administrator	<ul style="list-style-type: none"> • Ensures documents are appropriately reviewed by SAGs, CMER and ISPR. • Facilitates a Policy or Board response to questions of policy interpretation that may arise in the course of CMER scientific work. • Coordinates with the Board to ensure that its guidance and priorities are implemented and that the information and results produced by the AMP are effectively communicated to the Board. • Facilitates ISPR process, including coordinating with Managing Editor and PM. • Responsible for ensuring the deliverables in the ISPR contract are met. • Prepares transmittal letter to Managing Editor that may incorporate additional background information and review questions approved by CMER. • Manages dispute resolution process as necessary.
Project Manager	<ul style="list-style-type: none"> • Works with the Principal Investigator(s) (PI) to ensure reports are ready for review. • Works with the PI to develop comment matrices, as required. • Monitors progress on comment responses and incorporation into new drafts. • Delivers original and revised products to SAGs and CMER in a timely manner. • Ensures that contract provisions are followed throughout review process. • Updates CMER on review and any substantive changes to reports from review. • Coordinates the review of documents and ensures review steps are followed.
Principle Investigator	<ul style="list-style-type: none"> • Ensures that draft reports are ready for review. • Coordinates with PM for review and response to comments. • Prepares new drafts for review by agreed-upon timelines. • Provides timely response to SAG, CMER, and ISPR questions or recommendations.
Other Project Team Members	<ul style="list-style-type: none"> • Assist PI as requested to respond to comments and revise documents.
SAG co-chairs	<ul style="list-style-type: none"> • Ensures projects and reviewers follow the review process, including adhering to agreed- upon deadlines and review steps. • Delivers products to CMER that have SAG consensus. • Works with the PM and any non-consensus reviewers to summarize issues and elevate to CMER as necessary.
CMER co-chairs	<ul style="list-style-type: none"> • Ensures projects and reviewers follow the review process, including adhering to agreed- upon deadlines and review steps.

	<ul style="list-style-type: none"> • Works with the AMPA, PM, CMER members and other reviewers to resolve non- consensus comments and strive to reach consensus if possible.
CMER and SAG Reviewers	<ul style="list-style-type: none"> • Meets comment deadlines as agreed upon by SAG and CMER. • Provides comments in a professional manner as described below.
ISPR Managing Editor	<ul style="list-style-type: none"> • Coordinates the ISPR process with the AMPA. • Identifies an appropriate Associate Editor and transfers the documents along with the set of review questions to the reviewers. • Forwards the synthesis report with supporting rationale for the recommendations along with individual reviewer comments to the AMPA within the established timeline.

8.2 AMP Review

The AMP review process is intended to provide confidence in the scientific merit of the AMP's documents by soliciting reviews first from SAG members, then CMER members, and then from a group of independent scientists who are recognized experts. The AMPA has the ultimate responsibility for ensuring this obligation is met. The documents requiring SAG and CMER review include, but are not limited to:

- Literature reviews
- Project Scoping papers
- Research and monitoring study designs
- Pilot study designs
- Pilot study results
- Final reports
- Answers to CMER 6 questions
- White papers
- Project charters
- Implementation plans
- CMER work plans

The PM and SAGs are integral to the successful review of AMP documents. When a Project Team is ready to forward a document to a SAG and/or CMER for review, the first step is for the PM to review the document to ensure it meets the basic standards of grammar, spelling, literature citations, clarity of graphics, and other copy-editing details as well as adherence to the CMER Protocols and Standards Manual (PSM). Each review document should include line numbers. The PM will not accept the document for further review until it meets these standards. Edits to the document at this stage are the responsibility of the author(s). The PM review is an important step to make efficient use of SAG and CMER time by ensuring documents meet basic quality standards before formal review. The PM is responsible for delivery of products to the co-chairs to facilitate the review

process. The co-chairs are responsible for distributing to SAG and/or CMER members as appropriate.

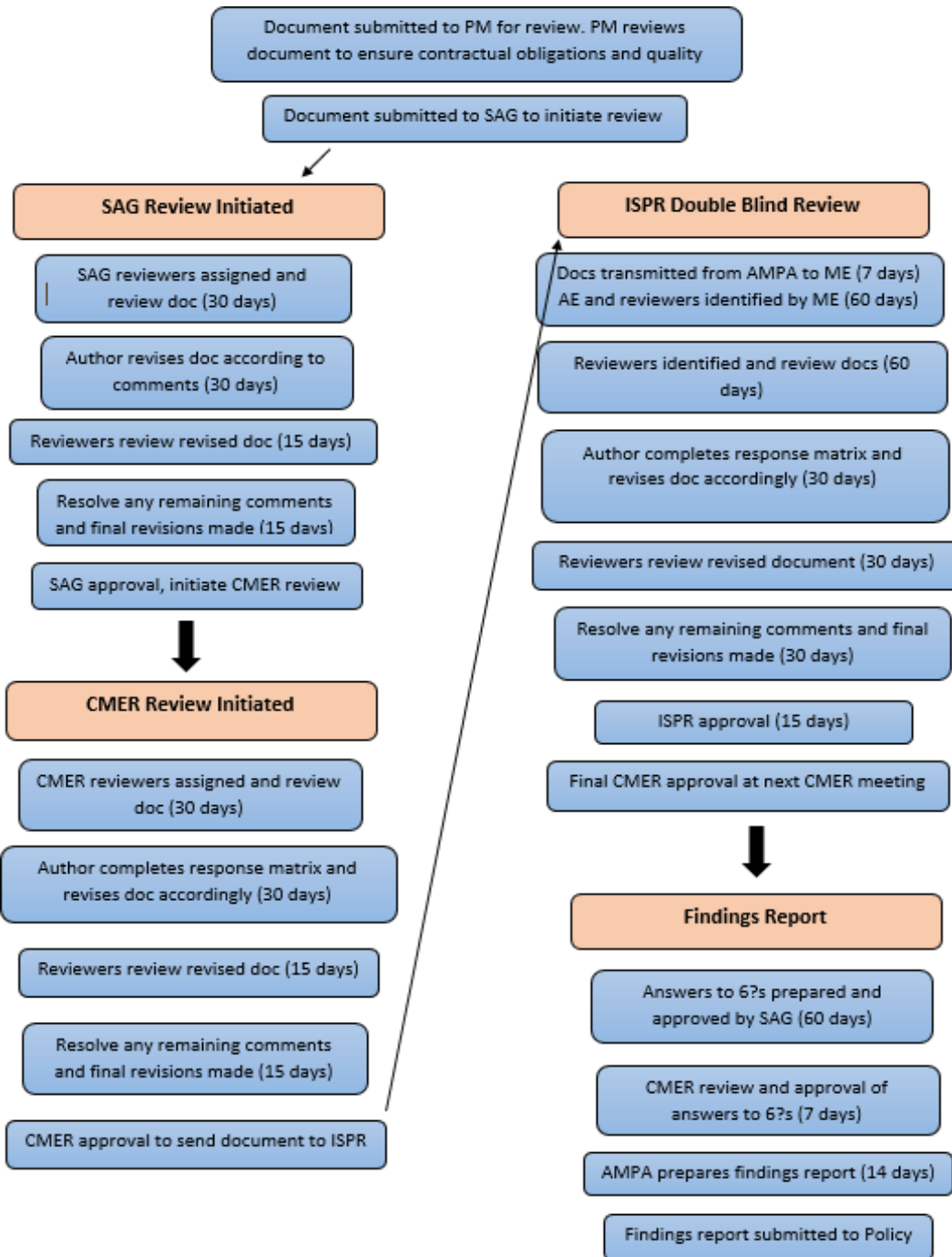
8.2.1 Review Color Codes

Reviewers are encouraged to label their comments using a color code to indicate the level of importance of the comment to the reviewer. The suggested system is:

- Green for comments that are up to the author's discretion on whether and how to address,
- Yellow for comments related to clarification of a statement or subject that may require additional information before acceptance, and
- Red for comments that appear to be critical and if the author does not incorporate them satisfactorily, the reviewer will not approve the document.

Comments without a color code are presumed to be green. Reviewers are particularly encouraged to provide specific recommendations on how to resolve red comments and use citations or other evidence to support their recommendations. Red comments should be infrequent, but where they are used the reviewer has an obligation to provide well thought out and science-based arguments supporting their position. Ultimately, if there are any comments that cannot be resolved in the review, the issue may move into CMER's Guided Decision Making Process (see Chapter 3, section 3.3.4).

Figure 8.2 Typical AMP review and approval process which include sequential SAG and CMER review and Blind ISPR. Does not include concurrent SAG/CMER review or open ISPR process. Recommended time to complete a process step are in parenthesis. Depending on the document in review and necessary revisions and re-review, process steps may be shorter or longer.



8.3 SAG Review

When the SAG co-chair(s) delivers a document to the SAG for review, the SAG determines whether to conduct that review internally before forwarding to CMER for additional review (sequential review) or to recommend to CMER a concurrent review of the document with CMER.

8.3.1 Sequential SAG/CMER Review

When the SAG accepts the document for internal SAG review (sequential review) all SAG members who are not on the Project Team are encouraged to review the document. The SAG will agree to a review timeline. SAG members review documents for technical quality, best available science standards, completeness and clarity. SAG co-chair(s) are responsible for orchestrating the review, which involves requesting reviewers and working with the reviewers and PM to ensure that review timelines are met as agreed to by the SAG. If needed, a reviewer can ask an outside subject area experts(s) to assist in the review. The basic elements of a review include the following:

1. **Reviewers:** SAG members who are not on the Project Team are encouraged to read all documents and be prepared to engage in project discussions/decisions. CMER staff may also review documents and submit comments if they are not part of the Project Team. Project Team members do not have a role in reviewing and approving project documents originating from the Project Team. It is recommended that SAG members that are also Board-approved CMER members, participate in the review of a document at the SAG level to address any issues early on in the review process and to not delay their review until the CMER review.
2. **Timeline:** Due dates for review are established by the SAG. As a default, reviewers are given 30 days to review a document and provide comments to the PM, but a different timeline may be agreed to up front by the SAG and reviewers. All reviewers are encouraged to provide comments to the PM by the due date. Reviewers may solicit assistance from outside qualified experts of their choosing and at their own expense. If a reviewer cannot provide comments by the agreed upon due date they should notify the PM prior to the due date. The PM is not obligated to extend beyond the agreed upon due date. If a reviewer's comments are not provided by the agreed upon timeline and no arrangements are made for an alternate due date, the review and approval process will proceed according to the original timeline. Extensions, even by consensus agreement, beyond 30 days should not occur where doing so would cause conflict with meeting contractual obligations or critical project timelines that would increase the cost of the project.
3. **Comments:** Reviewers are expected to provide constructive, professional comments that may include specific language and/or recommendations. Additionally reviewers should provide, or be prepared to provide, supporting materials reinforcing their positions on technical issues. Reviewers are also asked to use a color code with their comments – see section 8.2.1 Review Color Codes. If a color code is not used, those comments are presumed to be green.
4. **Response to comments:** The Project Team and author(s) of the document, will address reviewer comments and incorporate them into the document as appropriate. The PM and co-chairs will work with the document author(s) to ensure comments are responded to in a timely manner. The Project Team and authors are responsible for explaining how and why reviewer recommendations were not used. The recommended format for providing

responses to comments is to create a comment matrix, however this isn't required for the SAG review. The PM and SAG will determine if creating a comment matrix is appropriate for the document in review. The matrix distills the reviewer's comments into definitive issues, proposed author actions (or no action) to remedy, and the rationale behind the decision if no action is taken. Figure 8.2 provides an example of a comment matrix. Responses to specific comments should refer to specific document version and the line number, as appropriate. If the reviewers decide a document requires substantive editing, additional review will be required prior to approval.

Table 8.3 Example of comment matrix for use in responding to comments on CMER documents.

Comment #	Reviewer Initials or number	Location Page/Line in original document	Location Page/Line in revised document	Color Code	Reviewer Comment	Author response	Author questions/comment s to reviewer	Reviewer response to author action
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8.3.2 SAG Approval

The PM submits the revised document to the SAG members to determine if their comments were adequately addressed. The SAG should strive to reach consensus so the document can be finalized and approved to submit to CMER for review. If the comments were adequately addressed, the SAG then approves the document. Once approved by the SAG, the document is distributed to CMER at least one week prior to a CMER meeting with a SAG request to initiate CMER review.

If SAG members determine their comments have not been adequately addressed, they need to identify unresolved comments and provide recommendations on how to incorporate them sufficiently into the document within 30 days. The PM provides these recommendations to the author(s) to incorporate appropriately. If the comments cannot be incorporated by the author(s) to the SAG's satisfaction after 60 days, the issues are elevated to CMER for guidance on how to move forward, unless the SAG agrees by consensus to extend the timeline beyond the 60 days. The SAG co-chair(s) are responsible for working with the PM and the reviewer(s) who are in non-consensus to summarize the issue(s) and forward the document to CMER for resolution.

8.3.3 Concurrent SAG/CMER review

When documents are recommended by the SAG for a concurrent review, the SAG co-chair(s) identifies the SAG reviewers and submits a request to CMER that they are recommending the document for concurrent SAG/CMER review. This request should include a brief update of the project and all relevant information necessary for CMER to make an informed decision on whether to agree to a concurrent review, or whether to send it back to the SAG for a sequential review. Examples of when a concurrent review is appropriate are if the SAG has already informally reviewed the document and no yellow or red issues remain unresolved or in an effort to expedite the review process due to financial or contractual time constraints. If CMER decides a concurrent review is appropriate then the review steps outlined in section 8.4 for CMER review will be followed. During a concurrent review, the document does not go back to the SAG for approval. It is considered to be in CMER review with identified SAG members participating in

the review. SAG comments (and CMER staff if participating in the review) will be included in the comment matrix developed for CMER review.

8.4 CMER Review

When a SAG approved document is distributed to CMER to initiate review, a presentation is typically given by the document author(s) that gives an overview of the project. The basic elements of CMER review are similar to the SAG review and include the following:

1. Reviewers: Each review requires at least three reviewers (that did not participate in the SAG review) from different caucuses that are not Project Team members/authors for that particular project document in review. All Board-approved CMER members are expected to read all documents they will be voting on and be prepared to engage in project discussions/decisions. Project Team members, whether Board-approved CMER members or not, do not have a role in approving project documents. Non-Board approved CMER participants may review and comment on project documents, but as non-voting members, their consent is not required in order to move a document or decision forward. If needed, a reviewer can ask an outside subject area experts(s) to assist in the review.
2. Timeline: Due dates are established by CMER for the review. As a default reviewers are given 30 days to review a document and provide comments to the PM, but a different timeline may be agreed to up front by CMER and the reviewers. All reviewers are expected to provide comments to the PM by the due date. Reviewers may solicit assistance from outside qualified experts of their choosing at their own expense. If a reviewer's comments are not provided by the agreed upon timeline and no arrangements are made for an alternate due date, the review and approval process will proceed according to the original timeline. If a reviewer cannot provide comments by the agreed upon due date they should notify the PM prior to the due date, to see if an extension can be accommodated. Extensions, even by consensus agreement, beyond 30 days should not occur where doing so would cause conflict with meeting contractual obligations or critical project timelines that would increase the cost of the project.
3. Comments: Reviewers are expected to provide constructive, professional comments that may include specific language and/or recommendations. Additionally reviewers should provide, or be prepared to provide, supporting materials reinforcing their positions on technical issues. Reviewers are also asked to use a color code with their comments – see section 8.2.1 Review Color Codes. If a color code is not used, those comments are presumed to be green.
4. Response to comments: The Project Team and author(s) of the document will address reviewer comments and incorporate them into the document as appropriate. The PM and co-chairs will work with the document author(s) to ensure comments are responded to in a timely manner. The Project Team and author(s) are responsible for explaining how and why reviewer recommendations were not used. The recommended format for providing responses to CMER comments on any report that goes to ISPR is to create a comment matrix. The matrix distills the reviewer's comments into definitive issues, proposed author actions (or no action) to remedy, and the rationale behind the decision if no action is taken. Figure 8.2 provides an example of a comment matrix. Responses to specific comments should refer to specific document version and the line number, as appropriate. The PM and CMER or AMPA will determine if creating a comment matrix is necessary for other types of CMER documents (e.g. documents not slated to go to ISPR). If the reviewers decide a document requires substantive editing or that a complete rewrite is necessary, additional review may be required prior to approval.

8.4.1 CMER Approval

The PM submits the revised document to the reviewers to determine if their comments were adequately addressed. If the comments were adequately addressed, the document is distributed to CMER for approval. If the reviewers determine their comments have not been adequately addressed, they need to identify unresolved comments and provide recommendations on how to incorporate them sufficiently into the document within 30 days. The PM provides these recommendations to the author(s) to incorporate appropriately. If the comments cannot be incorporated by the author(s) to the reviewers' satisfaction after 60 days, it goes to CMER for an approval vote unless CMER agrees by consensus to extend the review timeline beyond the 60 days. If consensus cannot be reached by the CMER Board-approved members, then the CMER members that are in dispute will enter into the Guided Decision Making Process (see PSM Chapter 3, section 3.3.4).

CMER should strive to reach consensus so the document can be finalized and approved to submit to ISPR. Once approved by CMER Board-approved members, documents slated for ISPR are put in final draft form and forwarded by the PM to the AMPA for transmittal to the ISPR Managing Editor with a cover letter, recommended reviewers if identified, and any helpful background information to start the ISPR process.

8.5 Independent Scientific Peer Review

WAC 222-12-045(2)(c) "establishes an independent scientific peer review (ISPR) process to determine if the scientific studies that address program issues are scientifically sound and technically reliable; and provide advice on the scientific basis or reliability of CMER's reports" (Board Manual Section 22.4.1). The ISPR process is required for certain types of CMER reports and is a valuable tool for CMER to ensure a robust study design and to gain insight and add credibility to final products.

The purpose of the ISPR process is outlined in Board Manual 22 Part 4.1. Submission of a document to ISPR requires CMER approval. Not all documents need to go through ISPR, but the ones that typically do include:

- Research and monitoring study designs
- CMER Final reports
- Stand-alone literature reviews

Other reports that may go through ISPR are identified in Board Manual Section 22, Part 4.3, such as: "certain CMER recommendations, pertinent studies not published in a CMER approved, peer-reviewed journal, and unpublished reports." Literature reviews and short-term and finite pilot/exploratory project results also typically do not go through ISPR, but should be considered on a case-specific basis after considering implications to the AMP.

The ISPR Associate Editor (AE) and reviewers operate externally to CMER to prevent conflicts of interest and to minimize bias. To this point, ISPR reviewers must not be affiliated with CMER. The default for CMER reports is to go through a double blind review process however, CMER may request by consensus that the AMPA set up an interactive ISPR. This typically would occur for review of a study design but may also include other types of documents.

8.5.1 Double Blind Reviews

A double blind review is where the reviewers and the authors are not identified to each other. The default for CMER reports is to go through a double blind review process where the document author(s) and the reviewers do not interact. To the extent feasible, the author(s) of the CMER

report should not be named so their identities will be unknown to the reviewers. It is important that the PM ensure author names are not contained in the reports going to ISPR.

8.5.2 Interactive (open) ISPR Reviews

This type of review is typically implemented for study designs where study authors can benefit from open interaction with technical experts concerning technical approach, sample population, field methods and analyses that are appropriate to address the purpose, critical questions and CMER context of the proposed study. Unlike the double-blind peer review process, this approach for this type of purpose provides more of a consulting service where all parties agree to interact and the identity of the authors and reviewers is known. In certain cases, CMER may request an interactive ISPR review for a final report. The CMER members requesting an interactive review must provide technical rationale along with a request for approval by CMER.

The AMPA and the AE coordinate the interactive review process. They identify specific questions or issues to be addressed during interactive sessions. The AMPA or PM will provide an update to CMER regarding the issues being addressed during the interactive sessions.

The reviewers give feedback after an initial review, then a meeting is held with the authors to respond to the panel's initial review comments. Further follow-up or iterative interaction may occur (see Section 8.5.2). Substantive changes made during the interactive review process and the basis for making them needs to be documented to create transparency in the CMER process. In some cases the authors may request ISPR reviewers participate in development or refinement of the study design by addressing unresolved questions from the study design development process, or by utilizing their expertise to inform specific technical questions. CMER will decide if that request is appropriate, and if not will recommend an alternate course of action. In other cases, the authors may only want the opportunity to discuss specific comments with ISPR reviewers for clarification.

8.5.3 Preparation and Review

The process described below applies to both double blind and interactive peer reviews. ISPR staff include a Managing Editor, an AE, and three or four specialist that conduct the review. The Managing Editor receives the request for review from the AMPA, evaluates the documents readiness for review, and then transfers them to the appropriate AE. The request can also include additional CMER approved focal questions beyond the standard questions listed below and a list of subject-appropriate reviewers. The AE selects three or four reviewers to provide expert peer review.

Reviewers are expected to provide an unbiased technical review of the document and to give written responses to the Managing Editor's questions and provide recommendations pertinent to the study. After a review is completed, the AE returns the document and reviewers' comments to the Managing Editor along with a statement of scientific acceptability which is based on a set of criteria (e.g., key questions are adequately addressed, sound experimental design, accepted methodology, and proper statistical analysis) and on the professional opinion of the ISPR reviewers and AE.

ISPR reviewers will be asked to address CMER's standard eight questions:

1. Are rigorous, transparent and sound research and statistical methods followed?
2. Is there sufficient detail in the document to reproduce the study?
3. Were data reasonably interpreted?
4. Do the stated conclusions logically flow from the results?
5. Do the literature citations include the latest applicable information and represent the current state of scientific understanding on this topic?

6. Are uncertainties and limitations of the work stated and described adequately?
7. Are assumptions stated and described adequately?
8. Is the information presented in an accurate, clear, complete, and unbiased manner and in a proper context?

CMER may agree to give supplementary materials to provide context or identify portions of the document for review focus. The review will proceed according to the procedures outlined in the DNR contract. ISPR reviewers are currently contractually required to be available for 30 days after their comments have been received by the AMPA. It is important the authors act quickly to get clarifications of comments they do not understand. This is done by making a request for clarification through the AMPA.

ISPR findings, whether from a double blind or interactive review, come back to the AMPA in the form of a synthesis report from the AE along with comments from individual reviewers. The AMPA distributes the ISPR comments to the PM who then distributes them to the authors, Project Team and CMER reviewers. Other CMER members may request a copy of the ISPR comments. Per Board Manual section 22 part 4.4, the Associate Editor (AE), "...summarizes all reviewer comments into a separate synthesis report that identifies the key observations, provides general suggestions, outlines any contradictions in comments, and includes a recommendation for addressing contradictions. If the individual reviews are inconsistent, the Managing Editor, the appropriate AE and an outside AE will address and resolve the inconsistencies. It should be noted that while synthesis reports are disclosable under public disclosure law, confidentiality of the reviewers and their individual comments is maintained." The AE forwards the synthesis report, supporting rationale for the recommendations, together with the individual reviewer comments to the Managing Editor, who then returns the documents to the AMPA. The AMPA, author(s), and AE will attempt to resolve comments that:

- Are clearly based on a misunderstanding or are off topic,
- do not reflect current scientific methods,
- do not fit into the context or purpose of the study informing the AMP, or
- do not answer CMER's questions.

If the concerns regarding these comments cannot be resolved, preventing ISPR approval, the AMPA may recommend:

- a dispute resolution panel be formed to resolve the issue within the ISPR process (preferred),
- change the review to an open review (see section 8.5.2),
- selection of another peer review panel, or
- withdrawal of the document from further ISPR and returned to CMER to determine how to proceed.

8.5.4 Response to ISPR Comments

The PM is responsible for coordinating the response to the peer review comments within a timely manner. The document author(s) will address summary comments from the AE, and individual reviewer comments. In cases where conflicting comments between reviewers exist, the AE will resolve those comments and provide reasoning for their decision before forwarding to the AMPA.

In response to ISPR comments, the author(s) may:

- Adopt reviewer comments and recommendations,
- Request further clarification within 20 days, or

- Request reconsideration of comments after clarifications

The author's response to ISPR comments will, at a minimum, include a:

- Comment matrix that describes how all comments were responded to and why. If the author(s) chooses not to make changes in response to a review comment, they must provide clear and technically sound explanation for doing so,
- revised document in red-line, strike-out, and
- Summary letter for the AE.

Response to ISPR comments follows these general steps:

1. **Create Comment Matrix.** A typical format for organizing a response is to create a comment matrix. The matrix can organize the peer reviewer's comments into definitive issues or by a specific question that the comment refers to along with comment color code. The matrix also includes the author's proposed actions (or no action) to remedy and a clear and technically sound explanation if no action is proposed. Figure 8.2 provides an example of a comment matrix. In the example, comments are numbered, specific reviewers are identified (by letter or number if blind review), comments are presented and cited by location within the document, i.e., page, paragraph, bullet within a paragraph, and/or line number. Similar comments from different reviewers may be grouped together for a single integrated response. The comment matrix clearly identifies general and specific comments that raise substantive issues (an issue addressing an assumption, procedure, finding, or recommendation) or requests for clarification (a question or comment addressing the intent or meaning of a word, sentence, or paragraph). Once the author(s) has completed the comment matrix, the PM will review to ensure it is complete.
2. **Author(s) revise report.** The author(s) will revise the document according to the proposed actions in the comment matrix. The AMPA will then forward the revised document (a clean version and re-line strike out/track changes version), the completed comment matrix, and letter to the AE on how comments were addressed to the Managing Editor. The Managing Editor will typically depend on the AE to determine if the proposed responses and revisions to the document are adequate. The AE may also need to consult with the original reviewers to make this determination. If the AE does not approve revisions to the document, it will be returned to the AMPA. The AE needs to identify revisions that are not approved and provide recommendations on how the document can be revised appropriately. The AMPA will send to the PM who will then forward to the Project Team for the author(s) to revise the document accordingly and resubmit to ISPR for approval. If there are disputes between the author(s) and project team on how to revise the document, the AMPA will facilitate resolution. The PM and/or AMPA will provide a status update to CMER. If ISPR reviewers do not agree with the revisions, the author(s) will attempt to make changes that result in ISPR approval.
3. **Resubmittal of document for ISPR approval.** When the report author(s) and the AE cannot come to agreement on whether the author(s) have adequately responded to ISPR comments, the AMPA will establish a fair and unbiased process to resolve any disagreements in consultation with the Managing Editor, AE, PM, and author(s). The process will be designed to maintain the integrity, especially the double blind requirement, of the review process, and may involve bringing in additional outside experts as arbiters.

4. **CMER Approval.** After the AE provides written approval of the final draft document, the PM distributes the final document, the written approval from the AE and the comment matrix to CMER for final review and approval. At this stage the CMER review is not to raise issues related to language and materials in the original CMER approved report, but to limit their review to any substantive changes made to the report in response to the ISPR review.

8.5.5 Final CMER Approval

After documents are approved by ISPR or by the CMER reviewers for non-ISPR reviewed documents, the PM forwards the revised document, response matrix, and approval memo to CMER for final approval. The documents will also be distributed to the appropriate SAG as an FYI. At this stage the review is limited to revisions in response to substantive changes that were made during ISPR. If a FP Board-approved CMER member does not approve a document at this stage, they must provide a detailed summary, including a clear rationale for doing so. Then the AMPA may invoke the Guided Decision Making Process (PSM Chapter 3, section 3.3.4).

Once a scoping document, study design, or final report is approved by CMER, the AMPA delivers it to Policy with the findings report. Other documents may be delivered to Policy at the discretion of the AMPA and CMER. The SAG, with guidance from the Project Team if needed, prepares the six questions document to be included in the findings report, which is then approved by CMER. Then the findings report (final report, six questions document, AMPA cover letter) is transmitted to Policy.

8.6 CMER Findings Report for completed studies

After a final report has been approved by CMER, a Findings Report is compiled to inform Policy on implications to forest practice rules. CMER is ultimately responsible for answering the Six Questions (See PSM Ch. 7 for 6 questions) that are part of the Findings Report, but typically these questions are completed by the SAG with input from the Project Team if needed. Answers to six questions should be concise; overall the report should strive to be no more than three pages long. Pertinent context or history should be limited and mostly referencing the full study report or CMER Study Design. CMER approval of the answers to the Six Questions should occur within 3 months of CMER approval of a final report. A complete Findings Report should include the final report, answers to the Six Questions from the 'CMER/Policy Interaction Framework' (see PSM ch. 7 and see Board Manual section 22) and a cover letter from the AMPA. The Findings Report is provided to the Policy Committee who then decides whether to make an adaptive management recommendation to the Forest Practices Board.

8.7 Publishing study results outside of the Adaptive Management Program

Once CMER approves a final report, author(s) are free to publish work related to the project. Author(s) should not submit manuscripts for potential publication prior to this approval step without permission. If authors would like to publish prior to CMER approval they should notify the AMPA before submitting a manuscript to an external publisher. The AMPA in turn should notify Policy and CMER that the report will be submitted for outside publishing, along with the anticipated publish date. Prior to publishing, the final manuscript will be forwarded to CMER and Policy. In the publication article, the author(s) will acknowledge that CMER funding was used to

implement the study and provide proper acknowledgement to authors, PMs, and CMER. Here is an example of appropriate language, however journals may have their own guidelines:

This work was developed with public funding through the DNR Adaptive Management Program. As such it is within the public use domain. However, the concept of this work originated with the Washington State Forest Practices Adaptive Management Program and the authors. The document was prepared for the Cooperative Monitoring, Evaluation and Research Committee (CMER) and was intended to inform and support the Forest and Fish Adaptive Management program. The project is part of the CMER Adaptive Management Program, and was conducted under the oversight of the [...name of SAG...]. As a public resource document, this work should be given proper attribution and be properly cited. [Insert Full reference citation as appropriate.]

If a report contains management implications or recommendations Policy will review (approval is not necessary) that section prior to being submitted for publishing.

8.8 Review and Use of non-CMER Project Documents

As stated in Board Manual Section 22, Part 3, external science studies may be brought to CMER in two ways: 1) as part of the body of science reviewed by CMER in addressing work plan tasks; or 2) directly in the form of specific technical reports to be reviewed and reported on by CMER as directed by Policy or the Board. When CMER evaluates outside science for inclusion in the adaptive management program, CMER should take into consideration its relevance to CMER research and AMP priorities, adherence to scientific methods, and where available, an examination of any QA/QC processes used in collecting and assessing the accuracy of the data.

When evaluating studies and study designs CMER should consider a hierarchical process for assessing quality:

1. Experimental studies (i.e., randomized control trials),
2. Quasi-experimental studies (i.e., studies without randomization),
3. Controlled observational studies,
4. Cohort studies,
5. Case control studies,
6. Observational studies without control groups, and
7. Expert opinion based on theory, laboratory research, or consensus.

When a final technical non-CMER report is formally evaluated by CMER for inclusion in the AMP, peer-reviewed publications that are widely available and referenced in the area of scientific inquiry of interest are preferable. Gray literature should be evaluated with caution, but can be acceptable if the content can be evaluated for accuracy and credibility, and is available to CMER and the general public. Internal reports, papers presented at conferences, articles in preparation, and other types of scientific information should be treated as unpublished and assessed for quality (accuracy and credibility). For additional guidance see the memo "Use of Non-CMER Science in the Forest Practices Adaptive Management Program" Hotvedt et al, 2014 (PSM Appendix XX).

9 Data Gathering, Documentation, and Information Management

This chapter explains the sources of CMER information (data, reports, and maps) produced by or on behalf of CMER and the collection and storage of that information.

Additional intentions and goals of this chapter include the following:

1. Guidance to DNR staff and CMER cooperators in how CMER documents and data will be stored
2. Guidance for minimum data standards for CMER reports
3. Setting the stage for public sharing of information and the provision of accurate data and learning for policy setting
4. Minimizing the loss or corruption of CMER work products
5. A system of storage that minimizes staff time and space in filing and storage
6. Linking CMER data and reports to the contracting process and to the project management process that generates the CMER reports and data

9.1 *Protocols and Process Steps for Data Gathering and Storage*

1. The work plan identifies a research and report need.
2. An RFQ or other solicitation is sent out, and a contract is awarded for research and report.
3. The contractor generates data through field research.
4. The contractor generates a final written report.
5. The contractor creates a geographical map of the research site(s).
6. The contractor delivers all data, reports, and maps to DNR at the close of the contract.
7. DNR distributes hard copies of reports to CMER and SAGs for review.
8. Data, reports, and maps are stored (one hard copy of each in contractor's file, one hard copy in AMPA's file, CD in contractor's or AMPA's file). The report is catalogued. Raw data are stored _____ *[Placeholder]*. Maps are catalogued and are stored _____ *[Placeholder]*.
9. Other data and emails are stored by DNR Information Technology as required by law.
10. Contractor/contract file is closed and retention protocol is used to store (DNR).
11. Data are periodically reviewed for proper conditions, formats, and applications.

9.2 *Data Generation*

CMER data or information is generated by contractors performing research and writing reports to fulfill CMER projects identified in the work plan. Data are generated in three forms: original research or field data, geographical maps or descriptions of research sites, and final reports.

9.3 *Data Quality Standards*

All CMER-funded projects must meet DNR minimum standards for data formatting, metadata, GIS layers, and other data considerations, such as sample size. The purpose of these standards is to assure CMER of scientifically credible data that can be used to develop sound policy. Since standards are lengthy and dynamic, they are incorporated here by reference.

9.3.1 Principles of Data Quality

[Placeholder]

9.3.2 Error Checking

[Placeholder]

9.4 Data Dictionary

A data dictionary should accompany any project data submitted for archiving. The data dictionary should list the files included, name and describe the data fields in each file, outline the data structure of each file, and provide other information as shown in the template or as needed to facilitate use of the data.

9.4.1 Data Dictionary Template

[Placeholder]

9.4.2 Data Dictionary Example

[Placeholder]

9.5 Data Ownership

Most CMER data are obtained via DNR contracts and so are legally owned by DNR.

Copies of all adaptive management contract deliverables are physically stored in the contract file that is maintained in the Forest Practices Division. This includes study plans, interim and final reports, paper and digital data, maps, publications, and presentations. The contract file should have a copy of every single thing that was generated as part of work paid for by the state; investigators should have nothing in their personal possession (including raw data) that is not part of the contract file.

9.5.1 Authorship

Whether CMER or the contractor will be considered the author is determined by the contract terms.

9.6 Data Storage and Document Retention

DNR stores CMER data generated through contract work. DNR follows a file retention policy for storage of CMER data. Generally speaking, CMER data are kept indefinitely and is periodically reviewed to ensure that the storage format (compact disc, etc.) and data format (.xls, ascii) both meet our needs.

DNR file retention policies must be followed for data collected through DNR contracts. In general, a staggered 5-year retention schedule (2 years at DNR, 3 years in archives etc.) is appropriate for most CMER-related products. However, some products, such as final reports, may have longer retention periods. Products that have exceeded the retention schedule will and should be archived or destroyed as appropriate.

10 Information Access and Communication

This chapter specifies CMER's obligations to provide information to the public and describes the ways in which the information will be requested and provided. It also outlines reporting requirements. It may also include plans for education programs and other outreach efforts. External peer review is *not* covered in this chapter (see Chapter 7).

Additional intentions and goals of this chapter include the following:

1. Guidance to DNR staff and CMER cooperators on CMER document retrieval and distribution (phone request, internet, kept by project manager, etc.)
2. Guidance to CMER cooperators and the public in requesting data and other CMER information
3. Requirements, structure, and procedures for distribution and use of CMER products
4. A system and procedures for CMER scientists to gain access to data for scientific purposes and for landowners to obtain data collected on their lands
5. A system of distribution that minimizes staff time in servicing requests

10.1 *Protocols and Process Steps for Distribution of Reports*

1. DNR distributes hard copy of reports to CMER, SAGs for review.
2. CMER reviews final report for approval.
3. If edited by CMER, authorship of report is decided. (contractor or CMER)
4. Once approved, final report becomes known as a "CMER-approved document."
5. CMER documents are "published" in a variety of ways: posted on the web, photocopied and inventoried in the DNR Forest Practices library, or printed as journal articles.
6. Access to CMER information and documents/publications is gained through phone calls, letters, walk-in mail-slot system in DNR office, website, and email. Active access is solicited by and shared by DNR, CMER, the scientific community and others via web postings, press releases, phone contacts, outreach events, and scientific presentations at conferences.
7. CMER transmits documents and data through the AMPA to Policy, which uses the information to make policy recommendations to the FPB.

10.2 *Access to Data*

10.2.1 **Public Disclosure**

All data should be disclosed as a matter of public record since public funds are used for this research. Small fees will be charged for photocopying, CDs, and other media. Certain personal and other records are exempt from public disclosure (RCW 42.17.310). Nearly all of these specific exemptions are completely unrelated to any CMER process or products. The only exemption remotely applicable is the "valuable formula" exemption for "research data obtained by any agency within five years of the request for disclosure." It is doubtful that any CMER project conducted in an open stakeholder approach would produce products of this nature, so it is appropriate to disclose nearly all CMER products.

For some special types of data, the DNR charges a more substantial fee. Considered DNR corporate data, these include the transportation and hydrography GIS layers, aerial photos, and some types of maps. If a CMER project specifically requires these data, the need should be

documented in a letter or, ideally, included in the contract language as a DNR deliverable to the contractor (“DNR will provide XYZ at no costs....”).

Although DNR-owned data are fully available through public disclosure, data are not considered to be in the public record until DNR accepts the data from the contractor. Until DNR accepts these data, they remain the property of the contractor. The intent here is to allow the contractor to perform quality assurance, and to allow the DNR to correctly incorporate the new data into DNR databases and GIS systems.

Landowners that allow access to their lands for CMER projects should have a Memorandum of understanding (MOU) in place with the DNR prior to access if they desire early release of raw data. The MOU should clearly state that the data may contain errors and should caution landowners about the risk of making management decisions on these preliminary data.

10.2.2 Data and Document Requests

Data and document requests are made in writing. If a request is made by telephone, it is recorded. The request is processed by the DNR Public Disclosure Officer, who clarifies the request, processes it, and tracks the public request records.

10.3 Dissemination and Sharing of Data

CMER and the AMPA actively share information in several ways:

1. Recommending policy based on report and field data findings to the Board.
2. Making informal presentations.
3. Encouraging scientists to use data in their conferences and professional presentations.
4. Publishing papers in professional journals.
5. Sharing information at the annual CMER Science Conference.

Appendix A

Forest Practices Rules for Adaptive Management

WAC 222-08-035 Continuing review of forest practices rules. (p. 8-1)

***(2) Adaptive management program.** The adaptive management program will be used to determine the effectiveness of forest practices rules in aiding the state's salmon recovery effort and provide recommendations to the board on proposed changes to forest practices rules to meet timber industry viability and salmon recovery. The program provides assurances that rules and guidance not meeting aquatic resource objectives will be modified in a streamlined and timely manner. The board may also use this program to adjust other forest practice rules and guidance in order to further the purposes of chapter 76.09 RCW. The specific components of the adaptive management program are set forth in WAC 222-12-045.

WAC *222-12-045 Adaptive management program. (p. 12-7) In order to further the purposes of chapter 76.09 RCW, the board has adopted and will manage a formal science-based program, as set forth in WAC 222-08-035(2). Refer to board manual section 22 for program guidance and further information.

(1) **Purpose:** The purpose of the program is to provide science-based recommendations and technical information to assist the board in determining if and when it is necessary or advisable to adjust rules and guidance for aquatic resources to achieve resource goals and objectives. The board may also use this program to adjust other rules and guidance. The goal of the program is to affect change when it is necessary or advisable to adjust rules and guidance to achieve the goals of the forests and fish report or other goals identified by the board. There are three desired outcomes: Certainty of change as needed to protect targeted resources; predictability and stability of the process of change so that landowners, regulators and interested members of the public can anticipate and prepare for change; and application of quality controls to study design and execution and to the interpreted results.

(2) **Program elements:** By this rule, the board establishes an active, ongoing program composed of the following initial elements, but not to exclude other program elements as needed:

(a) **Key questions and resource objectives:** Upon receiving recommendations from the TFW policy committee, or similar collaborative forum, the board will establish key questions and resource objectives and prioritize them.

(i) Projects designed to address the key questions shall be established in the order and subject to the priorities identified by the board.

(ii) Resource objectives are intended to ensure that forest practices, either singularly or cumulatively, will not significantly impair the capacity of aquatic habitat to:

(A) Support harvestable levels of salmonids;

(B) Support the long-term viability of other covered species; or

(C) Meet or exceed water quality standards (protection of beneficial uses, narrative and numeric criteria, and anti-degradation).

(iii) Resource objectives consist of functional objectives and performance targets. Functional objectives are broad statements regarding the major watershed functions potentially affected by forest practices. Performance targets are the measurable criteria defining specific, attainable target forest conditions and processes.

(iv) Resource objectives are intended for use in adaptive management, rather than in the regulatory process. Best management practices, as defined in the rules and manual, apply to all forest practices regardless of whether or not resource objectives are met at a given site.

(b) **Participants:** The board will manage the program and has empowered the following entities to participate in the program: The cooperative monitoring evaluation and research committee (CMER), the TFW policy committee (or similar collaborative forum), the adaptive management program administrator, and other participants as directed to conduct the independent scientific peer review process. The program will strive to use a consensus-based approach to make decisions at all stages of the process. Specific consensus-decision stages will be established by CMER and approved by the board. Ground rules will follow those established by the TFW process as defined in the board manual.

(i) **CMER.** By this rule, the board establishes a cooperative monitoring evaluation and research (CMER) committee to impose accountability and formality of process, and to conduct research and validation and effectiveness monitoring to facilitate achieving the resource objectives. The purpose of CMER is to advance the science needed to support adaptive management. CMER also has ongoing responsibility to continue research and education in terrestrial resource issues. CMER will be made up of members that have expertise in a scientific discipline that will enable them to be most effective in addressing forestry, fish, wildlife, and landscape process issues. Members will represent timber landowners, environmental interests, state agencies, county governments, federal agencies and tribal governments from a scientific standpoint, not a policy view. CMER members will be approved by the board. This will not preclude others from participating in and contributing to the CMER process or its subcommittees. CMER shall also develop and manage as appropriate:

(A) Scientific advisory groups and subgroups;

(B) Research and monitoring programs;

(C) A set of protocols and standards to define and guide execution of the process including, but not limited to, research and monitoring data, watershed analysis reports, interdisciplinary team evaluations and reports, literature reviews, and quality control/ quality assurance processes;

(D) A baseline data set used to monitor change; and

(E) A process for policy approval of research, monitoring, and assessment projects and use of external information, including the questions to be answered and the timelines.

(ii) **TFW policy committee (policy).** TFW, or a similar collaborative forum, is managed by a policy committee (hereafter referred to in this section as “policy”). Policy membership is self-selecting, and at a minimum should include representatives of the following caucuses: Timber landowners (industrial and nonindustrial private landowners); environmental community; tribal governments; county governments; state departments (including fish and wildlife, ecology, and natural resources); and federal agencies (including National Marine Fisheries Service, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency and U.S. Forest Service). Policy members

will participate without compensation or per diem.

(iii) **Adaptive management program administrator (program administrator).**

The department will employ a full-time independent program administrator to oversee the program and support CMER. The program administrator will have credentials as a program manager, scientist, and researcher. The program administrator will make reports to the board and have other responsibilities as defined in the board manual.

(c) **Independent scientific peer review process.** By this rule, the board establishes an independent scientific peer review process to determine if the scientific studies that address program issues are scientifically sound and technically reliable; and provide advice on the scientific basis or reliability of CMER’s reports. Products that must be reviewed include final reports of CMER funded studies, certain CMER recommendations, and pertinent studies not published in a CMER-approved, peer-reviewed journal. Other products that may require review include, but are not limited

to, external information, work plans, requests for proposal, subsequent study proposals, the final study plan, and progress reports.

(d) **Process:** The following stages will be used to affect change for managing adaptive management proposals and approved projects. If consensus cannot be reached by participants at any stage, the issue will be addressed within the dispute resolution process.

(i) **Proposal initiation:** Adaptive management proposals can be initiated at this stage by any of the participants listed in (2)(b) of this subsection to the program administrator, or initiation may be proposed by the general public at board meetings. Proposals must provide the minimum information as outlined in the board manual and demonstrate how results of the proposal will address key questions and resource objectives or other program rule and/or guidance issues. The board may initiate proposals or research questions in the course of fulfilling their duties according to statute.

(ii) **Proposal approval and prioritization:** The program administrator will manage the proposal approval and prioritization process at this stage and consult with CMER on the program work plan. CMER proposals will be forwarded by the program administrator to policy and then to the board. The board will make the final determination regarding proposal approvals and prioritization. The board will act on proposal approval and prioritization in a timely manner.

(iii) **CMER implementation of proposal:** Board approved proposals are systematically implemented through CMER at this stage by the program administrator.

(iv) **Independent scientific peer review:** An independent scientific peer review process will be used at identified points within this stage of implementation depending upon the study and will be used on specified final studies or at the direction of the board.

(v) **CMER committee technical recommendations:** Upon completion, final CMER reports and information will be forwarded at this stage by the program administrator to policy in the form of a report that includes technical recommendations and a discussion of rule and/or guidance implications.

(vi) **Policy petitions for amendment:** Upon receipt of the CMER report, policy will prepare program rule amendments and/or guidance recommendations in the form of petitions for amendment. When completed, the petitions and the original CMER report and/or other information as applicable will be forwarded by the program administrator to the board for review and action. Policy recommendations to the board will be accompanied by formal petitions for rule making (RCW 34.05.330). Policy will use the CMER results to make specific petitions to the board for amending:

(A) The regulatory scheme of forest practices management (Title 222 WAC rules and board manual);

(B) Voluntary, incentive-based, and training programs affecting forestry;

(C) The resource objectives; and (D) CMER itself, adaptive management procedures, or other mechanisms implementing the recommendations contained in the most current forests and fish report.

(vii) **Board action to adopt petitions for amendment:** Upon receiving a formal petition for amendment to rules and/or guidance, the board will take appropriate and timely action. There will be a public review of all petitions as applicable. The board will make the final determination.

(e) **Biennial fiscal and performance audits.** The board shall require biennial fiscal and performance audits of the program by the department or other appropriate and accepting independent state agency.

(f) **CMER five-year peer review process.** Every five years the board will establish a peer review process to review all work of CMER and other available, relevant data, including recommendations from the CMER staff. There will be a specified, but limited, period for public review and comment.

(g) **Funding.** Funding is essential to implement the adaptive management program, which is dependent on quality and relevant data. The department shall request biennial budgets to support the program priority projects and basic infrastructure needs including funding to staff the adaptive management program administrator position. A stable, long-term funding source is needed for these activities.

(h) **Dispute resolution process.** If consensus cannot be reached through the adaptive management program process, participants will have their issues addressed by this dispute resolution process. Potential failures include, but are not limited to: The inability of policy to agree on research priorities, program direction, or recommendations to the board for uses of monitoring and/or research after receiving a report from CMER; the inability of CMER to produce a report and recommendation on schedule; and the failure of participants to act on policy recommendations on a specified schedule. Key attributes of the dispute resolution process are:

(i) Specific substantive and benchmark (schedule) triggers will be established by the board for each monitoring and research project for invoking dispute resolution;

(ii) The dispute resolution process will be staged in three parts and may be applied at any level of the adaptive management process. Any participant, or the board, may invoke each succeeding stage, if agreement is not reached by the previous stage, within the specified time (or if agreements are not substantially implemented) as follows:

(A) Stage one will be an attempt by CMER and policy to reach consensus. On technical issues, CMER shall have up to six months to reach a consensus unless otherwise agreed upon by policy. Parties may move the process to stage two after an issue has been before policy for six months unless otherwise agreed. The time periods commence from referral of technical issues to CMER, report by CMER to policy, or the raising of a nontechnical issue (or matter not otherwise referable to CMER) directly at policy.

(B) Stage two will be either informal mediation or formal arbitration. Within one month, one or the other will be picked, with the default being formal unless otherwise agreed. Stage two will be completed within three months (including the one month to select the process) unless otherwise agreed. (C) If stage two does not result in consensus, stage three will be action by the board. The board will consider policy and CMER reports, and majority and minority thinking regarding the results and uses of the results can be brought forward to the board. The board will make the final determination regarding dispute resolution.

WAC 222-12-046 Cumulative effects. (p. 12-11) The purpose of this section is to identify how the forest practices rules address changes to the environment caused by the interaction of natural ecosystem processes with the effects of two or more forest practices. This interaction is referred to as “cumulative effects.” The following approaches have been taken:

(3) Certain rules are designed to focus on specific aspects of cumulative effects of forest practices. For example:

(a) WAC 222-08-035 requires continuing review of the forest practices rules and voluntary processes and adopts the concept of adaptive management. WAC 222-12-045 also adopts adaptive management.

WAC 222-12-090 Forest practices board manual. (p. 12-12) When approved by the board the manual serves as an advisory technical supplement to these forest practices rules. The department, in cooperation with the departments of fish and wildlife, agriculture, ecology, and such other agencies, affected Indian tribes, or interested parties as may have appropriate expertise, is directed to prepare, and submit to the board for approval, revisions to the forest practices board manual. The manual shall include:

...

(22) **Guidelines** for adaptive management program.

Appendix B

Schedule L-1

[Board-approved version: 6/21/00]

Key Questions, Resource Objectives, and Performance Targets for Adaptive Management

[This schedule contains implementation details and will be subject to further revisions and clarifications as the provisions of the agreement are implemented through rule, statutes and programs.]

Overall Performance Goals: Forest practices,¹ either singly or cumulatively, will not significantly impair the capacity of aquatic habitat to:

- a) Support harvestable levels of salmonids;
- b) Support the long-term viability of other covered species; or
- c) Meet or exceed water quality standards (protection of designated uses, narrative and numeric criteria, and anti-degradation).

Resource Objectives are defined below for the key aquatic conditions and processes affected by forest practices. These resource objectives are intended to meet the overall performance goals. Resource objectives consist of:

- **Functional Objectives**, which are broad statements of objectives for the major watershed functions potentially affected by forest practices; and
- **Performance Targets**, which are the measurable criteria defining specific, attainable target forest conditions and processes.

Resource objectives are intended for use in adaptive management, rather than in the regulatory process. Best management practices, as defined in the rules and manual, apply even if resource objectives are met at a given site.

Key Questions. The key questions driving adaptive management can be summarized as follows:

1. *Are forest practices being conducted in compliance with the prescriptions contemplated in this Report?*

Compliance monitoring will answer this question. Compliance monitoring will be conducted by DNR and is outside the scope of this adaptive management process.

2. *Will the prescriptions produce forest conditions and processes that achieve resource objectives while taking into account the natural spatial and temporal variability inherent in forest ecosystems?*

¹ “Forest practices” are defined in the Forest Practices Rules (76.09.010 RCW) and include road construction, timber harvesting, reforestation, brush control, etc.

Effectiveness monitoring and research will answer this question. Performance targets are not attainable in all places, even under natural conditions. The adaptive management process will take into account the extent to which a given performance target can actually be achieved given the natural spatial and temporal variability within forest ecosystems.

In addition, reasonable timeframes to achieve targets will be part of the process. There will be identification of performance targets that can be met within short (0-10 years), mid (10-50 years) and long-term (50-200 years) ranges of time measured at the landscape scale. There will also be consideration for the time required for the quantity of prescriptions to be applied on the ground to ensure adequate sample sizes for implementing adaptive management. Effectiveness monitoring and research should also test whether less costly alternative prescriptions would be effective in producing conditions and processes that meet resource objectives or where more conservative prescriptions may be necessary.

3. *Are the resource objectives the right ones to achieve the overall performance goals?*

Validation monitoring and research will answer this question. Validation monitoring and research should be designed to validate or verify the assumptions underlying the resource objectives. Resource objectives must work to achieve the overall performance goal, yet also be attainable within the context of a viable forest products industry. Current targets are those the authors believe will be met by the prescriptions in this Report. Progress towards achieving resource objectives within appropriate timeframes will be tracked through time. Changes to targets should be guided by evaluating two general questions aimed at defining the appropriate level of accuracy needed to change targets: (1) what level of statistical significance, scientific confidence or trend analysis is the monitoring effort intended to achieve and was it achieved; and (2) what level of significance for biological or habitat change is expected?

Heat/Water Temperature

Functional objective: Provide cool water by maintaining shade, groundwater temperature, flow, and other watershed processes controlling stream temperature.²

Measures	Performance targets	Time-Frame
Stream temperature	Water quality standards—current and anticipated in next triennial review (e.g., for bull trout ³).	<i>(Note--need to be completed by scientific advisory groups)</i>
Groundwater temperature	To be developed.	
Shade	<ul style="list-style-type: none"> • Type F & S streams, except Eastside bull trout habitat: that produced by shade model or, if model not used, 85-90% of all effective shade. • Westside and eastside high elevation, Type N streams: shade available within 50' for at least 50% of stream length. • Eastside: all available shade within 75' of designated bull trout habitat per predictive model. 	

² Stream temperature is affected by the interaction of a complex set of factors, including shade, air temperature, pool depth and frequency, flow, and groundwater influences. These factors are addressed in resource objectives for other conditions or processes (e.g., hydrology, sediment, LWD) in addition to the targets selected for stream temperature.

³ Bull trout temperature standards are expected to be an outcome of DOE's triennial review of water quality standards.

LWD/Organic Inputs

Functional objective: Develop riparian conditions that provide complex habitats for recruiting large woody debris and litter⁴.

Measures	Performance targets			Time-Frame
Riparian condition	<ul style="list-style-type: none"> Westside and high elevation Eastside habitats: riparian stands are on pathways to meet Desired Future Condition (DFC) targets (species, basal area, trees per acre, growth, mortality). Eastside (except high elevation): DFC; current stands on pathways to achieve Eastside condition ranges for each habitat series. 			
Litter fall	<ul style="list-style-type: none"> Westside Type N⁵: at least 50% of recruitment available from within 50’. Eastside Type N: at least 70% of recruitment available from within 50’. 			
Pool frequency	< 2 channel widths per pool.			
In-stream LWD	Westside: <ul style="list-style-type: none"> Streams <20 m (or 65.6 ft.) bankfull width: > 2 pieces (total wood) per channel width Streams <10 m (or 32.8 ft.) bankfull width: >0.30 key pieces per channel width Streams >10 m (or 32.8 ft.) bankfull width: >0.50 key pieces per channel width Eastside: (To be developed.)			
Residual pool depth	Mean Segment Bankfull Width in meters and (feet)	Minimum Unit Size in meters and (feet)	Minimum Residual Pool Depth in meters and (feet)	
	0 to <2.5 (>0 to 8.2 ft.)	0.5 (5.4 ft.)	0.10 (0.33 ft.)	
	∃2.5 to <5.0 (≥ 8.2 to 16.4 ft.)	1.0 (10.8 ft.)	0.20 (0.66 ft.)	
	∃5.0 to <10.0 (≥ 16.4 to 32.8 ft.)	2.0 (21.5 ft.)	0.25 (0.82 ft.)	
	∃10.0 to <15.0 (≥ 32.8 to 49.2 ft.)	3.0 (32.3 ft.)	0.30 (0.98 ft.)	
	∃15.0 to <20 (≥ 49.2 to 65.6 ft.)	4.0 (43.1 ft.)	0.35 (1.15 ft.)	
	∃20 (≥ 65.6 ft.)	5.0 (53.8 ft.)	0.40 (1.31 ft.)	

⁴ Litter is defined to include leaves, needles, twigs, branches, and other organic debris that is recruited to aquatic systems and riparian forest floor.

⁵ Targets for Westside and Eastside Type S and F streams are a low priority because adequate leaf litter is expected to be a by-product of riparian stand conditions.

Sediment

Functional objective: Provide clean water and substrate and maintain channel forming processes by minimizing to the maximum extent practicable, the delivery of management-induced coarse and fine sediment to streams (including timing and quantity) by protecting stream bank integrity, providing vegetative filtering⁶, protecting unstable slopes, and preventing the routing of sediment to streams.

Measures	Performance targets	Time-Frame						
Mass wasting sediment delivered to streams	<ul style="list-style-type: none"> Road-related: virtually none is triggered by new roads; favorable trend on old roads. Timber harvesting-related: no increase over natural background rates from harvest on a landscape scale on high risk sites. 							
Road sediment delivered to streams	<ul style="list-style-type: none"> New roads: virtually none. 							
Ratio of road length delivering to streams / Total stream length (miles/mile)	Old roads: Not to Exceed: <table border="0" style="width: 100%;"> <tr> <td style="width: 33%;">Coast (Spruce)</td> <td style="width: 33%;">West of Crest</td> <td style="width: 33%;">East of Crest</td> </tr> <tr> <td>0.15-0.25</td> <td>0.15-0.25</td> <td>0.08-0.12</td> </tr> </table>	Coast (Spruce)	West of Crest	East of Crest	0.15-0.25	0.15-0.25	0.08-0.12	
Coast (Spruce)	West of Crest	East of Crest						
0.15-0.25	0.15-0.25	0.08-0.12						
Ratio of road sediment production delivered to streams/Total stream length (tons per year/mile)	Old roads: Not to Exceed: <table border="0" style="width: 100%;"> <tr> <td style="width: 33%;">Coast (Spruce)</td> <td style="width: 33%;">West of Crest</td> <td style="width: 33%;">East of Crest</td> </tr> <tr> <td>6-10 T/yr</td> <td>2-6 T/yr</td> <td>1-3 T/yr</td> </tr> </table>	Coast (Spruce)	West of Crest	East of Crest	6-10 T/yr	2-6 T/yr	1-3 T/yr	
Coast (Spruce)	West of Crest	East of Crest						
6-10 T/yr	2-6 T/yr	1-3 T/yr						
Streambank/equipment limitation zone disturbance (caused by forest practices)	<ul style="list-style-type: none"> Type S&F: no streambank disturbance outside road crossings. Type N: ≤10% of the equipment limitation zone. 							
Fines in Gravel	Less than 12% embedded fines (<0.85 mm).							

⁶ Vegetative filtering can be measured by riparian vegetation, which is covered under the target for riparian condition under LWD.

Hydrology

Functional objective: Maintain surface and groundwater hydrologic regimes (magnitude, frequency, timing, and routing of stream flows) by disconnecting road drainage from the stream network, preventing increases in peak flows causing scour, and maintaining the hydrologic continuity of wetlands.

Measures	Performance Targets	Time-Frame
Road run-off	Same targets as road-related sediment.	
Peak flows	West side: Do not cause a significant increase in peak flow recurrence intervals resulting in scour that disturbs stream channel substrates providing actual or potential habitat for salmonids, attributable to forest management activities.	
Wetlands	No net loss in the hydrologic functions of wetlands	

Chemical Inputs

Functional objective: Provide for clean water and native vegetation (in the core and inner zones) by using forest chemicals in a manner that meets or exceeds water quality standards and label requirements by buffering surface water and otherwise using best management practices.

Measures*	Performance targets	Time-Frame
Entry to water	No entry to water ⁷ for medium and large droplets; minimized for small droplets (drift).	
Entry in RMZs	Core and inner zone: levels cause no significant harm to native vegetation.	

⁷ Targets are for forest chemicals other than Bt and fertilizer. BMPs for both are not priorities for adaptive management.

* These measures and performance targets are not intended to override label requirements.

Stream Typing and Fish Passage

Functional objective (stream typing): Type “fish habitat” streams to include habitat which is used by fish at any life stage at any time of the year, including potential habitat likely to be used by fish which could be recovered by restoration or management, and including off-channel habitat, by using a multi-parameter, field-verified, peer reviewed, GIS logistic regression model using geomorphic parameters such as basin size, gradient, elevation and other indicators.

Functional objective (fish passage): Maintain or restore passage for fish in all life stages and provide for the passage of some woody debris by building and maintaining roads with adequate stream crossings.

Measures	Performance targets	Time-Frame
Accuracy of predictive models	Fish habitat model: statistical accuracy of +/- 5%, with line between fish and non-fish habitat waters equally likely to be over and under inclusive.	
Access barriers	Eliminate road-related access barriers over the time-frame for road management plans.	

Appendix C

Schedule L-2

(v.10/24/03 WFPA PJH)

Schedule L-2 lists specific projects associate with the issues identified for adaptive management research in the Forests and Fish Report. All of the definition and Key Questions identified on pages one and two of Schedule L-1 apply. Text and tables in the first column, titled Performance Targets and Measures should be identical to the wording that appears in Schedule L-1.

Column Headings: 1. Performance targets and measures are taken from Schedule L-1. 6/21/00
2. Projects are from the “Research Budget FWS_NMFS” (L-1b) dated 1/31/00.
3. First year of funding denotes project initiation priority from “Research Budget FWS_NMFS” (L-1b) dated 1/31/2000.
4. Total \$ x 1000 - the total project cost estimated by “Research Budget FWS_NMFS” (L-1b) dated 1/31/2000.
5. Priority: PR = Priority Research, OR = Other Research from FFR 4/29/99
6. FFR. This column references the origins of the project in FFR 4/29/99. App refers to Appendix. Sch refers to Schedule

Other Notes: Yellow highlighted or shaded text in the Project column show FFR L-1 text that varied from the FWS_NMFS list (L-1b)
The “G” general projects are mostly from “Other Priority Research” on the last page of L-1.

Research questions that are in FFR Schedule L01 but do not appear in FWS_NMFS list (L-1b) and are not in this draft of L-2.

Heat/Water Temperature Other Research b): Test the effectiveness of the eastside basal area prescriptions in meeting shade targets.

LWD/Organic Inputs Priority Research j): Determine LWD targets for type N streams (e.g., for sediment retention and amphibians).

Sediment Priority Research f): Develop 10 m DEM state-wide; explore laser mapping. (Included in DNR budget and task list).

Other Priority Research e): Assess the historical ranges of conditions in disturbance regimes of the eastside riparian ecosystem.

Fish Habitat

Functional Objective: Type “fish habitat” streams to include habitat which is used by fish at any life stage at any time of the year, including potential habitat like to be used by fish which could be recovered by restoration or management, and including off-channel habitat, by using a multi-parameter, field-verified, peer-reviewed, GIS logistic regression model using geomorphic parameters such as basin size, gradient, elevation, and other indicators.

Performance Target (measures in bold) ¹	Project ² (First Year of Funding ³)	Tot \$ ⁴	Priority ⁵	FFR ⁶
Accuracy of predictive model Fish habitat model: statistical accuracy of +/- 5% with line between fish and non-fish habitat waters equally likely to be over and under inclusive.	G1. Develop a predictive model (e.g. the logistic regression model in FFR) to serve as the basis for stream typing in Washington State. (00)	1,000	PR	App B.1(a)
	G3. Develop and validate habitat suitability and distribution protocols for bull trout currently under development by AFS. (00)	700	PR	Sch L-1 Other Pri. Res. a)
	G5. Validate last-fish habitat model for upper extent of bull trout and other fish. (00)	300	PR	Sch L-1 Other Pri. Res. a)

Amphibians

Functional Objective : (In Progress)

Performance Target (measures in bold) ¹	Project ² (First Year of Funding ³)	Tot \$ ⁴	Priority ⁵	FFR ⁶
In progress	G4. Verify the stream-associated amphibian models. (00)	620	PR	Sch L-1 Other Pri. Res. a)
	G7. Test the effectiveness of the “patch buffer” prescriptions for westside type N streams in maintaining the long-term viability of amphibians. (00)	670	PR	App B.4(d)(iv)
	Also see TH9 (Platform for developing amphibian performance targets)			

Fish Passage

Functional Objective: Maintain or restore for fish in all life stages and provide for the passage of some woody debris by building and maintaining roads with adequate stream crossings.

Performance Target (measures in bold) ¹	Project ² (First Year of Funding ³)	Tot \$ ⁴	Priority ⁵	FFR ⁶
<p>Access Barriers</p> <p>Eliminate road-related access barriers over the time-frame for road management plans.</p>	G6. Test the effectiveness of fish passage prescriptions at restoring and maintaining passage. (03)	200	PR	Sch L-1 Other Pri. Res. b)

Other Research

Functional Objectives: (In progress)

Performance Target (measures in bold) ¹	Project ² (First Year of Funding ³)	Tot \$ ⁴	Priority ⁵	FFR ⁶
	G8. Develop an effective strategy to retain snags in riparian areas on the Eastside. (03)	200	OR	Sch L-1 Other Pri. Res. d)

Performance Target (measures in bold) ¹	Project ² (First Year of Funding ³)	Tot \$ ⁴	Priority ⁵	FFR ⁶
	G2. Long-term Course-Level Ambient Monitoring of FFR, incl. Infrastructure for data management and archiving. (01)	200	PR	App L.3 (a)

Heat Temperature

Functional Objective: Provide cool water by maintaining shade, groundwater temperature, flow, and other watershed processes controlling stream temperature

Performance Target (measures in bold) ¹	Project ² (First Year of Funding ³)	Tot \$ ⁴	Priority ⁵	FFR ⁶
<p>Stream Temperature</p> <ul style="list-style-type: none"> Water quality standards - current and anticipated in next triennial review (e.g., for bull trout). 	<p>TH1. Validate cumulative effects of forest practices upon temperatures of F and S streams at the basin scale. (00) (FFR: Investigate basin-wide cumulative effects of forest practices, and potentially other land uses, on attainment of temperature targets.)</p> <p>TH2. Improve shade model to better predict relationships between shade and other microhabitat variables and temperature at the reach scale. (00) (FFR: Improve the shade model to better predict relationships between shade and temperature at a regional level and at different spatial scales, and update to reflect current research and any updated water quality standards.)</p>	<p>550</p> <p>500</p>	<p>OR</p> <p>PR</p>	<p>Sch L-1 Heat/Water Temp 2) d)</p> <p>Sch L-1 Heat/Water Temp 1) a)</p> <p>Sch L-1</p>

Groundwater <ul style="list-style-type: none"> To be developed. (See TH5) 	TH3. Test effectiveness of 75' alternative to the shade rule in meeting temp and shade targets. (02)	450	OR	Heat/ Water Temp 2) a)
	TH4. Test the cumulative effect (at basin scale) of the westside Type N patch buffers and eastside type N buffers in meeting temperature targets. (00)	800	PR	Sch L-1 Heat/Water Temp 1) c)
	TH5. Understand the effects of forest practices on groundwater and on stream temperature (e.g. –hyporheic zones) and their relationship to temperature targets. (00)	900	PR	Sch L-1 Heat/Water Temp 1) d)
	TH6. Calibrate the shade model to meet bull trout temperature targets. (00)	100	PR	Sch L-1 Heat/Water Temp 1) e)
Shade <ul style="list-style-type: none"> Type F & S streams, except eastside bull trout habitat: that produced by shade model or, if model not used, 85-90% of all effective shade. Westside and eastside high elevation, Type N streams: shade available within 50' for at least 50% of stream length Eastside: all available shade within 75' of designated bull trout habitat per predictive model	TH7. Test whether the management prescriptions for buffers are achieving shade and temperature targets, including: TH7a. Understand how local conditions affect the performance of the prescriptions (03); and TH7b. understanding the cumulative effects of yarding corridors on meeting temperature targets. (03)	400	OR	Sch L-1 Heat/Water Temp 2) c)
	TH8. Test whether the wetland prescriptions are effective in preventing downstream temperature increases beyond targets. (03)	400	OR	
		200	OR	Sch L-1 Heat/Water Temp 1) e)
	TH9. Determine whether amphibians or other designated uses require different temperature targets. (03)	300	OR	Heat/Water Temp 1) f)

Large Woody Debris/Organic Inputs

Functional Objective: Provide complex and productive in- and near-stream habitat by recruiting large woody debris and litter.

Performance Target (measures in bold) ¹	Project ² (First Year of Funding ³)	Tot \$ ⁴	Priority ⁵	FFR ⁶
<p>Riparian Condition</p> <ul style="list-style-type: none"> Westside and high elevation eastside habitat: riparian stands are on pathways to meet Desired Future Condition (DFC) targets (species, basal area, trees per acre, growth, mortality) Eastside (except high elevation): Desired Future Condition; current stands on pathways to achieve eastside condition ranges for each habitat series <p>Litter fall</p> <ul style="list-style-type: none"> Westside Type N: at least 50% of recruitment available from within 50' 	LWD1. Validate assumptions, models and data used to develop Desired Future Condition (DFC) targets and eastside stand conditions. Conduct field reconnaissance of mature riparian reference stands and compare results with interim targets. (00)	1050	PR	Sch L-1 LWD/Org Input 1) i)
	LWD2. Validate the assumptions, models, and data used to develop growth and succession pathways to riparian DFC's. Conduct field reconnaissance of riparian stands (management age and mature); utilize new data on validation and refinement of growth models. (00)	350	PR	Sch L-1 LWD/Org Input 1) a)
	LWD3. Improve and validate growth models for conifer/hardwood interactions, older ages, and riparian zone conditions. (02) (“older ages and riparian zone conditions” add to FFR version)	100	PR	Sch L-1 LWD/Org Input 1) b)
	LWD4. Determine rates of natural regeneration and tree mortality in riparian management zones and their effects on the ability of	560	PR	Sch L-1 LWD/Org Input 1) h)

1.	≥10 to <15	3.0	0.30	LWD10. Develop <i>(or validate current)</i> Performance Targets for instream LWD amounts for all stream types. (00)	100	OR	Not in FFR	
	≥15 to <20	4.0	0.35		LWD11. Investigate the delivery of LWD from off-site, upstream locations, and test the cumulative effectiveness of the riparian and mass wasting prescriptions in contributing LWD to down-stream channels. (03)		400	Sch L-1 LWD/Org Input 2) a)
					LWD12 Test the effectiveness of trees in the outer buffer (outer zone) in contributing LWD to streams. (01)		250	Sch L-1 LWD/Org Input 2) b)
					LWD13. Test the effectiveness of the riparian prescriptions for recruiting LWD under different site conditions. (01)		250	Sch L-1 LWD/Org Input 2) c)
					LWD14. Test the regeneration capacity of forested wetlands in riparian zones. (01)		350	Sch L-1 LWD/Org Input 2) d)
					LWD15 Evaluate the effectiveness of current WMZ s in meeting in-stream LWD targets (Not certain of intent/scope of this study. Need to discuss) (02)		100	Sch L-1 LWD/Org Input 2) e)
					LWD16. Validate the assumptions underlying in-stream LWD targets by determining the effectiveness of different LWD sizes in habitat formation and the probability of recruitment and long-term stability. (03)		300	Not in FFR
					LWD17. Develop (priority) and validate indexes of LWD recruitment in relation to eastside disturbance regimes. (02)		100	Sch L-1 LWD/Org Input 2) f)
					<i>LWD18. Determine targets for LWD for Dunn and Van Dyke salamanders, and determine the effectiveness of Type N prescriptions in meeting them. (02)</i>		300	Sch L-1 LWD/Org Input 2) h)
					LWD19. Determine basin-wide targets for LWD loading, and test the cumulative effectiveness of the prescriptions in meeting them Validate models to predict regional LWD recruitment. (03)		300	Sch L-1 LWD/Org Input 2) i)
			LWD20. Determine targets for nutrient cycling on type N streams, and test the effectiveness of the prescriptions in meeting them. (02)	100	Sch L-1 LWD/Org Input 2) j)			

	LWD21. Investigate the role of groundwater in nutrient cycle in aquatic ecosystems, whether forest practices have significant adverse impacts, and whether additional targets or prescriptions are needed. (02)	100	OR	Sch L-1 LWD/Org Input 2) k)
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Sediment

Functional Objective: Provide clean water and substrate and maintain channel forming processes by minimizing, to the maximum extent practicable, the delivery of management-induced coarse and fine sediment to streams (including timing and quantity) by protecting stream bank integrity, providing vegetative filtering, protecting unstable slopes, and preventing the routing of sediment to streams.

Performance Target (measures in bold)¹	Project² (First Year of Funding³)	Tot \$⁴	Priority⁵	FFR⁶
<p>Mass wasting sediment delivered to streams</p> <p>Road-related mass wasting</p> <ul style="list-style-type: none"> Virtually none is triggered by new roads; favorable trend on old roads. <p>Timber Harvest-related mass wasting</p> <ul style="list-style-type: none"> No increase over natural background rates on a landscape scale on high risk sites. <p>Road erosion sediment delivered to streams</p> <ul style="list-style-type: none"> New roads: virtually none. <p>Ratio of road length delivering to streams to total stream length (miles/mile)</p> <p>Old road not to exceed:</p>	S1. Develop road sediment targets and determine the effectiveness of road maintenance BMPs on a site-scale in meeting those targets. (00) “Develop road sediment targets” added to FFR	200	PR	Sch L-1 Sediment 1) a)
	S2. Determine the effectiveness of road maintenance BMPs on a sub-basin scale in meeting road sediment targets. (02)	100		Not in FFR
	S3. Test the accuracy and lack of bias of the criteria for identifying unstable landforms in predicting areas with a high risk of instability. (00)	300	PR	Sch L-1 Sediment 1) b)
	S4. Test the effectiveness of the equipment exclusion zone on Type N streams at meeting targets for streambank disturbance. (00)	400	PR	Sch L-1 Sediment 1) c)
	S5. Identify the best available model to predict shallow-rapid landslides. (00)	200	PR	Sch L-1 Sediment 1) d)

CMER PSM

<p>Coast West of East of Spruce zone Cascade Crest Cascade Crest 0.15-0.25 0.15-0.25 0.08-0.12</p> <p>Ratio of road sediment production delivered to streams to total stream length (Tons/year/mile)</p> <p>Old roads not to exceed:</p> <p>Coast West of East of Spruce zone Cascade Crest Cascade Crest 6-10 2-6 1-3</p> <p>Streambank equipment limitation zone disturbance (caused by forest practices)</p> <ul style="list-style-type: none"> • Type S&F : No streambank disturbance outside of road crossings. • Type N: Less than or equal to 10% of the equipment limitation zone. <p>Fines in Gravel</p> <ul style="list-style-type: none"> • Less than 12% embedded fines (<0.85 mm). 	<p>S6. Develop a screen for deep-seated landslides (needs to be done state-wide). (00)</p> <p>S7. Test the effectiveness of yarding corridor prescriptions at meeting targets for streambank disturbance, including the cumulative effects of allowable corridors. (01)</p> <p>S8. Test the effectiveness of mass wasting prescriptions in meeting mass wasting targets. (03)</p> <p>S9. Develop and validate mass wasting and road sediment targets by determining what levels of cumulative sediment inputs are harmful to the resource at the basin scale. (03)</p>	<p>300</p> <p>120</p> <p>400</p> <p>400</p>	<p>PR</p> <p>PR</p> <p>OR</p> <p>OR</p>	<p>Sch L-1 Sediment 1) e)</p> <p>Sch L-1 Sediment 1) f)</p> <p>Sch L-1 Sediment 2) a)</p> <p>Sch L-1 Sediment 2) b)</p>
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CMER PSM

Hydrology

Functional Objective: Maintain surface and groundwater hydrologic regimes (magnitude, frequency, timing, and routing of stream flows) by disconnecting road drainage from the stream network, preventing increases in peak flows causing scour, and maintaining the hydrologic continuity of wetlands.

Performance Target (measures in bold) ¹	Project ² (First Year of Funding ³)	Tot \$ ⁴	Priority ⁵	FFR ⁶																		
<p>Road Runoff</p> <p>Ratio of road length delivering to streams to total stream length (miles/mile)</p> <p>Old road not to exceed:</p> <table border="0"> <tr> <td>Coast</td> <td>West of</td> <td>East of</td> </tr> <tr> <td>Spruce zone</td> <td>Cascade Crest</td> <td>Cascade Crest</td> </tr> <tr> <td>0.15-0.25</td> <td>0.15-0.25</td> <td>0.08-0.12</td> </tr> </table> <p>Ratio of road sediment production delivered to streams to total stream length (Tons/year/mile)</p> <p>Old roads not to exceed:</p> <table border="0"> <tr> <td>Coast</td> <td>West of</td> <td>East of</td> </tr> <tr> <td>Spruce zone</td> <td>Cascade Crest</td> <td>Cascade Crest</td> </tr> <tr> <td>6-10</td> <td>2-6</td> <td>1-3</td> </tr> </table> <p>Peak Flows</p>	Coast	West of	East of	Spruce zone	Cascade Crest	Cascade Crest	0.15-0.25	0.15-0.25	0.08-0.12	Coast	West of	East of	Spruce zone	Cascade Crest	Cascade Crest	6-10	2-6	1-3	<p>H1. Test the effectiveness of the roads program at disconnecting road drainage from the stream network and the effect roads have on the hydrology of streams. FWS/WDFW priority. (00) “and the effect roads have on the hydrology of streams. FWS/WDFW priority” added to FFR</p> <p>H2. Test the effectiveness of prescriptions in meeting peak flow targets (rain-on-snow issue). (Includes validation of the model in the watershed analysis hydrology module used to predict forest-management related peak flows.) (01)</p> <p>H3. Develop a process to accurately identify wetlands in the dry season, especially on the Eastside. (01)</p> <p>H4. Develop and validate the target for peak flows as sufficient to prevent increases in the frequency of peak flows causing extensive redd scour. (01)</p> <p>H5. Investigate the role of groundwater influences on low flows, their relationship to forest practices, and develop targets if appropriate. Test the effectiveness of the prescriptions in meeting the targets. (02)</p>	<p>200</p> <p>750</p> <p>100</p> <p>200</p> <p>100</p>	<p>PR</p> <p>PR</p> <p>PR</p> <p>PR</p> <p>PR</p>	<p>Sch L-1 Hydrology 1) a)</p> <p>Sch L-1 Hydrology 1) b)</p> <p>Sch L-1 Hydrology 1) d)</p> <p>Sch L-1 Hydrology 1) e)</p> <p>Sch L-1 Hydrology 1) f)</p>
Coast	West of	East of																				
Spruce zone	Cascade Crest	Cascade Crest																				
0.15-0.25	0.15-0.25	0.08-0.12																				
Coast	West of	East of																				
Spruce zone	Cascade Crest	Cascade Crest																				
6-10	2-6	1-3																				

CMER PSM

<p>Westside: Do not cause significant increase in peak flow recurrence intervals resulting in scour that disturbs stream channel substrates providing actual or potential habitat for salmonids, attributable to forest management activities.</p> <p>Wetlands No net loss in the hydrologic functions of wetlands.</p>	H6. Improve models of the effects of forest practices on stream flows. (02)	100	OR	Sch L-1 Hydrology 2) a)
	H7. Refine the demarcation between perennial and seasonal Type N streams. (02)	300	OR	Sch L-1 Hydrology 2) b)
	H8. Determine wetland size and function requiring mitigation sequencing to achieve targets. (03)	150	OR	Sch L-1 Hydrology 2) c)
	H9. Assess the hydrologic functions of forested wetlands, the effects of harvesting on stream flows and the effectiveness of prescriptions in meeting wetland targets. If needed, revise the classification system based on wetland function. (02)	100	OR	Sch L-1 Hydrology 2) d)

Appendix D

Other References and Links

Adaptive Management

Salafsky, Nick, Richard Margoluis, and Kent Redford. 2001. Adaptive Management: A Tool for Conservation Practitioners. Biodiversity Support Program Publication # 112. 1250 24th Street, NW, Washington D.C. 20037. Available from the Internet. URL: <http://www.BSPonline.org>.

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Mills, Thomas J. 2000. Position advocacy by scientists risks science credibility and may be unethical. Northwest Science 74(2): 165-168.

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Appendix E

Stakeholders and Key Contact Information

CMER Cooperators

Northwest Indian Fisheries Commission

<http://www.nwifc.org/>

Washington Department of Natural Resources

<http://www.dnr.wa.gov/>

Washington Department of Ecology

<https://ecology.wa.gov/>

Washington Department of Fish and Wildlife

<http://www.wdfw.wa.gov/>

United States Fish & Wildlife Service

<https://www.fws.gov/pacific/>

National Marine Fisheries Service West Coast Region

<https://www.fisheries.noaa.gov/region/west-coast>

Environmental Protection Agency

<https://www.epa.gov/aboutepa/epa-region-10-pacific-northwest>

Washington Forest Protection Association

<http://www.wfpa.org/>

<https://www.forestsandfish.com/>

Washington Farm Forestry Association

<http://www.wafarmforestry.com/>

Key Contacts for CMER

For current contact information for the Adaptive Management Program Administrator (AMPA), the CMER co-chairs, or the CMER coordinator, see

<https://www.dnr.wa.gov/about/boards-and-councils/forest-practices-board/cooperative-monitoring-evaluation-and-research>

Appendix F

Critical Knowledge, Skills, and Abilities (KSAs) for CMER Co-chairs

The KSAs were taken from the Washington State Manager Development and Performance Plan (PER SF-MCPP2000 4/93) and edited to better reflect the CMER co-chair position. The eight KSAs represent broad areas of ability deemed critical to most state managerial positions. “Prompters” included for each KSA are indicators to better guide the co-chairs’ performance expectations.

KSAs	“Prompters”
Communication	<ul style="list-style-type: none"> ○ Adapt communications to diverse audiences ○ Deliver quality oral presentations ○ Demonstrate consistency between verbal and nonverbal communication ○ Share appropriate information internally and externally ○ Manage meetings effectively ○ Possess effective listening skills ○ Write clearly and concisely ○ Speak clearly and concisely
Decision Making	<ul style="list-style-type: none"> ○ Take calculated risks ○ Use a logical rational approach ○ Make timely/responsive decisions ○ Take responsibility for decisions ○ Modify decisions based on new information when appropriate ○ Involve appropriate others in the decision making process
Interpersonal Skills	<ul style="list-style-type: none"> ○ Relate well with others ○ Demonstrate trust, sensitivity and mutual respect ○ Provide timely and honest feedback in a constructive and non-threatening way ○ Maintain confidentiality ○ Accept constructive criticism ○ Demonstrate consistency and fairness ○ Negotiate effectively
Leadership	<ul style="list-style-type: none"> ○ Coach and mentor; inspire and motivate ○ Delegate responsibility with associated authority ○ Demonstrate self-confidence ○ Lead by example; serve as appropriate role model ○ Promote a cooperative work environment ○ Set clear, reasonable expectations and follows through ○ Remain visible and approachable and interacts with others on a regular basis ○ Demonstrate high ethical standards ○ Gain support and buy-in through participation of others
Planning	<ul style="list-style-type: none"> ○ Maintain a clear focus on internal and external customer needs ○ Work with Policy and SAGs to plan future budgets and resource requirements ○ Anticipate problems and develops contingency plans ○ Work with CMER members to: <ul style="list-style-type: none"> ▪ Set priorities ▪ Establish challenging, attainable goals and objectives

	<ul style="list-style-type: none"> ▪ Identify short and long range organizational needs ▪ Look to the future with a broad perspective
Human Resource Management	<ul style="list-style-type: none"> ○ Recruit, select and retain capable, productive volunteers ○ Promote volunteer safety and wellness ○ Demonstrate knowledge of volunteer support/coordination ○ Recognize and reward good performance ○ Assess and provide for volunteer development and training ○ Encourage and assist volunteers to achieve full potential ○ Evaluate volunteers timely and thoroughly ○ Take timely, appropriate corrective/dispute resolution action
Program/Project Management	<ul style="list-style-type: none"> ○ Monitor and verify ongoing cost effectiveness (AMPA task only?) ○ Ensure protocols and standards are met ○ Respond effectively to unforeseen problems ○ Understand policy and FPB needs ○ Ability to lead CMER in achieving results ○ Use resources efficiently and manages effectively within budget limits
Interacting with the External Environment	<ul style="list-style-type: none"> ○ Work effectively within the political environment ○ Exhibit knowledge and show cooperation regarding intra- and inter-agency programs/ activities/ responsibilities ○ Display sensitivity to public attitudes and concerns ○ Understand and cultivate stakeholder relationships ○ Demonstrate team play

Appendix G

Project Management Forms

This appendix contains the following forms. Use of these forms is optional but may be helpful for project management, tracking, and reporting.

[To come for each form: Instructions for Completion; Completed Example]

Comprehensive Project Summary Tracking Form

Literature Review PM Tracking Form

Study Plan PM Tracking Form

Implementation Plan PM Tracking Form

Field and Data Management PM Tracking Form

Reporting, In-Progress Results, PM Tracking Form

Reporting, Final Results, PM Tracking Form

COMPREHENSIVE PROJECT SUMMARY

Project ID Code: _____ . _____ . _____ <input style="width: 50px; height: 20px;" type="checkbox"/>	Project Name:
Project Start Date:	<input type="checkbox"/> CMER <input type="checkbox"/> SAG:
Expected Project Completion Date:	Rule Group:
Expected Total CMER Budget \$:	Program:

Fiscal Year	Budget Appropriation	Budget Spent	Step	% Step	Date Start	Date End	PM	Tech. Work Group/PI

Notes:

Project ID Code: _____._____._____ <input type="checkbox"/>	FY Literature Review	Project Name:
Date:	Expected Step Completion Date:	Expected Project Completion Date:
FISCAL YEAR: 20 _____	<input type="checkbox"/> CMER <input type="checkbox"/> SAG:	Co-chairs:
Rule Group:	Project Manager (PM):	Principal Investigator (PI):
Program:	Technical Work Group:	Step Budget \$:
Associated Contracts & Numbers:		

Checkpoints

√	∅	W	Stage Checkpoints	Date Start	Date End
			Scoping		
			Literature Review		
			SAG Review		
			SAG Approval		
			SRC Review		
			CMER Review		
			CMER Approval		

LR Deliverable	Due Date	Budget	Workload	Coop/Cont

Use footnotes to identify additional information pages – Use notes by footnote to explain name/location of page

Notes:

Project ID Code: _____. _____. _____	FY Study Plan	Project Name:	
Date:		Expected Step Completion Date:	
FISCAL YEAR: 20 ____		<input type="checkbox"/> CMER <input type="checkbox"/> SAG:	Expected Project Completion Date:
Rule Group:		Project Manager (PM):	Co-chairs:
Program:		Technical Work Group	Principal Investigator (PI):
Associated Contracts & Numbers:			
Step Budget \$:			

Checkpoints

√	∅	W	Stage Checkpoints	Date Start	Date End
			Scoping		
			Study Plan		
			SAG Review & Approval		
			CMER Review & Approval for SRC		
			SRC Review		
			CMER Response to SRC		
			CMER Final Approval		

SP Deliverable	Due Date	Budget	Workload	Coop/Cont

Use footnotes to identify additional information pages – Use notes by footnote to explain name/location of page

Notes:

--

Project ID Code: _____ . _____ . _____ <input style="width: 40px; height: 20px;" type="text"/>	<h2 style="margin: 0;">FY Implementation Plan</h2>	Project Name:
Date:	Expected Step Completion Date:	Expected Project Completion Date:
FISCAL YEAR: 20 _____	<input type="checkbox"/> CMER <input type="checkbox"/> SAG:	Co-chairs:
Rule Group:	Project Manager (PM):	Principal Investigator (PI):
Program:	Technical Work Group:	Step Budget \$:
Associated Contracts & Numbers:		

Checkpoints

√	∅	W	Stage Checkpoints	Date Start	Date End
			<i>Implementation Plan</i>		
			Research Site Access Approval		
			Project Summary Approval		
			Contract Preparation Approval		
			SAG Review & Approval		
			CMER Review & Approval		

IP Deliverable	Due Date	Budget	Workload	Coop/Cont

Use footnotes to identify additional information pages – Use notes by footnote to explain name/location of page

Notes:

--

Project ID Code: _____. _____. _____	FY Field & Data Management	Project Name:
Date:	Expected Step Completion Date:	Expected Project Completion Date:
FISCAL YEAR: 20 _____	<input type="checkbox"/> CMER <input type="checkbox"/> SAG:	Co-chairs:
Rule Group:	Project Manager (PM):	Principal Investigator (PI):
Program:	Technical Work Group:	Step Budget \$:
Associated Contracts & Numbers:		

Checkpoints

√	∅	W	Stage Checkpoints	Date Start	Date End
			Logistics		
			Data Collection		
			Quality Control		
			Data Entry & Error Checking		
			Data Management		

FD Deliverable	Due Date	Budget	Workload	Coop/Cont

Use footnotes to identify additional information pages – Use notes by footnote to explain name/location of page

Notes:

Project ID Code: _____ <input type="checkbox"/>			FY Reporting: In-Progress Results	Project Name:		
Date:				Expected Step Completion Date:		Expected Project Completion Date:
FISCAL YEAR: 20 _____			<input type="checkbox"/> CMER <input type="checkbox"/> SAG:		Co-chairs:	
Rule Group:			Project Manager (PM):		Principal Investigator (PI):	
Program:			Technical Work Group:		Step Budget \$:	
Associated Contracts & Numbers:						

Checkpoints

√	∅	W	Stage Checkpoints	Date Start	Date End
			Annual PMC Progress Report		
			Notice of Significant Findings/Issues Report		
			CMER Science Topic Presentations		
			Plan Modification Report		
			Plan Revision Request to CMER		
			Other Report:		
			Other Report:		

IR Deliverable	Due Date	Budget	Workload	Coop/Cont

Use footnotes to identify additional information pages – Use notes by footnote to explain name/location of page

Notes:

Project ID Code: _____. _____. _____	FY Reporting: Final Results	Project Name:
Date:	Expected Step Completion Date:	Expected Project Completion Date:
FISCAL YEAR: 20 ____	<input type="checkbox"/> CMER <input type="checkbox"/> SAG:	Co-chairs:
Rule Group:	Project Manager (PM):	Principal Investigator (PI):
Program:	Technical Work Group:	Step Budget \$:
Associated Contracts & Numbers:		

Checkpoints

√	∅	W	Stage Checkpoints	Date Start	Date End
			<i>Data Analysis Report</i>		
			Final Project Results Report		
			SAG Review & Approval		
			CMER Review & Approval for SRC		
			SRC Review		
			CMER Response to SRC		
			CMER Final Approval		

FR Deliverable	Due Date	Budget	Workload	Coop/Cont

Use footnotes to identify additional information pages – Use notes by footnote to explain name/location of page

Notes:

Appendix H

Contracting Templates

This appendix contains the following templates, which may be useful in the contracting process.

**Confidentiality and Conflict of Interest Template
Evaluation Scoring Sheet Example and Template**

Confidentiality and Conflict of Interest Template

The DNR routinely uses the following conflict of interest statement when reviewing proposals. DNR employees must sign this form before participating in a proposal review team for any DNR-administered contract. The DNR cannot require other CMER participants to sign, but all members of the review team must be informed that the content of this form is a DNR policy.

CONFLICT OF INTEREST AND CONFIDENTIALITY STATEMENT

(Select one) RFP/RFQQ/RFQ Number:

TITLE OF RFP PROJECT

CONFLICT OF INTEREST STATEMENT

To ensure a fair procurement process and to guard against protests by unsuccessful proposers, I have carefully evaluated my position with regard to possible conflict of interest. I certify that I am not aware of any issue that would reduce my ability to participate on the evaluation team in an unbiased and objective matter, or which would place me in a position of real or apparent conflict of interest between my responsibilities as a member of the evaluation team and other interests. In making this certification, I have considered all financial interests and employment arrangements past, present, or under consideration.

CONFIDENTIALITY STATEMENT

In anticipation of my participation in the evaluation process used to evaluate proposals, I certify that I will not disclose any information, during the proceedings of the evaluation process or at any subsequent time, to anyone who is not also authorized access to the information by law or regulation.

Signature

Name (Print)

Date

Evaluation Scoring Sheet Example and Template

The following is an example of a scoring system routinely used by CMER and the DNR. This can be modified as needed to suit a particular situation as long as it is predetermined, used objectively, and directly supports the review criteria listed in the RFP.

The proposal review team should be encouraged to be “hard graders” and not, for example, to routinely assign a 4 or a 5 to a component worth 5 points. Where appropriate, the full range should be considered to help separate closely scoring proposals. A scoring method that is too liberal will lead to nearly identical scores, causing the contract award to appear more arbitrary or to be based upon hidden review criteria.

The contractor receiving the highest score does not necessarily have to be awarded the contract if the top 2 scores are nearly identical (for example 89.2 and 91.9). The second- place proposal can be awarded the contract if the management approach or other proposal components better suit the needs of CMER and the DNR.

Sample Evaluation Scoring Sheet
 (This can be modified by the DNR to suit a particular scope of work.)

RFP/RFQQ NO. _____
 Title: _____

EVALUATION FACTORS	Maximum Points Possible	Bidder 1	Bidder 2	Bidder 3	Bidder 4
1. Technical approach (35%) (Delete this Section for RFQQ)					
a) Understanding of project requirements	15				
b) Proposed project approach & methodology	10				
c) Quality of work plan	25				
d) Feasibility of proposed schedule	10				
e) Description of proposed deliverables	10				
Subtotal for this section	70				
2. Management approach (30%)					
a) Project team structure & internal controls	15				
b) Firm’s degree of relevant experience with projects of similar complexity & type	25				
c) Staff qualifications & experience	15				
d) References	5				
Subtotal for this section	60				
3. Price (35%)					

EVALUATION FACTORS	Maximum Points Possible	Bidder 1	Bidder 2	Bidder 3	Bidder 4
Lowest responsible bid = maximum points					
<p>All other bidders receive points based upon a percentage derived by dividing their bid into the lowest bid and then multiplying the percentage derived by 70 (maximum points for this section).</p> <p>Example: Low Bid \$50,000 = 70 points Other Bid \$55,000 = 64 points</p> <p>Calculation: <u>Low Bid \$50,000</u> Other Bid \$55,000 = $0.91 \times 70 = 64$ pts</p>					
Subtotal for this section	70				
TOTAL SCORE	200				

Appendix I

Standard Document Elements and Format Conventions

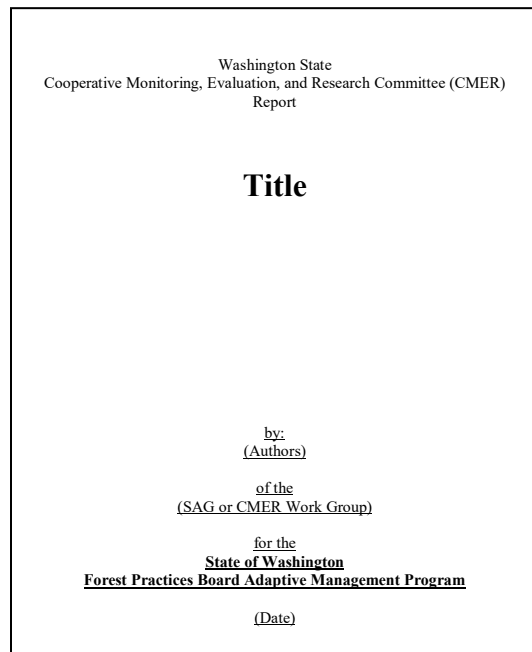
The following guidelines are based on a variety of sources including a Lee MacDonald paper¹; Transactions of the American Fisheries Society, Canadian Journal of Fisheries and Aquatic Sciences, and the North American Journal of Fisheries Management author guidelines. This information provides the front and end pieces around a CMER document.

Standard Document Elements

1. Title, Table of Contents, and Other Information

This is the information that starts the report and is standard in most scientific texts.

- **Title Page:** See example at right. At the top of the page, put “Washington State Cooperative Monitoring, Evaluation, and Research Committee Report.” Next, put the title of the study. The title of the report should clearly indicate the scope and duration of the monitoring project. The title serves two functions: 1) it allows the reader to judge whether or not the article is of potential interest; and 2) it provides enough information to judge the document’s potential importance. Underneath the title should be the name(s) of the author(s) with their affiliations. If the authors are CMER members, then the appropriate SAG or CMER work group should be identified. Next put “for the Washington State Forest Practices Board Adaptive Management Program.” At the bottom of the page put the date of completion or that version.
- **Citation Information:** Provide the official citation and reference information that should be used by others to reference this document. This may be included with the contributors section or placed on the back of the title page.
- **Table of Contents:** In most situations, the table of contents page identifies chapter and sub-chapter headings down to the third level (e.g., 6.2.3) and their page start locations. The table of contents also identifies the front and end materials and their page numbers found both before and after the contents.
- **Contributors:** The name, title, affiliation, email address, and full mailing address of all listed authors should be provided as a courtesy to the readers. This may be extended for the final published version into brief biographies of each author.



¹ Lee H. MacDonald. 1992. Components of a Monitoring Report. Department of Forest, Rangeland, and Watershed Stewardship, Colorado State University. Fort Collins, CO 80523-1472. (970) 491-6109

2. *Abstract/Executive Summary*

This section should summarize the "meat" of the report, briefly telling the reader what you did, how you did it, the primary results, and the implications of those results. Keep it as objective and as factual as possible. Usually it is best to write this after you've completed the rest of the report, as only then will you have the clarity and understanding to do a good job on this section. Remember not to include abbreviations or other jargon that may not be known to the reader. This section should stand on its own, as many readers will read only this section. This section does not include tables or figures, but should specify the most important numerical results.

3. *Introduction*

The introduction is critical, as it: (1) sets the stage for all that follows, and (2) either hooks or loses the reader. It is all too easy for an introduction to be rambling and include a variety of extraneous information. The first paragraph needs to come to the point--why are you monitoring some particular variable(s) in the selected locations. You then need to provide the context of your study--what has been done in the past, what is known about the system being monitored, and what is the technical basis for your study. This should not be an exhaustive review, but a concise summary.

The introduction should then clearly list the objectives of the study. These objectives should be both concise and precise, and they should stand out. The logic and structure developed here should be reflected in all the other sections of the report, as the reader knows what to expect and is ready for it. Often the introduction you write at the beginning will not fit the report once it's finished, so you may need to go back and revise the introduction to fit the results and discussion. Footnotes generally should be avoided here and in the rest of the report because they can distract the reader and break up the flow of the report.

4. *Key Elements*

The key elements provide the main substance of the report. The specific elements vary somewhat with the type of report. Refer to Chapter 7 of this manual, particularly the sections on literature reviews (7.3.2) and reporting final results (7.8.2).

5. *Acknowledgments*

Most monitoring projects involve a variety of people, and this is your chance to give credit where credit is due. If people can see that their efforts helped produce a usable and tangible result, they are more likely to be interested and willing participants in the future. Having interested and willing participants will then greatly improve the quality and reliability of your future monitoring efforts. Key people may include technicians, managers, and peer reviewers. Funding sources may also be acknowledged in this section whether monetary or in-kind. Recognize these contributions! Acknowledgments may appear in the front matter of the document instead of this position.

6. *References*

This is where you list all the source material cited in your report, including published literature, previous monitoring reports, unpublished documents, personal communication, and computer software. "Literature cited" is a more restrictive term, and for most monitoring reports "references" is more appropriate.

Use the author-date system—e.g., (Smith 1992)—rather than a numbering system. Two advantages of author-date are that (1) you don't have to renumber your citations each time you add or delete a reference, and (2) many readers can readily identify a reference from the author and date. A numeric system forces the reader to keep flipping from the text to the references to see exactly what you are referencing each time.

Text lifted verbatim from a source should be enclosed in quotation marks. Such quotes should be referenced not only by author and date, but also by page number. Paraphrased text requires a reference

but need not be enclosed in quotation marks; information considered general knowledge and not subject to argument can be used without an accompanying citation.

Be sure your citation is sufficiently complete to allow the reader to track down and obtain any reference. Referencing a personal communication by name only is not adequate; include the person's organization so that the reader knows exactly whom you mean and could contact that person if desired. Your attention to detail in the references is another clue to the type of work you do; a sloppy and incomplete reference list suggests that your monitoring efforts are sloppy and unreliable. Credibility is a resource that generally takes a great deal of time to build up but can be rapidly destroyed. To be effective, a monitoring report must be credible, useful, and clear.

7. Appendix

The appendix holds all the extra information that makes the report complete and documents the CMER process on how it got to that point. Most material is placed here to make the heart of the report readable and efficient. Common appendix elements include CMER process documentation as noted in the manual by chapter, supportive data, a glossary of terms and definitions used, etc.

Standard Document Format Conventions

Element	Sub-Element	Standard Formats
Electronic Files	Transfer materials & Compatibility	<ul style="list-style-type: none"> • CD ROM Disk • 3.5 Floppy Disk • Microsoft Word (PC) • Adobe PDF (PC compatible) • Microsoft or WordPerfect RTF (PC compatible)
		Auto Formatting/ Master Documents
Page Setup	Page size	<ul style="list-style-type: none"> • 8.5 x 11 inches standard 20-24lb. white paper
	Margins	<ul style="list-style-type: none"> • Minimum 1 inches top, bottom, & sides
	Headers, report format	<ul style="list-style-type: none"> • Left: SAG • Center: Short title • Right: Version & date
	Footers, report format	<ul style="list-style-type: none"> • Left: PI last name • Center: Page number • Right: Blank (for reviewer versions)
	Headers, book format	<ul style="list-style-type: none"> • Odd page: Same as for report • Even page: Reverse order of odd
	Footers, report format	<ul style="list-style-type: none"> • Odd page: Page number on right • Even page: Page number on left
	Page numbering	<ul style="list-style-type: none"> • Front material: Sequential lower case roman numerals starting after title page – bottom center • Main document: Arabic - bottom center • Appendixes: Arabic – bottom center
	Title numbering	<ul style="list-style-type: none"> • First to third levels: Outline numbering (e.g., 1.2.3) • Fourth level: Capital letters (A, B, C, etc.) • Fifth level: Arabic numerals (1, 2, 3, 4, etc.)

	Citations	<ul style="list-style-type: none"> • Name-and-year system: Name (year) or (Name year) - e.g., Johnson (1995); (Johnson 1995); Johnson and Smith (1996); (Rice et al. 1997) • In press, unpublished data and personal communications system: same format as name-and-year system except use term in place of year - e.g., Johnson (in press); (Rice et al. – unpublished data); Johnson and Smith (personal communications). Identify full name and contact information in footnote or endnote
	Footnotes and Endnotes	<ul style="list-style-type: none"> • Useful in identifying points of discussion and document review comments; • Limit use in final document
Paragraph Format	Line spacing	<ul style="list-style-type: none"> • Single
	Paragraph spacing	<ul style="list-style-type: none"> • Double
	Justification	<ul style="list-style-type: none"> • Left
Font	Style & Size	<ul style="list-style-type: none"> • Times New Roman or Times Roman – 12pt
	Dates	<ul style="list-style-type: none"> • Month Day, Year (e.g., September 2, 2004)
	Mathematical Expressions, Equations, and Formulae	<ul style="list-style-type: none"> • Metric units or conversions to metric in parentheses • Use correct standard equation and formulae symbols
Tables, Figures, & Text Boxes	Inserting	<ul style="list-style-type: none"> • Photos & line art – JPEG; TIFF; or EMF • Line art tip for smaller file sizes – copy and paste “As: picture” (Word – Edit > Paste Special function) • Spreadsheet – convert to table preferred
	Numbering and text identification	<ul style="list-style-type: none"> • Independent sequential numbering of tables and figures using Arabic numerals
	Formatting	<ul style="list-style-type: none"> • Layout square (text wrap) • Right alignment
	Captions	<ul style="list-style-type: none"> • Table 1. (captions above table) • Figure 1. (captions below image)
	Alignment	<ul style="list-style-type: none"> • Centered or right preferred
	External Links	<ul style="list-style-type: none"> • None
Document Review Options	Printing	<ul style="list-style-type: none"> • Double-sided preferred
	Line numbering	<ul style="list-style-type: none"> • Encouraged
	Track changes	<ul style="list-style-type: none"> • Underline/strikeout
	Comments	<ul style="list-style-type: none"> • Hidden • Footnote or Endnote • Bracketed/highlighted in text
	Reviewer name	<ul style="list-style-type: none"> • Right footer - Last name & date as mm/dd/yy or mmddyy

Appendix J

CMER Published Reports

Many of the reports listed here are available at

<http://www.dnr.wa.gov/forestpractices/adaptivemanagement/cmer/publications/>

Date/Type/ID	Title and Authors
5/1/2000 Biological Research TFW-LWAG1-00-001	Effectiveness of Riparian Management Zones in Providing Habitat for Wildlife, Final Report; Margaret A. O'Connell, James G. Hallett, Stephen D. West, Kathryn A. Kelsey, David A. Manuwal, Scott F. Pearson
2/1/2000 Physical Research TFW-MAG1-00-002	Functions of Wood in Small, Steep Streams in Eastern Washington: Summary of Results for Project Activity in the Ahtanum, Cowiche, and Tieton Basins; charles chesney
2/1/2000 Physical Research TFW-MAG1-00-003	Streamside Buffers and Large Woody Debris Recruitment: Evaluating the Effectiveness of Watershed Analysis Prescriptions in the North Cascades Region; Jeff Grizzel, Myla McGowan, Devin Smith, and Tim Beechie
12/1/1999 Physical Research TFW-AM9-99-007	TFW Monitoring Program Method Manual for the Salmonid Spawning Habitat Availability Survey (replaces 76); Allen E. Pleus, Dave Schuett-Hames
12/1/1999 Physical Research TFW-AM9-99-003	TFW Monitoring Program Method Manual for the Habitat Unit Survey; Allen E. Pleus, Dave Schuett-Hames
12/1/1999 Physical Research TFW-AM9-99-004	TFW Monitoring Program Method Manual for the Large Woody Debris Survey; Allen E. Pleus, Dave Schuett-Hames
12/1/1999 Physical Research TFW-AM9-99-005	TFW Monitoring Program Method Manual for the Stream Temperature Survey; Allen E. Pleus, Dave Schuett-Hames
12/1/1999 Physical Research TFW-AM9-99-008	TFW Monitoring Program Method Manual for the Salmonid Spawning Gravel Scour Survey (replaces 76); Allen E. Pleus, Dave Schuett-Hames
12/1/1999 Physical Research TFW-AM9-99-009	TFW Monitoring Program Method Manual for Wadable Stream Discharge Measurement (replaces 76); Allen E. Pleus, Dave Schuett-Hames
12/1/1999 Physical Research TFW-MAG1-00-001	Onion Creek Watershed Large Woody Debris Recruitment; Rick Schumaker and Domoni Glass
12/1/1999 Physical Research TFW-MAG1-99-006	Monitoring Approach and Procedures to Evaluate Effectiveness of Culverts in Providing Upstream Passage of Salmonids; C. Edward Cupp, JoAnn Metzler, Richard T. Grost, and Paul Tappel
12/1/1999 Physical Research TFW-WQ6-99-002	Effectiveness of Forest Road and Timber Harvest Best Management Practices with Respect to Sediment-Related Water Quality Impacts - Appendices; Ed Rashin, Casey Clishe, Andy Loch, Johanna Bell, Washington Department of Ecology

10/1/1999	The Effects of the Intentional Addition of Large Woody Debris to Stream Channels in the Upper Coweeman River Basin, Storm Beech;
Physical Research TFW--MAG1-99-004	
10/1/1999	A Watershed-scale Baseline Inventory of Large Woody Debris in the Upper Coweeman Wau; Greg Volkhardt
Physical Research TFW--MAG1-99-005	
9/1/1999	Assessing the Effectiveness of Large Woody Debris Prescriptions in the Acme Watershed. Phase 1-Baseline Data Collection; Alan Soicher
Physical Research TFW-MAG1-99-002	
9/1/1999	Assessing the Effectiveness of Mass Wasting Prescriptions in the Acme Watershed. Phase 1-Baseline Data Collection; Alan Soicher
Physical Research TFW-MAG1-99-003	
8/1/1999	TFW Effectiveness Monitoring & Evaluation Program, Progress Report, July 1997-June 1999; Dave Schuett-Hames, Alan Pleus, Amy Morgan, Myla McGowan, Devin Smith
Physical Research TFW-AM9-99-010	
7/9/1999	Comparison of GIS-based Models of Shallow Landsliding for Application to Watershed Management; Susan C. Shaw and Laura M. Vaugeois
Physical Research TFW-PR10-99-001	
6/1/1999	Forest Road Drainage and Erosion Initiation in Four West-Cascade Watersheds; Curt Veldhuisen and Periann Russell
Physical Research TFW-MAG1-99-001	
4/1/1999	Effectiveness of Forest Road and Timber Harvest Best Management Practices with Respect to Sediment-Related Water Quality Impacts; Ed Rashin, Casey Clishe, Andy Loch, Johanna Bell, Washington Department of Ecology
Physical Research TFW-WQ6-99-001	
3/1/1999	TFW Monitoring Program Method Manual for the Salmonid Spawning Gravel Composition Survey; Allen E. Pleus, Dave Schuett-Hames
Physical Research TFW-AM9-99-006	
10/15/1998	Effectiveness of Riparian Management Zones in Providing Habitat for Wildlife Workshop Abstracts; James G. Hallett, Kathryn A. Kelsey, David A. Manuwal, Margaret A. O'Connell, Stephen D. West
Biological Research TFW-WL3-98-001	
10/1/1998	Stream Biological Assessments (Benthic Macro Invertebrates for Watershed Analysis): Mid-Sol Duc Watershed Case Study; Robert W. Plotnikoff
Physical Research TFW-WQ11-98-001	
5/1/1998	TFW Monitoring Program Method Manual for the Reference Point Survey; Allen E. Pleus, Dave Schuett-Hames
Physical Research TFW-AM9-98-002	
5/1/1998	TFW Monitoring Program Method Manual for Stream Segment Identification; Allen E. Pleus, Dave Schuett-Hames
Physical Research TFW-AM9-98-001	
1/1/1998	Wildlife Use of Managed Forests - A Landscape Perspective, Vol 3: East-Side Studies, Research Results; James G. Hallett, Margaret A. O'Connell
Biological Research TFW-WL4-98-003	
1/1/1998	Wildlife Use of Managed Forests - A Landscape Perspective, Vol 2: West-Side Studies, Research Results; Keith B. Aubry, Stephen D. West, David A. Manuwal, Angela B. Stringer, Janet Erickson, Scott Pearson
Biological Research TFW-WL4-98-002	
1/1/1998	

Biological Research TFW-WL4-98-001	Wildlife Use of Managed Forests - A Landscape Perspective, Vol 1: Executive Summaries, Introduction and Technical Approach; Keith B. Aubry, James G. Hallett, Stephen D. West, Margaret A. O'Connell, David A. Manuwal
12/1/1997 Physical Research TFW-AM9-97-001	TFW Monitoring Program Status Reports for the Period From July 1, 1995 to June 30, 1997; David Schuett-Hames, Allen Pleus, Amy Morgan, Devin Smith
10/1/1997 Physical Research TFW-AM9-97-002	Trends in Disturbance and Recovery of Selective Salmonid Habitat Attributes Related to Forest Practices: Literature Review and Monitoring Recommendations; Amy Morgan, Devin Smith
9/1/1997 Physical Research TFW-SH20-97-001	Evaluation of the Effects of Forest Roads on Streamflow in Hard and Ware Creeks, Washington; Laura C. Bowling and Dennis P. Lettenmaier
12/1/1996 Physical Research TFW-SH15-97-001	Landslide Hazard Mapping: Part 3: Prediction and Mapping of Landslide Hazard; Tien H. Wu and Mohamed A. Abdel-Latif
12/1/1996 Physical Research TFW-SH12-96-001	Simulation of Water Available for Runoff in Clearcut Forest Openings During Rain-On-Snow Events in the Western Cascade Range of Oregon and Washington; Marijke van Heeswijk, John S. Kimball, and Danny Marks, U.S. Geological Survey (Water-Resources Investigations Report 95-4219)
11/12/1996 Physical Research TFW-AM9-96-007	Proposal for a TFW Monitoring Strategy to Determine the Effectiveness of Forest Practices in Protecting Aquatic Resources; Dave Schuett-Hames, Nancy Sturhan, Kevin Lautz, Randy McIntosh, Mike Gough, Charlene Rodgers
10/21/1996 Physical Research TFW-AM9-96-006	Quantification of Stream Channel Morphological Features: Recommended Procedures for Use in Watershed Ambient and TFW Ambient Monitoring Manuals; Carlos Ramos
10/16/1996 Physical Research TFW-WQ20-96-001	Type 4 & 5 Waters Workshop Proceedings;
10/1/1996 Biological Research TFW-WL4-96-003	Wildlife Use of Managed Forests - A Landscape Perspective: A Workshop; Dr. James G. Hallett, Dr. Margaret A. O'Connell
5/1/1996 Physical Research TFW-AM9-96-005	Field Comparison of the McNeil Sampler with Three Shovel-based Methods Used to Sample Spawning Substrate Composition in Small Streams; Dave Schuett-Hames, Bob Conrad, Allen Pleus, Devin Smith, Northwest Indian Fisheries Commission
2/1/1996 Physical Research TFW-AM9-96-003	Watershed Analysis Monitoring: Pilot Project Evaluation; Dave Schuett-Hames, Allen Pleus, Northwest Indian Fisheries Commission
2/1/1996 Physical Research TFW-AM9-96-002	Salmonid Spawning Habitat Availability: A Literature Review and Recommendations for a Watershed Analysis Monitoring Methodology; Dave Schuett-Hames, Allen Pleus, Northwest Indian Fisheries Commission
2/1/1996 Physical Research TFW-AM9-96-001	Spawning Gravel Scour: A Literature Review and Recommendations for a Watershed Analysis Monitoring Methodology; Dave Schuett-Hames, Bob Conrad, Allen Pleus, Northwest Indian Fisheries Commission
2/1/1996 Physical Research TFW-AM9-96-004	Winter Habitat Utilization by Juvenile Salmonids: A Literature Review; Amy Morgan, Northwest Indian Fisheries Commission, Frank Hinojosa, Grays Harbor College
7/1/1995 Physical Research	Implications of Forest Practices on Downstream Flooding, Phase II, Final Report; Pascal Storck, Dennis P. Lettenmaier, Brian A. Connelly, Terrance W. Cundy

TFW-SH20-96-001	
3/8/1995	Effects of Hydraulic Roughness and Sediment Supply on Surface Textures of Gravel-bedded Rivers; John M. Buffington
Physical Research	
TFW-SH10-95-002	
1/1/1995	Mountain Scale Strength Properties, Deep-Seated Landsliding, & Relief Limits; Kevin M. Schmidt
Physical Research	
TFW-SH10-95-001	
12/1/1994	TFW Ambient Monitoring Program 1993-94 Status Report; Dave Schuett-Hames, Allen Pleus, Dennis McDonald
Physical Research	
TFW-AM9-94-002	
10/1/1994	CMER Research and Status Reports with Abstracts 1988-1994; Northwest Indian Fisheries Commission & Washington Department of Natural Resources
CMER	
TFW-000-94-002	
10/1/1994	Bedload Transport and Large Organic Debris in Steep Mountain Streams in Forested Watersheds on the Olympic Peninsula, Washington: Final Report; Matthew O'Connor
Physical Research	
TFW-SH7-94-001	
7/1/1994	1993 Riparian Management Zone Survey; TFW Field Implementation Committee
CMER	
TFW-000-94-001	
6/1/1994	Dam-Break Floods in Low-Order Mountain Channels; Carol Coho and Stephen J. Burges
Physical Research	
TFW-SH9-93-001	
6/1/1994	User Instructions: Sediment Sampling Application, rBASE Ver 1.2; Anita Sparks and Dave Schuett-Hames
Physical Research	
TFW-AM14-94-002	
5/1/1994	The Effect of Forest Practices on Fish Populations, Final Report; Dr. Thomas P. Quinn, N. Phil Peterson
Biological Research	
TFW-F4-94-001	
5/1/1994	Effectiveness of Forest Road and Timber Harvest Best Management Practices with Respect to Sediment-Related Water Quality Impacts - Interim Report 2 [Companion to Interim Report #1, TFW-WQ8-93-001 (63)]; Ed Rashin, Casey Clishe, Andy Loch
Physical Research	
TFW-WQ8-94-001	
5/1/1994	A Strategy to Implement Watershed Analysis Monitoring: Assessment of Parameters and Methods, Monitoring Module Outline, Recommendations for Program Development; Dave Schuett-Hames and George Pess, Northwest Indian Fisheries Commission
Physical Research	
TFW-AM14-94-001	
10/1/1993	Effectiveness of Best Management Practices for Aerial Application of Forest Pesticides; Ed Rashin, Craig Graber
Physical Research	
TFW-WQ1-93-001	
9/1/1993	TFW - Cooperative Monitoring, Evaluation and Research Workplan Status Report;
CMER	
TFW-000-93-002	
6/30/1993	Geomorphological Watershed Analysis Project, Final Report For The Period From 10/1/91 to 6/30/93; David R. Montgomery, Thomas Dunne, William E. Dietrich
Physical Research	
TFW-SH10-93-001	
6/24/1993	Channel Classification, Prediction of Channel Response, and Assessment of Channel Condition; David R. Montgomery and John M. Buffington
Physical Research	
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6/1/1993	Effectiveness of Forest Road & Timber Harvest Best Management Practices With Respect To Sediment-Related Water Quality Impacts, Interim Report 1; Ed Rashin, Johanna Bell, Casey Clishe
Physical Research TFW-WQ8-93-001	
6/1/1993	TFWTEMP Computer Model: Revisions and Testing; Kent Doughty, J. Smith and J. E. Caldwell
Physical Research TFW-WQ4-93-001	
3/1/1993	Wildlife Use of Riparian Habitats: A Literature Review; Margaret A. O'Connell, James G. Hallett, Stephen D. West
Biological Research TFW-WL1-93-001	
1/1/1993	Landslide Hazard Mapping, Part 1: Estimating Piezometric Levels; Tien H. Wu and Mohamed Abdel-Latif
Physical Research TFW-SH15-93-001	
8/20/1992	Proposed Surface Water Criteria for Selected Pesticides Used for Forest Management and Management of Forest Tree Seedling Nurseries and Christmas Tree Plantations in Oregon and Washington; Logan A. Norris and Frank Dost
Physical Research TFW-WQ1-92-001	
7/30/1992	Effects of Forest Cover On Volume of Water Delivery to Soil During Rain-On-Snow, Final Report; Bengt A. Coffin and R. Dennis Harr
Physical Research TFW-SH1-92-001	
7/1/1992	TFW Ecoregion Bioassessment Pilot Project; Plotnikoff and Dietrich
Biological Research TFW-WQ11-92-001	
7/1/1992	Effectiveness of Washington's Forest Practice Riparian Management Zone Regulations for Protection of Stream Temperature; Ed Rashin and Craig Graber, Washington Department of Ecology
Physical Research TFW-WQ6-92-001	
4/1/1992	A Process-Based Stream Classification System for Small Streams in Washington; Jeffrey B. Bradley and Peter J. Whiting
Physical Research TFW-SH11-91-001	
3/2/1992	Assessment of Cumulative Effects on Salmonid Habitat: Some Suggested Parameters and Target Conditions; N. Phil Peterson, Andrew Hendry, Dr. Thomas P. Quinn
Biological Research TFW-F3-92-001	
11/1/1991	1991 Forest Practice Compliance Survey; Timber/Fish/Wildlife Field Implementation Committee
CMER TFW-000-98-001	
9/1/1991	Evaluation of Downstream Temperature Effects of Type 4/5 Waters; Jean Caldwell, Kent Doughty, and Kate Sullivan
Physical Research TFW-WQ5-91-004	
7/15/1991	Proposal for Research in Geomorphological Watershed Analysis; Thomas Dunne and David Montgomery
Physical Research TFW-SH10-91-002	
7/1/1991	Management Trials Testing Plan for the TFW Stream Temperature Method; Caldwell, Sullivan, & Doughty
Physical Research TFW-WQ4-91-003	
7/1/1991	Analysis of Initiation Mechanisms of Dam-Break Floods in Managed Forests; Carol Coho, Stephen J. Burges
Physical Research TFW-SH9-91-001	
6/30/1991	

CMER TFW-IM-91-001	Information Management Coordination Project: Report to TFW Administrative Committee; Dan Cantrell, Peter T. Haug
6/28/1991 Physical Research TFW-SH10-91-001	Geomorphological Watershed Analysis: A Conceptual Framework and Review of Techniques; Lee Benda and Lynne Rodgers Miller
6/28/1991 Biological Research TFW-WL4-91-001	Wildlife Use of Managed Forests - A Landscape Perspective (Study Design); Stephen West, James Hallett
6/28/1991 Physical Research TFW-WQ8-91-008	Methods for Testing Effectiveness of Washington Forest Practices Rules and Regulations with Regard to Sediment Production and Transport to Streams; Pentec Environmental, Inc.
6/28/1991 Physical Research TFW-AM10-91-002	Watershed Characteristics and Conditions Inventory, Taneum Creek and Tacoma Creek Watersheds; Jones & Stokes Associates
6/1/1991 Physical Research TFW-SH5-91-001	Literature Search of Effects of Timber Harvest To Deep-Seated Landslides; Thomas E. Koler
6/1/1991 Physical Research TFW-WQ4-91-002	TFW Stream Temperature Method: User's Manual; Doughty, Caldwell, & Sullivan
6/1/1991 Biological Research TFW-F4-91-001	Patterns of Flow, Temperature and Migration of Adult Yakima River Spring Chinook Salmon; Thomas P. Quinn
6/1/1991 Physical Research TFW-SH17-91-001	Effects of Landslide-Dam-Break Floods on Channel Morphology; Adelaide C. Johnson
6/1/1991 Physical Research TFW-SH13-91-001	Design of a Slope Hazard Assessment System for Washington's Forested Land, Phase 1, Draft Report, June 1991; Golder Associates
5/1/1991 Physical Research TFW-AM10-91-001	Watershed Characteristics and Conditions Inventory, Pysht River and Snow Creek Watersheds; Jones & Stokes Associates
5/1/1991 CMER TFW-000-91-001	TFW - Cooperative Monitoring, Evaluation and Research Program Workplan;
3/1/1991 Physical Research TFW-AM10-91-003	Watershed Characteristics and Conditions Inventory, Upper Mashel River Watershed, Charley Creek Watershed; Jones & Stokes Associates
2/1/1991 Physical Research TFW-SH6-91-001	TFW Road Questionnaire: Analysis and Compilation of Responses; Cogan Sharpe Cogan
1/1/1991 Physical Research TFW-AM9-91-002	Status and Trends of Instream Habitat in Forested Lands of Washington: TFW Ambient Monitoring Project, Biennial Progress Report (1989-91 Biennium); Robert J. Naiman, Ph.D., Loveday L. Conquest, Ph.D., Stephen C. Ralph
1/1/1991 Physical Research TFW-SH8-91-001	Watershed and Stream Channel Cumulative Effects Analysis Using Aerial Photography and Ground Survey Data - Interim Report; Dave Somers, Jeanette Smith, Robert Wissmar

1/1/1991	A Road Damage Inventory for the Upper Deschutes River Basin; Steven Toth
Physical Research TFW-SH14-91-007	
12/1/1990	Characterization of Riparian Management Zones and Upland Management Areas with Respect to Wildlife Habitat - Data Documentation; Washington Department of Wildlife
Biological Research TFW-WL1-91-003	
12/1/1990	Evaluation of Prediction Models and Characterization of Stream Temperature Regimes in Washington;
Physical Research TFW-WQ3-90-006	
12/1/1990	Evaluation of Prediction Models and Characterization of Stream Temperature Regimes in Washington, Data Appendix;
Physical Research TFW-WQ3-90-006	
12/1/1990	Characterization of Riparian Management Zones and Upland Management Areas with Respect to Wildlife Habitat - 1988-90 Cumulative Report; Washington Department of Wildlife
Biological Research TFW-WL1-91-001	
7/1/1990	Evaluation of the TFW Stream Classification System: Stratification of Physical Habitat Area and Distribution; Beechie and Sibley
Physical Research TFW-16B-90-011	
7/1/1990	Quantitative Modeling of the Relationships among Basin, Channel and Habitat Characteristics for Classification and Impact Assessment, with Appendices; Orsborn
Physical Research TFW-AM3-90-010	
5/1/1990	Characterization of Riparian Management Zones and Upland Management Areas with Respect to Wildlife Habitat - Field Procedures Handbook;
Biological Research TFW-003-90-005	
5/1/1990	TFW Stream Ambient Monitoring Field Manual;
Physical Research TFW-16E-90-004	
3/1/1990	Slope Stability in the Transient Snow Zone; T.H. Wu and Carolyn J. Merry
Physical Research TFW-SH15-90-001	
12/1/1989	The Physics of Forest Stream Heating: A Simple Model; Terry N. Adams and Kathleen Sullivan
Physical Research TFW-WQ3-90-007	
12/1/1989	Characterization of Riparian Management Zones and Upland Management Areas with Respect to Wildlife Habitat - 1989 Field Report;
Biological Research TFW-003-90-003	
9/1/1989	An Analysis of Program Integration and Development; Jim Currie
CMER TFW-000-89-007	
6/1/1989	Valley Segment Type Classification for Forest Lands of Washington; Cupp
Physical Research TFW-AM-89-001	
6/1/1989	Sediment Dynamics in Type 4 and 5 Waters, A Review and Synthesis; Ann MacDonald and Kerry W. Ritland
Physical Research TFW-012-89-002	
6/1/1989	

Biological Research TFW-009-89-005	The Effect of Elevated Holding Temperatures on Adult Spring Chinook Salmon Reproductive Success; Berman, Quinn
6/1/1989	Wildlife Use of Managed Forests: Literature Review and Synthesis; NCASI
Biological Research TFW-017-089-004	
12/1/1988	Characterization of Riparian Management Zones and Upland Management Areas with Respect to Wildlife Habitat - 1988 Field Report;
Biological Research TFW-003-88-001	
Physical Research	Supplement: Appendix I - Field Survey Protocols and Appendix J - Case Study Summaries will be available at some future time. For copies of the supplements: Shirley Rollins (360) 407-6696 or srol461@ecy.wa.gov.;

Appendix K

Glossary

TERM OR ACRONYM	DEFINITION
Access [to data]	Availability of information
Adaptive management	A resource management approach in which practices are adjusted in response to new information
Adaptive management participant	A person or body empowered by the Forest Practices Board to participate in the adaptive management program. Adaptive management participants include “the cooperative monitoring evaluation and research committee (CMER), the TFW policy committee (or similar collaborative forum), the adaptive management program administrator, and other participants as directed to conduct the independent scientific peer review process” (WAC 222-12-045 (2)(B)).
Adaptive management process	A continuous loop that begins with policy questions about the effectiveness of the forest practices rules in meeting established resource objectives and continues through research to answer those questions, recommendations based on the research, affirmation or revision of rules, and more questions.
Adaptive management program administrator	The DNR staff member responsible for managing the adaptive management program
AMP	Adaptive management program
AMPA	Adaptive management program administrator
Authorship	Recognition and responsibility for the content of a document
Board	The Forest Practices Board
BTSAG	Bull Trout Scientific Advisory Group
CMER	Cooperative Monitoring, Evaluation, and Research Committee
CMER Budget	The funds the Forest Practices Board authorizes for CMER for a fiscal year (July 1–June 30). These funds are allocated for specific purposes as projects are developed and move forward.
CMER cooperators	The agencies and associations that are members of the six adaptive management caucuses
CMER data	Field data from research—e.g., data on forms and informal field notes

CMER Member	A representative appointed by one of the six adaptive management caucuses and confirmed by the Forest Practices Board to serve on the Cooperative Monitoring, Evaluation, and Research Committee
CMER publication	An official CMER report
CMER report	A report that summarizes, analyzes, and draws conclusions from research conducted as part of the CMER work plan.
Consensus	Agreement by all members of a group to allow an action to proceed (See Chapter 4 for a complete description of CMER consensus.)
Cooperative agreement (CA)	A contract that public and private parties can enter into when the scope is covered by one of several chapters of the RCW
Cooperative monitoring	Process in which groups with varied interests work together to gather and interpret data on natural resources
Cooperator	See <i>CMER cooperators</i> .
Core members	A term sometimes used to distinguish CMER members appointed by the Forest Practices Board from other interested parties
Dissemination	Formal publication or presentation of information
DFC	Desired future outcome
DNR	Washington Department of Natural Resources
Effectiveness monitoring	Evaluation of the performance of the prescriptions in achieving resource objectives at one site
Extensive monitoring	Evaluation of the current status and future trends of key watershed input processes and habitat conditions within FFR lands statewide; also called <i>status and trends monitoring</i>
FFR	Forests and Fish Report
FFR Policy Group	Same as TFW Policy Committee
Forest Practices Board	A state administrative body established in 1974 by the Forest Practices Act and charged with establishing rules to protect the state's public resources while maintaining a viable timber industry
Forests and Fish Report	A 1999 report containing recommendations for protecting aquatic resources on forested lands in Washington State. The report was later legislated (ESHB 2091) and then adopted as rules by the Forest Practices Board.
FPB	Washington State Forest Practices Board
FPD	DNR Forest Practices Division – Olympia Headquarters

FREP & ROSP	Forestry Riparian Easement Program & Riparian Open Space Program
Geographical map	Location reports or legal description or literally a map of research areas
Ground rules	Code of conduct that group members agree to use in their meetings
Independent scientific peer review	The process for securing evaluation by scientists outside CMER of proposals, study designs, research reports, and other CMER work
Intensive monitoring	Watershed-scale monitoring that is designed to evaluate the cumulative effects of multiple forest practices and to provide information that will improve our understanding of causal relationships and biological effects of FFR rules on aquatic resources
Interagency agreement (IAA)	A contract between public agencies to implement joint or cooperative projects. The terms are binding on all parties. See RCW 39.34.
Internal dispute resolution	Processes for dealing with disagreements within CMER
ISAG	Instream Scientific Advisory Group
LWAG	Landscape and Wildlife Advisory Group
Memorandum of understanding (MOU)	A document used to identify areas of cooperation and coordination. It is not a contract, and its terms are not legally binding.
Peer review	Independent scientific peer review
Personal service contract (PSC)	Agreement for professional or technical services to be provided by a consultant to accomplish a specific study, task, or other work statement. See RCW 39.29.
Policy	The TFW Policy Committee or the Forests and Fish Policy Group
Program	A group of projects designed to answer related questions about forest practices rules within a rule group
Project	A research study or monitoring task
Protocols and standards	Routine tasks, standard operating procedures, rules, requirements, responsibilities, and measures of quality
PSMWG	Protocols & Standards Manual Work Group
Ranking criteria (work plan)	The factors, such as scientific uncertainty and risk to public resources, considered in determining the priority of projects and programs
Regions	Northeast, Southeast, Northwest, Pacific Cascade, Olympic
RFP	Request for proposal (sometimes used also as a catch-all to refer to RFQ or RFQQ)

RFQ	Request for qualifications
RFQQ	Request for qualifications and quotation
RSAG	Riparian Scientific Advisory Group
Rule group	A category of forest practices rules based on similar resource protection goals
Rule tool program	A program to help DNR develop tools for rule implementation and testing
SAG	Scientific advisory group
SAGE	Scientific Advisory Group - Eastside
Schedule L-1	A portion of the 1999 Forests and Fish Report that defines resource objectives, performance targets, and key questions related to aquatic forest practices rules
Schedule L-2	An outline, created after the 1999 Forests and Fish Report to help guide research, that lists specific types of questions and studies to be used to answer the broad questions in Schedule L-1
Scientific advisory group	A subcommittee formed by CMER to address a particular set of scientific issues
SFLO & AC	Small Forest Landowner Office & Advisory Committee
SFLWG	Small Forest Landowner Work Group
SOW	Scope of work
SRC	An acronym for <i>Scientific Review Committee</i> , sometimes used to refer to independent scientific peer review
TFW	Timber, Fish, and Wildlife Forum
TFW CC	Timber/Fish/Wildlife Cultural Committee
TFW Policy Committee	The group responsible for recommending policy changes in response to CMER reports; also referred to as <i>FFR Policy Group</i> or <i>Policy</i>
Timber, Fish, and Wildlife Agreement	A 1987 agreement among government, forest industry, tribal, and environmental groups for cooperative management of resources
UPSAG	Upslope Processes Scientific Advisory Group
WETSAG	Wetlands Scientific Advisory Group
Work Plan	An annual document developed by the adaptive management participants, with assistance from the SAGs, and approved by the Forest Practices Board to guide CMER's work for a given year

Appendix L

Final amended CMER Review Response Plan for the Protocols and Standards Manual

CMER Review Response Plan
For the
Cooperative Monitoring, Evaluation, and Research Committee (CMER) Protocols and Standards Manual
Version: September 28, 2004

Introduction

The CMER Protocols and Standards Manual (PSM) work group presented a draft of the manual to CMER on September 28, 2004. At the request of the PSM work group, CMER asked the following people to review the draft and provide comments to the work group by October 19: Doug Martin (CMER co-chair), Nancy Sturhan (CMER co-chair), Terry Jackson and Mark Hunter (WDFW), Chris Mendoza (Conservation Caucus), Dave Schuett-Hames (CMER Staff), any other project managers that wished to comment. Additional comments were received from Robert Palmquist (CMER Staff), Mary Raines (NWIFC), and Sally Butts (USFWS). This document collates and summarizes all (306) reviewers' comments and provides the PSM work group's responses to those concerns for a final document recommendation.

CMER Review Summary

The PSM work group met several times to discuss reviewer comments. Where comments were not understood, reviewers were contacted for clarification. The actions and rationale provided are by consensus of the work group. The group that met for this purpose consisted of Allen Pleus (NWIFC), Ann Colowick (contract writer), Dennis McDonald (WDNR), Geoff McNaughton (AMPA), and Heather Rowton (WFPA), and Jeannette Barreca (WDOE). They were joined by reviewers Nancy Sturhan and Chris Mendoza. Kris Ray (Colville Tribes), Peter Heide (WFPA), and Sara Grigsby (contract manager) were work group members involved in preparing or discussing the draft PSM but not in discussing the comments.

A summary of each reviewer's overall comments follows.

- Doug Martin said that, overall, the manual is too long and has too much detail, many redundancies, and too many headings. He thinks thorough editing is needed.
- Nancy Sturhan conveyed concerns she had heard that the manual is "too prescriptive and not flexible enough for the broad array of projects that we do." She suggested that the work group might need "to make it clearer that this is a guide and individual project steps might vary but the overall progression is about the same."
- Terry Jackson and Mark Hunter provided suggestions to polish wording and clarify intent. They also expressed concern about increasing the burden of CMER work.
- As someone relatively new to CMER, Chris Mendoza welcomed the background information and reference material.
- Dave Schuett-Hames provided suggestions to help the manual fit more closely the actual processes followed by CMER and the practical needs of project managers.
- Robert Palmquist, who confined his review to the project management chapter, made many constructive language recommendations and thought the efforts of the work group were "largely successful."
- Mary Raines focused her attention on Section 7.2, Scoping Paper.

- Sally Butts liked the introduction and had only a few comments on the project management chapter.

Work Group Interpretation of CMER Review

The work group accepted most of the comments, incorporating many helpful suggestions and addressing others by its own rewriting. Comments from two reviewers reflected feelings that the manual should be very short, provide minimal detail, and allow maximum flexibility. Other reviewers seemed to feel that detailed guidelines and extensive information would help CMER participants carry out their work and would help other interested parties understand what CMER is, how it is organized, and how it operates. The work group agrees about the need for flexibility to accommodate a variety of projects and situations. However, the work group firmly believes that CMER needs to establish and publish clear and concise standards for its research (as required by WAC 222-12-045(2)(b)(i)(C)) and for its decision making, reporting, information handling, responses to peer review, and approval processes. In addition, the work group wants the PSM to include information that makes it a useful reference tool and to offer guidance detailed enough to cover most situations. The work group believes this need for detail will be borne out through application of the guidelines over the “provisional” trial period. If this proves to be burdensome, they can be removed in future revisions. These views form the basis of the rationales for rejecting those comments.

CMER Review Response Plan Recommendation Table

All reviewer comments are listed in the “CMER Review Response Plan Recommendation Table” below, grouped by chapter and in order by page and section within each chapter. Comment numbers are provided for easy reference and review. Reviewers are identified by letter, and a key appears at the bottom of each page. Specific comments are presented, often in an abbreviated form. The text the comment pertains to is identified by section and often by page or other identifier, depending on how specific or general the comment was. Comment type is coded as “S” for substantive, “E” for editorial, and “R” for recommendation for future discussion. The term “substantive” is defined here as affecting the meaning or application of the section. The Action column indicates (usually by *YES, NO, or Partial*) whether the work group proposes to accept the comment or suggestion. The last column provides the rationale for the action recommended. For suggestions accepted, the rationale is often omitted where it uses the reviewer’s direct recommendation.

In completing the actions in the response plan, some errors were found and corrected. These appear as underline/strikeout edits in the table. These non-substantive edits simply clarified or corrected inconsistencies in the actions or rationales. The revised manual was then sent back to the reviewers with the response plan for confirmation that we accomplished the actions stated. One reviewer’s responded and comments # 263, 275, and 276 regarding what to call the peer review process have been adjusted accordingly.

CMER Review Response Plan Recommendation Table

Comment Number	Reviewer	Reviewer Comment	Original Text Location	Comment Type (E, R, S)	Action	Rationale
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Table of Contents

1	M	The table of contents is confusing. Why three different lists? Just show a normal Table of Contents starting with 1.0 Introduction		E	Partial	Keep 1st & 3d; Some find chapter-only table of contents helpful. Second list is an error.
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Executive Summary

2	D	General: The executive summary doesn't seem very useful to me. The first paragraph should just be incorporated.	p.vii-viii	S	Partial	Will Call "Summary of Contents" and rework 1 st paragraph
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Chapter 1 - Introduction

3	M	1.0 - The Intro chapter is too long and segmented. Needs to be more concise and consolidated into one section	p.1-1	E	No	Background info important to those unfamiliar w/CMER
4	M	1.1 - Omit first paragraph.		E	NO	Important for new participants and will incorporate Dave's edits
5	D	1.1 - I don't recall CMER making scientific recommendations to the FPB.		S	YES	Delete ref to FPB; add "within the adaptive management program"
6	D	1.1 - Incorporate added text to clarify		E	NO	FFR not defined or used in manual except as history; other information too detailed.
7	M	Transpose first two paragraphs in 1.2.		E	YES	
8	D	1.2 - Delete 1 st paragraph to midpoint of last sentence. This section never states the purpose, just the rationale. Is the purpose to provide guidance to the participants in conducting the business of the organization? par 1		E	NO	Using Doug's Comments, agree this needs to be consistent w/AMPM, but do not agree to delete at this time – this paragraph
9	D	1.2 - Modify last sentence to improve purpose. par 1		E	NO	Keeping first part of paragraph eliminates need.
10	D	1.2 - Wordsmith 2 nd paragraph two places. par 2		E	YES	Replace w/ "provides"
11	D	1.3 - Incorporate paragraph 1 from the Executive Summary.		E	NO	Redundant

Chapter 2 – Overview, History, and Context

12	M	Last sentence of 2.1 (re SAGs) unnec.	p. 2-1	S	YES	Move to appropriate section
12a	W	2.1 – Change "appoint" to "create" in last sent.		S	NO	Sentence deleted

CMER PSM

2/22/05

13	M	2.2 – Unnec. to mention “another means of independent scientific peer review”		S	Partial	Reword. The rules do not specify anything called a Scientific Review Committee, and in fact, there is no such committee.
14	M	2.2 – Reports need to be written with the normal protocol for scientists to facilitate technical review. Executive summaries, etc can be written for not science audience: bottom		S	Partial	Incorporate comments
15	M	2.2 – Add “All final reports will be available to the general public.” Par 1	p.2-2	E	YES	
16	M	2.2 – Omit last paragraph.		S	NO	Part of AMP process – not every reader will know this
17	M	Section 2.3 more logically part of 2.1.		E	NO	Separation prevents too much detail at start and helps audience find.
19	D	2.2 to partial 2.5 – Delete all. Concern about redundancy with AMP manual and reader fatigue in plowing-through this material to get to heart of this manual.	p.2-1 to 2-3	S	NO	Will keep until AMPM is completed and available, will revisit need then
20	D	2.5 - Delete header and first sentence.	p.2-3	E	YES	May delete all or incorporate in rewrite with Doug’s comments of 2.5 to 2.7
21	W	2.5 – Add “or invalidate” to bullet 2		E	NO	Bullets not kept
18	M	2.6 – Refer to FFR instead of including Schedule L-1 in appendix.		E	NO	Added for convenience to avoid need to access multiple documents to accomplish tasks – new section 2.5
22	M	2.6 – Integrate w/ 2.7. Material on goals and objectives is “unnecessary and breaks thought track from the 1 st sentence.”		S	Partial	Move paragraph 2 to start of section for proper flow. Provides important context. Will consider rewrite. – new title “Roles and Responsibilities of CMER”
23	W	2.6 – Bullet 1 isn’t worded right. CMER research can’t restore and maintain resource functions.		E	YES	Deleted
24	D	2.6 and 2.7 – Delete all, same reason as 2.2 to 2.5	p.2-3 to 2-5	E	NO	Will rewrite in accord w/ Doug’s comments
25	M	2.7 – Items under first bullet are unnec.	p.2-4	E	YES	
26	M	2.7 – Paragraph under list is redundant & unnec.		E	Partial	Agree it’s too long. Will delete or condense.
27	M	2.7 – 2nd paragraph under list is unnec.		E	YES	
28	M	2.7 – Restate last paragraph as bullets in list above.		E	YES	
29	M	2.7 – This paragraph is way off the mark and does not address the heading “Responsibilities.” par.1	p.2-5	E	YES	Will delete

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30	M	2.7 – Last paragraph is unnec.		S	NO	Will rewrite; provides context.
31	M	2.7.1 – Simplify chart, too confusing, don’t need the names of all these groups in this document.		E	Partial	Will delete boxes under DNR, change section number to 2.7
32	M	2.7.1 – Combine and simplify Key. E.g. SAGs are defined in “Organization” below	p.2-5, 6	E	Partial	Will simplify but keep SAGs
33	D	2.7.1 – Delete all text below acronym table	p.2-6	E	Partial	Keep last paragraph.
34	M	2.7.1 – Put info on SAGs in Organization sec.		E	YES	Chart & acronym list enough here

Chapter 3 – CMER Organization

35	M	3.0 - Intro – Why include summary of CMER functions covered in later chapters?	p.3-1	E	YES	Will delete all of 3.4
36	D	3.0 – Add “two types of members voting and non-voting” par 2, sent 1		S	NO	Paragraph moved to 3.1. Members make decisions; others will be called participants. Decisions are by consensus, not voting.
37	M	Intro – Replace “landscape process” w/ “natural resource management” in areas of expertise. par 2		S	Partial	Will replace areas of expertise with more general statement in 3.1
38	M	3.1 & 3.2 – Prefer “core members.”	p.3-1, 2	S	NO	See above
39	D	3.1 to 3.2.2 - This entire section needs to be reorganized: 1) leadership - Co-chairs and AMPA; 2) Member - core voting and participants; 3) SAGs; 4) Coordinator; and 5) CMER Staff	p.3-1, 2	E	Partial	Will reorganize As 1) member & participants, 2) co-chairs; 3) coordinator; 4) SAGs; and 5) Staff in 3.2
40	D	3.1 – Delete 1 st paragraph	p.3-1	E	NO	Will reorganize and move to 3.2.1, where it will replace current par. 1.
41	M	3.1 – Maximum of 3 CMER reps per caucus		S	NO	No maximum, but will delete par.1
42	W	3.1, par. 2 – Replace “propelling” with “advancing”		E	Partial	Incorporate Dave’s suggestion #40 to eliminate
43	D	3.1 – rephrase to promote leadership: par 2, sent 1		E	YES	
44	M	3.1 – Delete ref to coordinator		S	NO	Need greater awareness of coordinator’s contributions
45	D	3.2 – rephrase to identify as non-voting representatives: par 1, sent 1		E	Partial	No voting – see #45
46	M	3.2.1 – All participants are expected to agree to ground rules.		S	YES	Will include participants
47	D	3.2.1 – add “voting” before representatives: par 1, sent 1		S	NO	No voting

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48	W	3.2.2 – Is this really possible? It is going to be really hard to come up with a new cochair each year. There are so few qualified and interested candidates for this position.	p.3-2	S	NO	As explained later, cochair may serve multiple terms.
49	M	3.2.2 – CMER nominates cochair, FPB selects.	p.3-2, 3	S	NO	Policy approval is required, but not FPB approval.
50	D	3.2.2 – Term: wordsmith two places: par 1, sent. 4 & 6	p.3-2	E	YES	
51	W	3.2.2, Term – If CMER can’t reach consensus on an interim Co-chair, why assume that it can reach consensus on a co-chair to finish the term? Change suggested to avoid two elections. Last sentence		S	YES	Misunderstanding. Will change “elect to maintain” to “choose to function under a single.” Language is not about two elections, but assumes two logical choices for either dropping the issue and maintaining or elevating it to Policy for resolution.
52	D	3.2.2 – Guidelines...: Delete 2 nd sentence par 1		E	YES	Will delete entire paragraph
53	D	3.2.2 – Guidelines...: There is no background section – what does this refer to? par 1 sent 4		E	YES	Will delete entire paragraph
54	M	3.2.2 – Omit 1st paragraph under “Nomination and Selection Process.”		E	YES	
55	M	3.2.2 – Combine “Desirable Qualifications” & “Knowledge, Skills, and Abilities” into “Qualifications and Skills” & place right before “Duties.”		E	Partial	Made title change, placed after “Term”
56	D	3.2.2 – Desirable...: Add “program and/or” to second bullet before project		E	NO	Not needed, rewrote section – Qualifications & Skills
57	M	3.2.2 – Replace 2nd qualification w/ these: <ul style="list-style-type: none"> • Experience in designing, implementing, and reporting on research in natural resource sciences. • Experience in oral and written communications, project management, and public meeting management 		S	YES	
58	D	3.2.2 – Knowledge...: Capitalize “abilities” in title		E	NO	Deleted title in rewrite
59	D	3.2.2 – Duties: General - This section is confusing - why are there two overlapping bulleted lists - what's the distinction between roles , responsibilities and duties?	p.3-3, 4	E	YES	Will use Doug’s suggestions to rewrite – moved to 1 st subtitle under 3.2.2
59	M	3.2.2 – Extensive revision of co-chair duties recommended	p.3-4, 5	S	YES	
60	D	3.2.2 – Duties: 1 st bullet - Not a duty - a requirement.	p.3-3	S	YES	Will move in “Qualifications” – 4 th bullet

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61	D	3.2.2 – Duties: 2 nd bullet – change to “Provide leadership in achieving consensus”		E	Partial	Need to parallel construction of other list items – 5 th bullet rephrased
62	D	3.2.2 – Duties: 3 rd bullet - Not a duty - a mode of operation.		S	YES	Rewrite should fix
63	D	3.2.2 – Duties: 4 th to 6 th bullet – Not clear what this duty entails		E	YES	Rewrite should fix
64	D	3.2.2 – Duties: Last bullet – add “to make sure this happens” to make a duty?		E	YES	Rewrite should fix
65	D	3.2.2 – Duties – In general... list: This list seems more like duties	p.3-4	E	YES	Rewrite should fix
66	D	3.2.3 – Duties: 5 th bullet: change “manage” to “oversee and coordinate”; delete “research projects, monitoring projects” – AMPA has financial responsibilities for projects, but does not actually manage them.		S	NO	AMPA, ultimately, legally, responsible for these duties
67	D	3.2.3 – Duties: 7 th bullet: change “Run a science-based operation” to “Ensure the scientific integrity of the program”		E	YES	
68	D	3.2.3 – Duties: 10 th bullet: don’t understand this	p.3-5	E	YES	Will rewrite
69	W	3.2.4 – The task list for the CMER coordinator is not realistic for a volunteer participant whose agency or entity does not get CMER funding to support that position.		R	NO	Evolving position, will revise as needed in future
70	D	3.2.5 – This seems out of place here		E	NO	Adds context – completes general spectrum of CMER roles
71	M	3.2.6 – Modify description to say that staff “perform other duties as assigned by the AMPA in coordination with the CMER cochairs” and that staff may help with (rather than do) project scoping, design, and implementation.	p.3-6	E	YES	
72	D M	3.4 to 3.4.6 – Delete all: This section is unnecessary and having these headings in the table of contents simply leads the reader to the wrong portion of the document	p.3-8	E	YES	

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Chapter 4 – CMER Meetings and Meeting Management

73	M	4.2 – Need not say science topic is predetermined, but should mention that it is relevant to CMER.	p.4-1	E	YES	
74	D	4.2 – change “shall” to “is typically”. par 3, sent 1		S	YES	
75	D	4.2 – Delete last sentence and add new one. par 3		S	YES	

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76	M	4.4.1 – Use “core members”.	p.4-2	S	NO	Using “members” per #36
77	D	4.4.1 – rephrase 1 st sentence to read, “CMER attempts to make decisions by consensus.”		E	NO	Will consider rephrasing, but consensus is the required decision method
78	D	4.4.1 – 2 nd sentence, add language after “shared”: “a motion is made, and the co-chairs ask if all participants agree”		E	NO	Motion part of meeting process, but not of decision process
79	D	4.4.1 – 3 rd sentence, change “participants” to “members”		S	NO	Maintain distinction between participants and members
80	D	4.4.1 – 4 th sentence, change “participants” to participating members” and add “core” before “CMER” at end.	p.4-2, 3	S	NO	Using “members” per #36
81	D	4.4.1 – 2 nd bullet: add “core” before members	p.4-3	S	NO	Using “members” per #36
82	D	4.4.1 – missing bullet: what about situations when the co-chairs ask for a vote of the core members?		S	NO	No voting, consensus of members already covered

Chapter 5 – CMER Scientific Advisory Groups (SAGs)

83	M	Intro & 5.2.1 – Change “conduct” to “facilitate”. (Pis conduct research.)	p.5-1	S	Partial	Will add “or facilitate” as they can also conduct where necessary or desired
84	W	5.3.3 – Add new subsection: “Meeting Attendance. A minimum of [4] committee members must be present, representing at least [3] stakeholders. A representative from the Landowner Stakeholder group must always be present. The meeting shall be rescheduled if this quorum is not met.”	p.5-3	R	NO	Quorum criteria needs full CMER agreement – future task
85	W	5.6: Add to bullet 2 “or merge it with another SAG”		S	YES	Will change “three” to “four” in first sentence; delete reference to splitting in second bullet; and add new third bullet to reflect merge and split options

Chapter 6 – CMER Work Plan Development

86	D	6.0 – Uncertain that Sept 1 to Dec 31 schedule is correct. par 1, sent 4	p.6-1	S	YES	CMER approves in Feb., Policy in Mar., FPB in May.
87	M	6.1 – Simplify, & chg “provide” to “outline.”		E	Partial	Simplified “outline” part, kept end.
88	M	6.2: This entire section is unnecessary because it just repeats text from the work plan. All you need is a simple summary paragraph and reference to the plan. Note, this section defines a workplan format that we may not	p.6-1 to 4	E	Partial	Useful to have general information on structure and definitions of rule groups, programs, and projects in manual. Will delete 6.2.4 (Task Categories) because that is likely to change.

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		continue. Instead it should say the format is defined by CMER and may change as needed.				
89	M	6.3: Sentence 1 is confusing..	p 6-4	E	YES	Will rewrite
90	M	6.3.1: Sentence 1 is confusing.		E	YES	Will rewrite
91	M	6.3.2, sent. 1: Not aware of this? Seems like the board may give us a task at any time.		S	YES	Will change sentence to reflect two points: Sept 1 reflects annual AMP stage cycle when proposals can be expected; board may also seek proposal development at other times
92	M	6.3.2 – Proposed work plan is submitted in spring—Apr 1, not Jan 1.		S	YES	New 6.3.2 - Will fix dates in 6.0 and 6.4
93	D	6.3 to 6.3.2 – General: process is unclear/confusing. Don't SAGs submit proposals to CMER?		S	Partial	Reorganization to get away from advocacy science. Will rewrite to clarify who does what when
94	D	6.3 – Last sentence, approved by whom?		E	YES	Will clarify approval by Policy
95	M	6.3.2 – Unnec to provide rationale for removal of study from work plan unless it is a specific project that was assigned by the FPB. We have removed a number of projects that are unnecessary.	p. 6-5	S	YES	Will clarify
96	M	6.3.3 – Not clear if DP is necessary if the project proposal has this info. If there is an implementation plan, this is unnecessary, just include info in proposal.		S	NO	Keep; will work out any conflicts as needed in future
97	W	6.3.3 – Add ref to 7.1 for description of steps.		E	YES	
98	M	6.3.3, par 1: Delete last sent. FPB does not need to approve DP.		S	YES	Will clarify that the board approves the CMER work plan within which the Development Plan resides.
99	W	6.3.3, bullet 6 – Consider changing “group” to “party” (or “SAG”?) to avoid confusion with rule groups.		E	YES	
100	W	6.3.3, bullet 8 – Is oversight group different from group in bullet 6? Redundant?		E	NO	Oversight group could be different.
101	M	6.3.3, par 3: Cover tracking form unnec if DP contains info listed below		E	NO	Tool only, Not required

Chapter 7 – Project Management

102	D	7.0 – change chapter title to “Project Development and Management”	p.7-1	S	YES	Will change to better clarify purpose of chapter
103	P	7.0 – minor wordsmithing		E	YES	

104	P	7.1 – minor wordsmithing		E	YES	
105	D	7.1 – Delete figure 7.1 – not very informative		E	NO	Will reduce size, but should help define the structure of how projects fit into programs
106	D	7.1.1 – Simplify 1 st sentence to “The project development and management chapter is organized in steps.”	p.7-2	E	Partial	Substantial revision to section & new title “Project Steps”
107	P	7.1.1 – minor wordsmithing		E	YES	
108	D	7.1.1 – Second to last sentence: change “for” to “due to”.		E	NO	Deleted sentence
109	D	7.1.2 – General: This section is out of place here. If section is organized step-wise as stated above.		S	YES	Place before 7.1.1 for better flow – changed title and reworded to make work
110	B	7.1.2 – I’d suggest that the AMPA keep the list of current PMs. Par 1, last sentence.		S	YES	Will change as reflects current duties
111	M	7.1.2 – PM is recommended by SAG, not appointed; plus other edits		S	YES	Will change. However, not sure CMER wants to approve all project managers as they would need to identify grounds for not approving – used “should be”
112	P D	7.1.2 – substantial wordsmithing throughout		E	Partial	In coordination with DSH comments
113	D	7.1.2 – Primary responsibilities...: bullet 1 – delete parentheses and text within to replace with “and cooperates”; delete “all”; replace “project scope of work” with “implementation plan”	p.7-3	E	YES	
114	D	7.1.2 – Primary responsibilities...: bullet 3 – delete “facilitate contracting” and replace with “develop RFPs or RFQQs, select contractors, monitor contract performance, and provide input on”		E	YES	Since contractor selection is done by committee, will replace “select contractors” with “review proposals.”
115	D	7.1.2 – Primary responsibilities...: bullet 4 – change “solve” to “resolve” and “problems” to “issues”		E	YES	
116	D	7.1.2 – Primary responsibilities...: bullet 5 – not sure what “the identification” means		E	YES	Will delete “the identification”
117	B	7.1.2 – Primary responsibilities...: bullet 5 – Change “study” to “project” and add “or unless another PM is designated by consensus of SAG”.		S	YES	
118	D	7.1.2 – Primary responsibilities...: bullet 6 – similar to bullet 1		E	YES	Will delete bullet 6 as redundant
119	D	7.1.2 – Primary responsibilities...: bullet 8 – add “and response to those reviews” at end of sentence		E	YES	

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120	D	7.1.2 – delete “may be rotated between SAG members, but” and replace with “a new PM may be assigned by consensus” and end sentence. Start last sentence with “A...” par 2, sent 2		E	Partial	Comment clear, edits not. Will revise sentences to meet comment intent.
121	D	7.1.2 – delete first two sentences in 3 rd paragraph		E	YES	
122	W	7.1.2 – Edit first sentence, fourth para “It is encouraged...”		E	YES	Revised wording per #120
123	D	7.1.2 – delete last two sentences in 4 th paragraph: these decisions should be left to the SAGs		S	NO	CMER has made clear it wants PM and PI roles filled by separate persons unless CMER chooses otherwise.
124	M	7.1.3 – Use Nancy’s version of Comp Project Tracking form?		R	NO	Too late for this year. That form is still under development.
125	B	7.1.3 – Change “Co-chairs are expected to track ...” to “It is suggested that PMs should track ...” par 1, sent 3		S	NO	Disagree. Co-chairs may delegate, but they are the “ultimately responsible” party and need to keep this level of oversight.
126	B	7.1.3 – The column headings for the Comprehensive Project Summary form in App. I are vague. The first three are fine, but the remaining need to be clarified as to what specific information is desired.	p.7-4	E	YES	Will add lead-in sentence and bullets under paragraph similar to next paragraph regarding PM project tracking minimum information
127	B	7.1.3 – Change “will” to “should” in line 3 of para. 2 (“The PM will maintain project step tracking forms ...”)		S	Partial	Will change to “is expected” in keeping with previous paragraph language.
128	P	7.1.3 – Minor wordsmithing		E	YES	
129	P	7.1.3 – add to sentence; “Project tracking information will be <u>submitted monthly or on an agreed upon frequency</u> to the AMPA and CMER co-chairs.”		E	Partial	Frequency issue dealt with in next paragraph – adding here would be redundant
130	W	7.1.3 – Appendix I: All of these forms makes the job more complex (in my opinion). It would help me as a project manager to have one checklist that you can follow to make sure that you are covering everything. We saw an example of one at an earlier meeting years ago.		S	NO	What’s here is a starting point and may change in the future.
131	M	7.1.3 – Appendix I: Tracking within a step is too detailed and is unnecessary. Not recommended		S	NO	Use of forms is optional.
132	M	7.1.3 – Project ID code: Unless this is truly used by the DNR computer, this is unnecessary. Ask Geoff		S	NO	Code modified for broader application. Keep for now. Clear ID is needed.
133	B	7.1.4 – This section should be moved up front. I think many of the forms will be very helpful and will be used by SAGs. However, I think some of the paragraphs	p.7-5	E	NO	There is currently high sensitivity to the need/use of CMER forms. Current layout helps to de-emphasize and focus on the

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		preceding this section indicate that forms will or must be done by PM.				information needed, not how it is recorded. Over time, the use of forms may become more accepted and this will be reflected in the manual by moving it forward.
134	P	7.1.4 – multiple wordsmithing	p.7-5	E	YES	
135	M	7.1.4 – Forms: They probably won’t be used. So, no use including?		S	NO	Forms are optional but useful.
136	B	7.2 – How can the scoping paper be recommended, but then it must be approved. This seems contradictory and might deter SAGs from doing scoping papers if they must have CMER approval. 1 st sent.		S	YES	Will change to “CMER may request, or the SAG may recommend that a scoping paper be completed to clarify the context and focus of the proposed project.”
137	W	7.2 – change “highly” to “strongly” in first sentence		E	YES	Since Dave provided most of the information in this section, I applied his comments to meet all concerns
138	D	7.2 – Delete first two sentences and add new intro per edits		S	YES	
139	M	7.2 - Please define the purpose of a Scoping Paper in the first paragraph?		S	YES	
140	P	7.2 – wordsmithing		E	YES	
141	R	7.2 - For a step (scoping) that is recommended (not required) there are too many elements "required" and too many details specified, which results in little flexibility to develop a cogent or succinct document useful for communicating an approach or approaches to a project. The recommended format does not produce a scoping document that is easy to read, and not all the required minimum elements applied to the 3 projects we were scoping.		S	YES	
142	D	7.2.1 – Delete all – overview captured in 7.2		S	YES	
143	P	7.2.1 – wordsmithing		E	YES	
144	R	7.2.2 - The purpose of our [UPSAG’s] scoping effort is to float an approach(es) for conducting 3 effectiveness monitoring projects for the purpose of getting incremental buy-in by CMER and policy prior to investing a lot of work in developing a monitoring design. As a scoping exercise, only the elements A-E seem to apply. For these effectiveness monitoring projects, the best available science comparison does not apply as we have no current information on the		S	NO	Useful guidelines for some projects. Will keep all elements but make intro less prescriptive. – now in 7.2.1

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		effectiveness of the FFR rules. The BAS comparison seems appropriate for some projects, but should not be "required" for all. Bob filled in the BAS table for one project and it doesn't tell us anything and is distracting until you figure that out. This section needs to be revised to be less prescriptive and to focus on the purpose of a scoping paper, which is to explore approaches to conducting projects. To that end, we need to provide the context for the project (FFR, CMER workplan) (items A-D) and the proposed approach(es), and not much else.				
145	M	7.2.2 - This is too detailed and most of the requirements unnecessary. Just list typical items that may be helpful to the proponents. You don't need sections A-H		S	NO	Brief descriptions of elements will be helpful to some users.
146	D	7.2.2 – add “requirements to end of (D); delete “study approach” in (E); delete all of (F); delete “review/study” in (G)		E	Partial	BAS important, but reduced text – other change details in #155-168 below
147	P	7.2.2 – wordsmithing		E	NO	Using Dave’s comments
148	P	7.2.2 (A) – change title from “Context” to “Project Identification”	p.7-6	E	NO	Using Dave’s comments
149	P	7.2.2(A) “...lead author’s name...” Not clear - how does lead author differ from project manager or principle investigator? What responsibilities does the lead author have?		E	YES	Changed to “PI’s” name
150	P	7.2.2 (A) - minor wordsmithing		E	Partial	No title change per Dave
151	D	7.2.2(B) – Delete first sentence, add new. This is a key step. We want people to think, clarify and distill, not just parrot the preliminary work. Revise second sub-heading, delete last sentence and add new sentence		S	Partial	Mixture of Bob and Dave’s comments. Maintained sentence to identify rules, guidance, etc. as important for understanding source. Also added some of Dave’s hidden comment to paragraph
152	P	7.2.2(B) - The two sub-headings appear redundant. The description of "Issue or problem" requests the factors appearing under "Identify the factors". Please clarify. Change language as noted		S	Partial	
153	D	7.2.2(C) – nearly complete rewrite		S	Partial	Mixture of Bob and Dave’s comments.
154	P	7.2.2(C) – substantive language change		S	Partial	

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155	W	7.2.2(D) – [GAP]: something needed here on how identification of the specific objectives of the study should be linked to how the study contributes directly or indirectly to FFR resource goals and objectives, and how it can inform rule		S	Partial	Mixture of Bob and Dave’s comments.
156	D	7.2.2(D) – new language to fill gap		S	Partial	
157	P	7.2.2(D) – substantive new language to fill gap		S	Partial	
158	D	7.2.2(E) - substantive new language to fill gap	p.7-7	S	Partial	Mixture of Bob and Dave’s comments.
159	P	7.2.2(E) – substantive new language to fill incomplete section		S	Partial	
160	W	7.2.2(E) – [GAP]: addresses advantages and disadvantages should include tradeoffs that arise in addressing selected elements, for example, between cost and power linked to sample size.		S	Partial	
161	D	7.2.2(F) – delete all	p.7-8	S	Partial	Will keep first paragraph and delete rest including Appendix L. Best Available Science an important element of the AMP, but needs stakeholder work to refine before putting in CMER PSM.
162	P	7.2.2(F) – multiple wordsmithing		E	Partial	First paragraph only as others now deleted
163	D	7.2.2(G) – delete all: should be done in conjunction with the Study Plan - not the scoping paper.		S	Partial	Discussed with Dave: Keep G title; delete all bullets; add new sentence that works with “Recommended Approach” to identify which one chosen and provide rationale.
164	P	7.2.2(G) – change title from “Recommended Review/Study Approach” to “Proposed Management Plan”		S	NO	
165	R	7.2.2(G) - Item G is miss-titled, as a preferred approach is identified in E. Study Approach Options. Regardless, what is listed in item G is a degree of detail inappropriate to a scoping document. Some of these items may be considerations in the discussion of approach options, but we are certainly not going to spend a lot of time developing project management considerations when what we are trying to convey and get buy-in on is the conceptual approach. The information required in item G is an element of a final study design, not a scoping paper.		S	NO	
166	D	7.2.2(H) – delete all: should be done in conjunction with the Study Plan - not the scoping paper.		S	NO	Need to do as early as possible to avoid waste of resources.

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167	P	7.2.2(H) – minor wordsmithing		E	YES	
168	W	7.2.2(H) – Revisions to what? Do you mean that policy may have comments that we would have to respond to, etc.? If so, why is this necessary to document?		E	YES	Delete reference to revisions
169	D	7.3 – add “s” to Review	p.7-9	E	NO	Not consistent with other headings
170	M	7.3 - Yes, but more importantly, they identify what is known and not known about a specific subject: add new language as noted		S	YES	
171	P	7.3 – substantive clarification language added		S	YES	Clarified “latter” review to “early phase” review
172	M	7.3.1 – delete “SAG”: The default for every document is CMER approval. The SAG’s facilitate this process		S	YES	Will delete entire reference to approval—not needed here.
173	D	7.3.1 – “conclusions and recommendations” are not necessarily the range		E	YES	Discussed with Dave: Delete recommendations, kept conclusions and added discussions
174	P	7.3.1 – wordsmithing		E	YES	Except for #173
175	D	7.3.2 – minor edit	p.7-10	E	YES	
176	P	7.3.2 – change “context” to “background” and minor edits		E	YES	
177	P	7.3.2(A) – change title from “Context” to “Background” and add substantive new language to clarify		S	YES	
178	P	7.3.2(C) – add substantive new language to clarify		S	YES	Replaced “synthetic” with “synthesis”
179	P	7.3.2(D) – wordsmithing		E	YES	
180	M	7.4 – revise second and third sentences as noted: These are the critical components, not implementation stuff		E	YES	Mixture of Dave, Bob, and Doug comments
181	D	7.4 – multiple wordsmithing		E	YES	
182	P	7.4 – multiple wordsmithing		E	YES	
183	P	7.4 - I am not sure how a study plan differs from an implementation plan. Presently, isn't project implementation included in the study plan?		E	NO	The rationale for separating the two types of plans is provided in the Implementation Plan section.
184	D	7.4.1 – wordsmithing and comment: need a more compelling statement identifying the purpose of a study plan in 1 st paragraph; wordsmithing in 3 rd paragraph	p.7-11	E	YES	

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185	M	7.4.1 – delete that a study plan must be approved by the SAG: CMER may approve a study plan without SAG approval.		S	YES	Will also delete end of sentence.
186	P	7.4.1 – multiple wordsmithing		E	NO	Used Dave’s comments
187	P	7.4.1 - Somewhere a discussion of why a person would want to develop both a study plan and an implementation plan. is there an advantage to developing a study plan before an implementation plan? If so, what is it?		E	YES	Add suggested language
188	D	7.4.2 – 1st paragraph on the approval process is out of place at the beginning of a section on document creation - move or delete.		E	YES	Deleted
189	M	7.4.2 – General: Don’t need the A-H detail as some of it may not fit each case. Rather, just list what needs to be addressed		S	NO	Brief description of each possible element will be helpful to some users.
190	W	7.4.2 – make numbering system consistent in text and box		E	YES	
191	P D	7.4.2 – wordsmithing and change “context” to “background”		E	YES	
192	M	7.4.2 - This list (A-L) may or may not fit. Rather than a list just indicate the areas that need to be addressed as shown in my edits above		E	NO	Brief description of each possible element will be helpful to some users.
193	D	7.4.2 – add new second key element “Purpose/objectives/ critical questions; delete “L) budget”		S	Partial	Keeping budget as useful information and needs iterative adjustments as process moves forward
194	D	7.4.2 (A) to (L) - use numbers instead to match table	p.7-12	E	NO	Format is to use capitol letters
195	P	7.4.2(A) – change “Context” to “Background” and replace section w/ multiple new language		E	Partial	Changed (i) and (ii) to new sub-heading per Dave #196
196	D	7.4.2(A)(i) – change (i) to new (2) and use new title; (ii) delete last sentence		S	YES	
197	D	7.4.2.(B) – complete rewrite		S	YES	
198	P	7.4.2(B) - replace section w/new language		S	Partial	Used Dave’s comments. Put issue of noting changes from the scoping document up in lead paragraph to provide global context – now “C”
199	P	7.4.2(F) – wordsmithing		E	YES	Now “G”

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200	P	7.4.2(G) – add new last sentence	p.7-13	S	Partial	Put issue of noting changes from the scoping document up in lead paragraph to provide global context – see #198
201	D	7.4.2.(H) – delete second sentence		E	YES	
202	M	7.4.2.(H) - There are thousands of methods, this is but a small sample. Why list?		E	NO	It is important to highlight and promote CMER-produced methods
203	D	7.4.2(I) – multiple edits		E	YES	
204	P	7.4.2(I) – add new first and last sentence, and wordsmithing		E	Partial	Used Dave’s comments. Put issue of noting changes from the scoping document up in lead paragraph to provide global context– see #198
205	P	7.4.2(J) – add new last sentence and wordsmithing		E	Partial	Put issue of noting changes from the scoping document up in lead paragraph to provide global context– see #198
206	D	7.4.2(L) – delete all	p.7-14	S	NO	Keep budget
207	P	7.4.2(L) – minor wordsmithing		E	Partial	Reworded w/same intent
208	P	7.5 – wordsmithing and new language to clarify		E	Partial	Cannot add language that makes this required
209	P	7.5.1 - wordsmithing		E	YES	
210	P	7.5.2 – reorder list and wordsmithing	p.7-15	E	Partial	Project summary should come at end as it needs to incorporate elements developed as part of the implementation plan
211	P	7.5.2(A)(i) & (ii) – minor edits and multiple new language		E	YES	
212	W	7.5.2(A)(ii) – CMER contracts: Some examples might be included such as obtaining appropriate federal and state permits.		E	NO	Examples are in 7.5.2(F)
213	P	7.5.2(B) – minor wordsmithing and add two new sentences at end of section.		E	Partial	Put issue of noting changes from the scoping or study plan documents are in 7.5.1 paragraph
214	W	7.5.2(B) – need appendix reference for CMER Project Tracking Form		E	YES	Delete reference to a specific form
215	W	7.5.2(B) – Last sentence: Mention should be somewhere about including the requirement that final product will go		E	YES	

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		through all required reviews and the contractor will be required to respond to comments (SAG/CMER/SRC).				
216	P	7.5.2(C)(i) – add “project manager” to coordination duties and question about “Study Summary” not described previously	p.7-16	S	YES	Will also delete reference to “CMER Study Implementation Coordinator” and change “Study Summary” to “Project Summary.” Language is missed holdover from when George McFadden was CMER staff. – Now C(ii)
217	W	7.5.2(C) – add new component (i) “initial research site selection process” and description		S	YES	
218	P	7.5.2(C)(i) – add new language at bottom of sub-section		S	YES	Now C(ii) – combined with #219
219	W	7.5.2(C)(i) – add new language at bottom of sub-section		S	YES	Now C(ii) – combined with #218
220	P	7.5.2(C)(ii) – add new language to 1 st paragraph		E	YES	Now C(iii)
221	P	7.5.2(C)(iii) – add new language to bottom of 1 st paragraph and delete second paragraph, plus wordsmithing 3 rd paragraph		E	YES	
222	W	7.5.2(C)(iii) – protocol packages: Is all this necessary?		E	NO	Not necessary, but important information in preparing to implement a project
223	P	7.5.2(C)(iv) – wordsmithing	p.7-17	E	YES	
224	P	7.5.2(C)(viii) – wordsmithing, add new language at end of “Data Entry...” to clarify		S	YES	
225	P	7.5.2(F) – wordsmithing	p.7-19	E	YES	
226	P	7.5.2(F)(ii) - Ambiguous -- all data collection involves cost -- cost of field crew etc. if nothing else. Does this statement refer to other costs such as purchase of data from a third party?	p.7-20	E	YES	Rewrite to clarify. Now F(iii)
227	W	7.5.2(F)(ii) - This should be an automatic part of each project; this may not be clear from the sentence indicated.		E	NO	Providing data on request is enough.
228	W	7.5.2(F)(ii) – add provided “other landowner coordination issues”		E	Partial	Incorporated into new (ii); old (ii) is now (iii).
229	P	7.5.2(G) – substantive new language to add context		S	YES	
230	P	7.5.2(H) – wordsmithing		E	YES	
231	M	7.6 – General: Many of the duties in this section are PI responsibilities. This needs clarification		S	YES	Discussed with Dave: Need to add information that the line between the PM and PI is currently evolving. Primary

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						distinction between PM and PI is that PM provides oversight for CMER and ensures that contract obligations are met. PI does the vast majority of the work, but only what their contract specifies. Will review sections to make consistent.
232	W	7.6 – Why is this redundant to Section 7.5.2(C)?		E	NO	Previous section concerns planning for this step. This section advises on conducting this step.
233	P	7.6 – wordsmithing		E	YES	In conjunction w/Dave comments
234	P	7.6.1 – wordsmithing	p.7-21	E	YES	In conjunction w/Dave comments
235	W	7.6.2 – minor edits first sentence		E	NO	Use Bob’s comments
236	W	7.6.2 – Equipment: include map and photo needs		E	YES	
237	M	7.6.2 – “PM must collect or verify...”: This the PI responsibility		S	YES	Discussed with Dave: delete “must” and replace with “will provide oversight that the PI will”
238	P	7.6.2 – multiple wordsmithing		E	YES	In conjunction w/Dave comments
239	M	7.6.3 - PI responsibility	p.7-22	S	YES	See #231
240	P	7.6.3 – minor edits		E	YES	
241	W	7.6.3 – bullet Loss...: add “(e.g., low or loss of water flow, disturbance, landowner complications, etc.)”		E	YES	
242	P	7.6.4 – new language to clarify and delete “Incomplete” status		S	YES	
243	M	7.7 – General: What the PM is responsible for vs the PI is confused? Most technical reporting is done by PI. PM may prepare simple status or tracking reports. Please clarify the roles		E	YES	Rewrite and reorganize to clarify oversight role of PM
244	W	7.7 - This entire section needs re-thinking, you have a CMER structure already overburdened with work and process-oriented elements, reporting should be extremely simplified to address solely the objective of expected project progress requirements and issues. You overburden this section and folks will fly out of CMER faster than they have already.		S	Partial	Rewrite to simplify, to clarify that these are examples of reports that may be needed, and to clarify PM’s role
245	P	7.7 – wordsmithing and clarifications		E		Some rewording w/same intent

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					Partial	
246	M	7.7.1 - What is done by PI and what is PM?	p.7-23	S	YES	See #243: Will clarify that PM will conduct where PI is not bound by contract or other delegation not available
247	P	7.7.1 – minor edits		E	NO	Deleted 1 st paragraph
248	P	7.7.2 – substantive wordsmithing and clarifications		S	YES	w/ PSM work group comments
249	M	7.7.2 – budget expend. & projections: This is defined by DNR contract. PM may not need to do this		S	YES	Deleted
250	P	7.8 – minor edits. Sent 1	p.7-24	E	YES	Add “and may result” after “FPB”; delete “their evaluations”; replace with “the re-evaluation”
251	M	7.8.1 – reports should be addressed to a scientific audience – not general. Delete second sentence in first para.		S	Partial	Rewrite to clarify need for understanding by all CMER participants
252	P	7.8.2 – add new second sentence to link with prior process	p.7-25	E	YES	
253	M	7.8.2 – add abstract/executive summary (A), introduction (B), and replace recommendations with references (H) to list of key elements.		E	Partial	Deleted Recommendations as element of report. Elements common to all documents are described in Appendix K. Will clarify relation between Chapter 7 and Appendix K.
254	W	7.8.2 – add introduction, background, objectives to list of key elements		E	Partial	Will clarify relation between Chapter 7 and Appendix K
255	P	7.8.2(A) - wordsmithing		E	YES	
256	P	7.8.2(B) – wordsmithing and add new sentence to link with prior process		S	YES	
257	P	7.8.2(C) – multiple edits and new language		S	YES	
258	W	7.8.2(C) – add “Each figure and table should stand alone and be clearly understood without the need to search through the text for explanation.”		E	YES	
259	P	7.8.2(D) – substantive wordsmithing and new language		S	YES	
260	M	7.8.2(E) – Conclusions: If you provide an abstract/executive summary this is generally unnecessary	p.7-26	S	NO	A Conclusions section is commonly included and considered standard.
261	M	7.8.2(F) – Delete recommendations: Reports provide the technical findings. Recommendations if requested by Policy would probably occur in a separate document		S	YES	

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262	P	7.9.1 – wordsmithing and clarifying language		E	YES	
263	M	7.9.1 - We already have the SRC, don't need another acronym		E	Partial	Manual will not use acronyms – will acknowledge common use of “SRC” but will use “peer review” to describe process in manual.
264	M	7.9.1 – add at end: “The PM is responsible for facilitating the communications and logistics necessary to complete the review process.”		E	YES	
265	P	7.9.1(A) – multiple edits and additions, delete yellow-highlighted text		S	YES	
266	M	7.9.1(A) – edit first sentence		E	YES	10.4 w/ Bob's comments in #265
267	M	7.9.1(A) – this is a technical document for a technical reader		S	YES	Added clarification
268	P	7.9.1(B) – multiple edits and additions,	p.7-27	S	Partial	No changes to (i) through (vi) as language was previously approved by CMER
269	M	7.9.1(B)(ii)(b) – Six questions: This is unnecessary at this point. Only when the report is submitted to Policy will this be needed	p.7-28	S	NO	This language was previously approved by CMER.
270	M	7.9.1(B)(vi) – add “PM” to list of receivers	p.7-29	E	NO	This is a CMER-approved process and should not be changed by our group. The language does not preclude and I think the common practice will make sure the PM receives all relevant materials.
271	P	7.9.1(C) – multiple edits and additions, delete yellow and blue highlighted text		E	Partial	Revised in consideration with other's comments
271a	M	7.9.1(C) – Delete second paragraph: Unnecessary, see plan of action, below		S	NO	Provides important information on process and sideboards
272	M	7.9.1(C) – change “will” to “may.” Para. 3, sent 1		E	Partial	Change from “will” to “is expected to” and moved to 1 st paragraph
273	C	7.9.1(C) – missing information on submitting “questions of context”		S	Partial	Already included; moved to make more prominent
274	W	7.9.1(C) – multiple edits to second paragraph		E	YES	
275	M	7.9.1(C) – Response...: edits	p.7-30	S	Partial	All okay except references to acronyms “SRC,” “ISPR”, or “SPR” will be changed to “peer review”

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276	P	7.9.2 – multiple edits and clarifications	p.7-31	E	Partial	All okay except: delete “Project Plans, Final reports are other” to keep generic and ; change “ISPR” to “peer review”
277	W	7.9.2 – last paragraph: This paragraph is unclear. Availability of what resources? What rationale should be recorded in the subsequent work plan? Overall, this is unclear.		E	YES	Will change language to clarify intent

Chapter 8 – Support Services and Requirements

278	W	8.2 – 3 rd para: minor edits	p.8-1	E	Partial	Modified with same intent
279	M	8.2 – Much of the material in this section is too detailed for CMER needs. Just provide a summary of the process and point out where CMER interacts		E	NO	Meets broad range of audience needs/experience
280	W	8.2.2 – process: minor edits	p.8-2	E	NO	Not necessary to clarify
281	M	8.2.2.1 – Figure 8.1: Why all the detail? DNR needs to know this, not CMER. Just describe the general process so we have a context.	p.8-3	E	YES	Deleted figure
282	J	8.2.2.2 – Options unclear	p.8-5	E	NO	Deleted section
283	W	8.2.2.3 – minor edits first sentence		E	NO	Deleted section

Chapter 9 – Data Gathering, Documentation, and Information Management

284	M	9.1 – Process Map: too small, simplify	p.9-2	E	Partial	Delete - Repetitive
285	W	9.1 – process map seems unnecessary		E	YES	Delete - Repetitive
286	M	9.5.1 – authorship designation by CMER: Not good. Needs to be defined in the contract.	p.9-3	S	YES	Changed to determined by contract only

Chapter 10 – Information Access and Communication

287	M	10.1 – Process map: too small, simplify	p.10-2	E	Partial	Delete - Repetitive
288	M	10.2.1 – last sentence: change “basing expensive” to “the risk of making”		E	YES	

Appendix

289	M	Appendix A, B, & C – Unnecessary, just reference the WAC or FFR		E	NO	Useful to have at hand (“one-stop shopping”)
290	M	Appendix G – Why repeat this here? Unnecessary		E	Partial	Not repeated; this is product, not process as in Chapter 6. Will refer to website.

291	M	Appendix H – Only need to list contacts and put in Appendix E		E	YES	Will delete H
292	M	Appendix J – Unnecessary, these can be obtained from DNR, give source		E	NO	These are tools that may be helpful.
293	M	Appendix K – Elements: This section needs to list the main sections that need to be in a document. I suggest you recommend using typical journal formats (e.g., Transactions of American Fisheries Soc) and just reference some journals. Other than the Cover, you only need to list the sections that will be required (e.g., abstract, intro, methods, results, discussion, references, appendix)		S	NO	Guidelines to provide consistency and help to those who need it.
294	M	Appendix K – title page: add “Washington State” before CMER		E	YES	
295	M	Appendix K – Title page(2): add provided language to clarify affiliations		S	YES	
296	M	Appendix K – Citation Info last sentence: This needs to be defined or don’t require it.		E	YES	Will add example of full citation (use CMER PSM)
297	M	Appendix K – Table of contents: Why require this detail when you have not provided all formatting details. I recommend you drop this and let the document format be defined by the authors. An alternative is to reference a format that is already defined.		E	NO	Not required. Guidelines to provide consistency and help to those who need it.
298	M	Appendix K – Contributors: A simple address and email is all that is needed.		E	Partial	Add email to first sentence list and delete last sentence. Extension of contributor information at the author’s option is a “may” and provides an accepted alternative way to list contributors.
299	M	Appendix K(2) – delete “prose” from first sentence		E	YES	
300	M	Appendix K(3) – Introduction: Just identify what should be in this section, not how to do it		E	NO	Guidelines to provide consistency and help to those who need it.
301	M	Appendix K(4) – Key elements: This is not a typical journal section (delete)		E	Partial	Clarify use of term and relation to Chapter 7.
302	M	Appendix K(5) – Acknowledgments: The author can define this as appropriate		E	NO	Guidelines to provide consistency and help to those who need it.
303	M	Appendix K(6) – References: There are a number of formats for different documents. Just reference a specific journal format		E	NO	Provides some flexibility. Guidelines to provide consistency and help to those who need it.

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304	M	Appendix K – Format conventions: Unnecessary. Author will define as appropriate		E	NO	Guidelines to provide consistency and help to those who need it.
305	M	Appendix L – BAS: I don't see the need for this section???		S	NO	CMER is going to have to define BAS. For now, detail will be removed from section, leaving a brief overview.
306	M	Appendix M – unnecessary, delete		E	NO	Will change to bibliography w/ link to website

Appendix M
Report on Use of Best Available Science
July 23, 2013

Use of Non-CMER Science in the Forest Practices Adaptive Management Program

July 23, 2013

Committee members: Jim Hotvedt (AMPA) - Lead, Marc Hayes (WDFW), Mark Hicks (Ecology), AJ Kroll (Weyerhaeuser Co.), Leslie Lingley (DNR), Doug Martin (WFPA), Chris Mendoza (Conservation Caucus), Nancy Sturhan (NWIFC)

In February 2010, Weyerhaeuser Company, an Adaptive Management Program (AMP) participant, submitted a formal AMP proposal requesting that a Weyerhaeuser non-peer reviewed, unpublished report “Landslide density and its association with rainfall, forest stand age, and topography, December 2007 storm, Willapa Hills, southwestern Washington” be incorporated into the CMER Adaptive Management process and undergo peer review, even though their study was conducted independent of the AMP’s stakeholder-driven process. Their request was based on the belief that their report had to be peer-reviewed before being considered for use in the adaptive management decision-making process. The Weyerhaeuser Company invoked AMP dispute resolution after Policy could not agree to send their report through the AMP’s Independent Scientific Peer Review (ISPR) process.

While no formal agreement on resolving the dispute has been written, Weyerhaeuser ended up having their independent landslide study peer reviewed for journal publication in *Forest Ecology and Management* (2010) that was later cited in the CMER Landside Study, so their reasons for invoking dispute resolution were resolved. However, in an attempt to prevent this type of dispute resolution from happening again, Policy did agree to request CMER to develop a process for further defining and potentially including (if relevant) non-CMER science in its research and monitoring program. The purpose of this report is to briefly describe the current use of non-CMER science in CMER’s scoping, study design, implementation, analysis, and report writing (as referenced in the Protocols and Standards Manual (PSM 2013) and to offer recommendations for revisions or clarification to CMER’s PSM, if necessary, for the use of non-CMER science in its research and monitoring program.

Questions to Guide the Response to Policy’s Request

A set of questions was developed to facilitate extracting potential issues associated with developing a process for use of non-CMER science in CMER’s project development, implementation and report writing process. The expectation was that questions in which sub-committee members disagreed would help focus the sub-committee’s time in developing a process.

The questions were (with consensus summary answers included):

1. Should “best available science” be used in the adaptive management program? Yes
2. Should “non-CMER” science to be used in the adaptive management program? Yes
3. Should a distinction be made between “outside” non-CMER science and “participant” non-CMER science? Generally “No”, depending on the circumstances.
4. Should CMER have a more structured process for assessing scientific relevance and technical merit of non-peer reviewed scientific information used in the adaptive management program? Yes, although application of it might depend on the issue. Any scientific information, including

peer and non-peer reviewed information, that could potentially influence decisions or recommendations being considered by CMER or Policy should be assessed in a deliberate manner for scientific relevance and technical merit.

5. Should CMER use a more structured hierarchy of scientific and technical report quality when choosing relevant literature, technical reports, white papers, etc. in the production of documents and information forwarded to Policy and the Forest Practices Board? Yes
6. Should CMER expect that relevant literature published between the time best available science (BAS) is assessed and used in scoping a project and the writing of draft final technical reports will be evaluated for relevancy and cited where appropriate in CMER reports? Yes
7. Should CMER develop a “list” of approved peer reviewed journals, government publication series, etc.? No

Although not directly related to the effort clarifying and further developing a process for incorporating the use of non-CMER science in CMER’s research and monitoring program, the following question is addressed at the end of this document.

8. Should a “synthesis” be produced when technical reports are completed? What is a “synthesis” and what additional information should be expected from its completion? How is it related to the “Findings Report”? The general answer to the first question is “No” if the Findings Report and final CMER reports accomplish the same. However, additional guidance on writing the “discussion” section of CMER reports should be provided to minimize the potential need for separate syntheses to accompany final technical reports.

CMER uses non-CMER science and BAS in the scoping, study design, implementation, and report writing phases of its research and monitoring program, which is consistent with the answer to question 2. above. Indeed, CMER uses the concept of “best available science” throughout its activities, which by definition would include consideration of scientific information from all sources, including “participant” and non-participant non-CMER science.

Guidance for Use of Best Available Science in the Adaptive Management Program

State law incorporating the 1999 Forests and Fish Report (RCW 76.09.370 Findings--Forests and fish report--Adoption of rules) states

The adaptive management process shall incorporate the best available science and information, include protocols and standards, regular monitoring, a scientific and peer review process, and provide recommendations to the board on proposed changes to forest practices rules to meet timber industry viability and salmon recovery.

Use of best available science is also referenced in Board Manual 22, including reference to RCW 76.09.370. Board Manual 22 Guidelines for Adaptive Management Program describes best available science as

... relevant science from all credible sources including peer-reviewed government and university research, other published studies, and CMER research products. Applicable historic information, privately produced technical

reports, and unpublished data may have value and are considered as long as they can be assessed for accuracy and credibility. (BM22-4)

Board Manual 22 also states

... CMER is charged with producing credible, peer reviewed technical reports based on best available science ... (BM-5)

The Board Manual also recognizes eleven best available science elements including:

... a) scientific information source; b) spatial scale; c) temporal scale; d) study design; e) methods; f) data; g) quantitative analysis; h) context; i) references; j) logical conclusions and reasonable inferences; and k) peer review. (BM22-9)

When Policy decides that a formal AMP proposal should go down the science track, the expectation is that CMER

... evaluates currently available science, collects new information through research and monitoring, and synthesizes the best available information into a technical summary for Policy consideration. (BM22-9)

Finally, reference to the use of best available science is found under Board Manual section “Special Considerations for Certain CMER Recommendations”.

When sufficient and credible data are available for any given issue or question, CMER prepares a recommendation package that is based on the best available science (e.g., this may include the results of CMER research as well as other research). (BM22-16)

In summary, RCW 76.09.370 and Board Manual 22 provide guidance to the Adaptive Management Program to use best available science, including relevant science from all credible sources. However, they don't provide explicit guidance to CMER for how to apply the concept of best available science in CMER scientific processes, including how to incorporate non-CMER science into its research and monitoring project development and reporting processes.

Application of Best Available Science in CMER

The RCW, WAC and Board Manual sections referenced above clearly expect best available science and information to be used in the Adaptive Management Program, which by definition would include both CMER and non-CMER science. CMER recognizes the direction from the Forest Practices Board to use best available science and information, by referencing relevant sections of the Board Manual in its Protocols and Standards Manual (PSM). For example, under section 2.6 Roles and Responsibilities of CMER, the PSM state that CMER will

Produce credible, peer-reviewed technical reports based on best available science ...

Multiple references to the use of “best available science” can be found in the CMER Protocols and Standards Manual. For example,

- Describing the contents of scoping papers - “The scoping paper should generally include the following elements ... (F) best available science comparison... “ (PSM 7-5),

- Developing a purpose statement in scoping papers – “Identify how the data collected under this project will validate and/or improve the best available science supporting the forest practices rule or guidance.” (PSM 7-5),
- Identifying the preferred approach in scoping papers – “This statement is the basis for the argument that the project is using the best available science.” (PSM 7-6),
- Listing best available science elements – “The science underlying the current forest practices and that of the proposed project are characterized based on the following BAS elements: ...” (PSM 7-6), and
- The objective of SAG reviews of technical documents – “The objective of the SAG review is to produce a project document that represents the best available science.” (PSM 7-25).

Finally, although not a direct reference to “best available science”, CMER implies that best available science is used in its technical reports through one of the questions that CMER asks ISPR reviewers to address, which is

5. Is the literature review complete and appropriately utilized in the discussion?
(PSM 7-28)

In summary, CMER understands that the use of “best available science” is not limited to CMER-produced reports and utilizes the best available science concept when considering relevant documents to use in all of its processes, from scoping to final reports. This includes incorporation of pertinent papers that are relevant, but may not agree with or replicate the findings of CMER reports.

Recommendation: Although CMER’s Protocols and Standards Manual frequently refers to the use of best available science, few guidelines exist for evaluating or weighing either CMER or non-CMER science for relevance and inclusion in CMER documents, including scoping documents, study designs, literature reviews, technical reports, and Findings Reports. An additional section could be added to Chapter 7. Project Development and Management, or another more appropriate location, on the general use of “best available science” in CMER documents.

Sources of Best Available Science

As stated earlier, the AM Board Manual Section 22 describes best available science as “*relevant science from all credible sources including peer-reviewed government and university research, other published studies, and CMER research products. Applicable historic information, privately produced technical reports, and unpublished data may have value and are considered as long as they can be assessed for accuracy and credibility.*”

Scholarly, peer-reviewed journals and other publications are the major venue of communication for the science community to publish and present results of research. However, “gray literature” can provide a valuable source of scientific information since it often goes into greater detail when describing methods, analytical techniques, results, and so forth than do peer-reviewed publications. Gray literature includes technical reports, academic theses, government documents, conference proceedings, and other publications that may not have been independently assessed for quality and technical rigor. Gray literature can be produced by government agencies, professional organizations, research centers, universities, public agencies, special interest groups, corporations, NGOs, and other organizations.

There are distinct advantages to using selected gray literature in the scientific community. For example, research results can be more detailed in “gray” reports, doctoral theses and conference proceedings than

in journals. Further, gray literature is often “published” or made available to the other researchers quicker than the same information is published elsewhere.

Recommendation: Review the PSM and revise if necessary to advise that all credible sources (both CMER and non-CMER) and types of scientific information should be used in CMER’s research and monitoring program and processes. Gray literature should generally be available to CMER and used with caution if relevant. Nevertheless, use of gray literature is acceptable if the content can be evaluated for accuracy and credibility, and it is available to CMER and the general public.

Quality Assessment of Scientific Information (Evaluating Best Available Science)

The term and use of “Best Available Science” is sprinkled throughout Federal, State and County laws and regulations (e.g., The ESA, Clean Water Act, Growth Management Act, Critical Area Ordinances, etc.) with no single definition addressing how to qualify and/or quantify the use of the term. It is beyond CMER’s ability to provide such a definition outside what is referenced in rule, law (RCW and WAC) and the FP HCP, which for the most part are generalities and simply provide guidance for documents that “shall” or “may” be peer-reviewed.

In describing best available science, Board Manual 22 states that applicable “*historic information, privately produced technical reports, and unpublished data may have value and are considered as long as they can be assessed for accuracy and credibility*”. In other words, gray literature and other non-peer reviewed scientific information may have value and should be considered as long as it can be assessed for relevance, accuracy and credibility.

In its best available science comparison during scoping, CMER recognizes general best available science elements that should be assessed when evaluating scientific information: scientific information source; spatial scale; temporal scale; study design; methods; data; quantitative analysis; context; references; logical conclusions and reasonable inferences; and peer review. However, CMER does not have a formal process for assessing scientific information “for accuracy and credibility” and simply assumes that at a minimum, peer reviewed publications that are relevant to specific research topics will be considered for potential use in their research and monitoring program.

The general goal of assessing the technical quality of a study is to establish how reliable its findings are based on the rigor of the methods, data collection and analyses, and whether logical conclusions are inferred from the final results, and, most importantly, whether such findings are relevant to a particular setting or area of interest, particularly to CMER given their work plan tasks outlined in the FP HCP. Quality also relates to the extent to which a study design is likely to prevent systematic error, or bias. Quality may also relate to the extent to which the effects observed in a study are applicable outside of the study (e.g., generalizability), such as strength of inferences.

Assessing the quality of studies should help:

- To examine whether quality differences provide an explanation for differences in study results,
- As a means of weighting the importance of individual studies when results are being discussed or synthesized,
- To guide interpretation of findings and determine the strength of inferences, and
- To guide recommendations for further research if/when needed.

Although no single definition of study “quality” exists, absent an ability to independently review the quality of a study, a hierarchy of quality might be based on the level of expected rigor of scientific review:

1. Peer-reviewed literature,
2. Gray literature,
3. Expert opinion (i.e., opinion and broadly held beliefs), and
4. Anecdotal evidence (e.g., personal observations and beliefs).

These sources are commonly viewed as reflecting different levels of innovation, quality, respectability, and accessibility.

While it would be difficult, if not impossible, to develop a single scoring system for finding or comparing the best available science, CMER could draw on adherence to the scientific process, or even processes that have been recommended or employed in the literature on systematic literature reviews, to fill in some of the details behind the best available science elements listed above.

To achieve quality science, scientists conduct their studies using the scientific process. A first step in assessing the quality of scientific information might be in determining whether or not the scientific process was used in developing it. The scientific process generally includes the following elements:

1. A clear statement of objectives;
2. A conceptual model, which is a framework for characterizing systems, stating assumptions, making predictions, and testing hypotheses;
3. A good experimental design and a standardized method for collecting data;
4. Statistical rigor and sound logic for analysis and interpretations;
5. Clear documentation of methods, results, and conclusions; and
6. Peer review.

CMER already adheres to these elements when developing larger more complex studies. However, for certain CMER studies, some of these elements in the scientific process may be missing, but that may not prevent the information from being reliable and/or useful if reliability can be evaluated (e.g. CMER Exploratory Reports informing larger studies).

For instances where non-CMER data is being considered to inform adaptive management program processes, CMER should evaluate if the protocols used in obtaining or generating the data are at least as rigorous as those expected for use by CMER in its research. This should include an examination of any QA/QC processes used in collecting and assessing the accuracy of the data.

The following could be used as a starting point for evaluating non-peer reviewed literature, including non-CMER science, for consideration as “best available science” and use in Adaptive Management Program decision-making. While this process is not intended to provide criteria for inclusion or exclusion of literature, it provides a framework for evaluating the appropriate use of prospective non-CMER science.

- Relevance to the primary literature review or study question;
- Adherence to scientific method;
- Degree to which study is original work (e.g., not literature review, overviews);
- Prospective or experimental vs. retrospective;
- Appropriateness of study design to the research question;
- Degree of bias: in study design, data collection, review of data, analysis, interpretation, and publication;
- Timing of measurements after an activity occurred;
- Number of years of follow up;
- Statistical issues (e.g., adequately powered to detect an effect and adjustments for confounding factors);

- Quality of reporting
- Generalizability (e.g., strength of inferences)
- Level of peer review
- Publication type/status (e.g., national/international scientific journal, federal and state agency peer-reviewed technical reports (e.g., USDA Forest Service, USGS), proprietary studies, university cooperative extension reports, consultant's reports, and so forth).

Keying in on study designs is a further, even more refined step for assessing quality of scientific information for use in Adaptive Management Program decision making. For example, a “hierarchy of study designs” might be based on the following, in general order of quality:

1. Experimental studies (i.e., randomized control trials),
2. Quasi-experimental studies (i.e., studies without randomization),
3. Controlled observational studies,
4. Cohort studies,
5. Case control studies,
6. Observational studies without control groups, and
7. Expert opinion based on theory, laboratory research, or consensus.

A similar, alternative hierarchy of study designs used by Kelly Burnett and others in their 2008 report “A Pilot Test of Systematic Review Techniques: Evaluating Whether Wood Placements in Streams of the Pacific Northwest Affect Salmonid Abundance, Growth, Survival, and Habitat Complexity” was, in order of quality:

1. Replicated sampling, replicated controls, sampling before and after treatment;
2. Unreplicated, controlled, sampling before and after treatment;
3. Unreplicated, uncontrolled, sampling before and after treatment; OR
Unreplicated, controlled, sampling after treatment;
4. Unreplicated, uncontrolled, sampling after treatment; and
5. Unreplicated, uncontrolled, anecdotal observation after treatment.

Recommendation: Review the PSM and revise if necessary to advise that references should be selected based on relevance, availability, and quality, with preference given to peer-reviewed publications that are widely available and referenced in the area of scientific inquiry of interest. Gray literature should be used with caution, but is acceptable if the content can be evaluated for accuracy and credibility, and it is available to CMER and the general public. Internal reports, papers presented at conferences, articles in preparation, and other types of scientific information should be treated as unpublished and assessed for quality (accuracy and credibility). Regardless of source, authors of CMER reports should be able to provide, or direct access to, literature referenced in a study design or report if requested during a CMER review process. It is also recommended that “best available science” be assessed using a hierarchical process for assessing quality.

Syntheses

The issue of whether or not CMER should develop a “synthesis” after completing reports has periodically come up in Policy. This became a topic of conversation during discussions on use of non-CMER science.

What is expected by Policy in a “synthesis” has never been clearly defined or described. Language in the WAC 222-12-045 and Board Manual 22 guide CMER to produce the following:

From WAC 222-12-045, (2)(d)(v)

(v) CMER committee technical recommendations: Upon completion, final CMER reports and information will be forwarded at this stage by the program administrator to policy in the form of a report that includes technical recommendations and a discussion of rule and/or guidance implications.

From the Board Manual Section 22, Part 3.3 Stage 3: Proposal Implementation

Assessment and synthesis

Upon approval of a final study report, CMER develops a findings report [Emphasis added]. The findings report includes the CMER-approved final study report, answers to the CMER/Policy framework questions 1 through 6, and all technical implications generated through the CMER consensus process. (BM 22-12)

Administrator analysis and transmittal to Policy

The Administrator assesses the findings report for completeness and adds a discussion of the forest practices rule and/or guidance implications to the CMER findings report. The Administrator discusses questions regarding completeness with CMER prior to presenting the findings report to Policy. The Administrator then submits the completed findings report within one month to Policy for consideration of recommendations to the Board.

Findings Report

Based on the excerpts above, CMER recently concluded that a complete “Findings Report” forwarded from CMER to Policy and subsequently to the Forest Practices Board should include:

- 1) A study report(s),
- 2) Answers to the six questions contained in the Framework for Successful Policy/CMER Interaction (BM 22 Appendix B),
- 3) Technical implications/recommendations, and
- 4) AMPA discussion of the forest practices rule and/or guidance implications.

CMER recently approved Findings Reports that contain 2 documents: 1) a final CMER study report and 2) an expanded set of questions contained in Board Manual Appendix B Framework for Successful Policy/CMER Interaction. The expanded set of questions includes examples of areas in which to comment for discussing technical implications/recommendations (e.g., evaluation of whether key aquatic resource objectives (Schedule L-1) are being met), suggested rules/board manual sections to review/revise, and new research/monitoring for Policy to consider to fill in gaps in information and understanding). (See the appendix for the expanded set of questions, including clarification on how to answer the original six questions contained in the framework).

A discussion section in CMER technical reports that includes relevant, current literature (including non-CMER science) together with the rest of the content found in a Findings Report should meet the intent of Board Manual Section 22, Part 3.3 Stage 3: Proposal Implementation, Assessment and synthesis. Expectations for writing a discussion section in CMER reports follow this section.

Does this mean that the Findings Report, as described above, precludes the need for “syntheses” after a study is completed? Not always. Findings Reports are expected to augment information generated by CMER studies that could help inform Policy of the need for determining whether rules or Board guidance should be revised. The key distinction between completing a Findings Report, which should satisfy the need for an “Assessment and synthesis”, and conducting a separate synthesis would be in the purpose and potential use of the information in Policy and the Board’s decision-making process. Syntheses would be completed in response to specific, focused questions from Policy and/or the Board which were not

addressed directly in a research or monitoring project and which were raised after Policy had an opportunity to review and discuss the Findings Report (which includes the technical report itself).

Recommendation: Review the PSM and revise if necessary to advise that syntheses will be primarily used to answer specific, focused questions raised by the Board, Policy, or CMER that are not adequately addressed in CMER technical reports and other documents (e.g., Findings Reports). Further, the TFW Policy Committee and CMER should clarify what constitutes “technical implications/recommendations” in discussion sections of technical reports and Findings Reports, and revise the PSM and Board Manual 22 accordingly. Finally, in syntheses, a systematic literature review approach should be employed using all credible sources (both CMER and non-CMER) and types of scientific information.

Discussion Section in Technical Reports

As stated above, Findings Reports, written upon completion of technical reports, are expected to contain final CMER reports that include technical recommendations and a discussion of rule and/or guidance implications. Typically, these are found in “discussion”, “implications”, “recommendations”, or related sections of reports. These sections should include discussions of how the study results compare and contrast with results of similar studies relevant to the critical questions being answered by CMER’s studies. As suggested above, if done well, the discussion section in concert with the answers prepared for the questions contained in the Framework for Successful Policy/CMER Interaction should provide the information that a separate synthesis would provide.

CMER’s Protocols and Standards Manual provides guidance for completing the Discussion section of reports.

The discussion is the place for interpretation of the results. Here the results can be placed in context with the current state of knowledge expressed in the literature review, their significance assessed, and any generalizations and syntheses developed, justified, and described. Throughout the discussion, the tables and figures in the results section should be cited to tie the two sections together and to support assertions. A thoughtful discussion can clarify and enhance the value of the results. Avoid wordiness and speculation. Any speculation or extrapolation that is included should be clearly labeled as such. (PSM 7-24).

Additional guidance could be provided in the CMER Protocols and Standards Manual. For example, it’s not clear in the guidance above that report authors should review all pertinent literature prior to discussing their results, both literature considered in the course of developing the study design and any literature published later during the course of the study itself. For example, the guidance above could be revised to state (revisions are underlined):

The Discussion is the place for interpretation of the results. The merits of a report can be greatly enhanced by a fully informed discussion. This is the place to provide synthesis of results in relation to the available literature, to relate what has been learned to what is known, to identify important information gaps or limitations, to search for generalities, and to establish basic principles. In it, authors should indicate the significance of their research, how it relates to current knowledge, and any avenues that it suggests for further research. Here the results can be placed in context with the current state of knowledge expressed in the literature review, their significance assessed, and any generalizations and syntheses developed, justified, and described.

The Discussion should include pertinent literature used when developing the project study design, as well as any pertinent literature published during the course of completing the study. Interpretations of the study results should include both CMER and non-CMER science, where relevant. The literature review incorporated in the Discussion is intended to put the research findings in a context of providing the BAS for answering the research questions. Throughout the Discussion section, the tables and figures in the results section should be cited to tie the two sections together and to support assertions. A thoughtful discussion can clarify and enhance the value of the results.

Avoid wordiness and speculation. Informed speculation is acceptable as long as it is clearly identified as such. Any speculation or extrapolation that is included should be clearly labeled as such and supporting evidence identified.

Authors should avoid merely restating their results and/or (re)summarizing the literature. The weakest discussions are brief literature surveys appended to mechanical restatements of the results..

The Discussion section should provide context as to how the results have improved knowledge beyond past research while addressing limitations of the projects. New hypotheses or scientific questions that are logical extensions of findings and conclusions also should be presented in this section. Finally, the section should end with an overview or summary of important points and/or conclusions of the study. (PSM 7-24, 2005)

As stated previously, the guidance above for preparing discussion sections in technical reports together with answers to the expanded set of questions in the Findings Report should preclude the need for a “synthesis” in most cases.

Recommendation: Review and revise if necessary the guidance to authors in the CMER PSM for completing the Discussion section in technical reports to ensure that results are fully interpreted and placed in context with the current state of knowledge and that the discussion includes the applicability of the result findings across the state of Washington. The discussion section, when combined with the additional information found in the Findings Report, is intended to be sufficiently developed so as to preclude the need for a subsequent synthesis if at all possible.

List of Recommendations in this Report

1. Although CMER’s Protocols and Standards Manual frequently refers to the use of best available science, few guidelines exist for evaluating or weighing either CMER or non-CMER science for relevance and inclusion in CMER documents, including scoping documents, study designs, literature reviews, technical reports, and Findings Reports. An additional section could be added to Chapter 7. Project Development and Management or another more appropriate location on the general use of “best available science” in CMER documents.
2. Review the PSM and revise if necessary to advise that all credible sources (both CMER and non-CMER) and types of scientific information should be used in CMER’s research and monitoring program and processes. Gray literature should generally be available to CMER and be used with caution if relevant. Nevertheless, use of gray literature is acceptable if the content can be evaluated for accuracy and credibility, and it is available to CMER and the general public.
3. Review the PSM and revise if necessary to advise that references should be selected based on relevance, availability, and quality with preference given to peer-reviewed publications that are widely available and referenced in the area of scientific inquiry of interest. Gray literature should

be used with caution, but is acceptable if the content can be evaluated for accuracy and credibility, and it is available to CMER and the general public. Internal reports, papers presented at conferences, articles in preparation, and other types of scientific information should be treated as unpublished and assessed for quality (accuracy and credibility). Regardless of source, authors of CMER reports should be able to provide, or direct access to, literature referenced in a study design or report if requested during a CMER review process. It is also recommended that “best available science” be evaluated using a hierarchical process for assessing quality.

4. Review the PSM and revise if necessary to advise that syntheses will be primarily used to answer specific, focused questions raised by the Board, Policy, or CMER that are not adequately addressed in CMER technical reports and other documents (e.g., Findings Reports). Further, the TFW Policy Committee and CMER should clarify what constitutes “technical implications/recommendations” in discussion sections of technical reports and Findings Reports, and revise the PSM and Board Manual 22 accordingly. Finally, in syntheses, a systematic literature review approach should be employed using all credible sources (both CMER and non-CMER) and types of scientific information.
5. Review and revise if necessary the guidance to authors in the CMER PSM for completing the Discussion section in technical reports to ensure that results are fully interpreted and placed in context with the current state of knowledge and that the discussion includes the applicability of the result findings across the state of Washington. The discussion section, when combined with the additional information found in the Findings Report, is intended to be sufficiently developed so as to preclude the need for a subsequent synthesis if at all possible.

APPENDIX

Guidance for Developing a Findings Report

Upon completion of a project or study, the following should be transmitted to Policy in a Findings Report.

1) Study Reports

Study reports focus on answering technical Questions of Interest and should include (when appropriate) discussion of results from similar studies to compare and contrast with the results from the CMER study. Technical implications and recommendations should also be considered for inclusion in the technical report.

2) CMER/Policy Interaction Framework Six Questions (Cover document to accompany study reports. Include abstract/executive summary with six questions and technical implications/recommendations.)

1. Does the study inform a rule, numeric target, performance target, or resource objective (Yes/No)? If Yes, go to the next question. If No, provide a short explanation on the purpose of the study.)
2. Does the study inform the Forest Practices Rules, the Forest Practices Board Manual guidelines, or Schedules L-1 or L-2 (Yes/No - Include whether or not the study answers the critical questions found in the CMER Work Plan.)? (If yes, describe briefly what rules, guidelines, key questions, critical question, resource objectives, performance targets, etc. the study informs, preferably in bulleted format. If no, provide a short explanation on the purpose of the study; do not repeat if already explained in question 1 above. Note: Schedule L1 contains resource objectives and associated functional objectives and performance targets. For the most part, the CMER Work Plan critical questions have replaced L-2. Be sure to use Forest Practice Board approved Schedule L-1 with a Feb 14, 2001 date on it.)
3. Was the study carried out pursuant to CMER scientific protocols (i.e., study design, peer review)? (Provide short explanation. Be clear on use of ISPR.)
4. What does the study tell us? What does the study not tell us? (This is where the study and its relationship to rules, guidance, targets, etc are to be described in detail. Consider technical findings; study limitations; and implications to rules, guidance, resource objectives, functional objectives, and performance targets; in addition to other information.)
5. What is the relationship between this study and any others that may be planned, underway, or recently completed? Factors to consider in answering this question include, but are not limited to:
 - a. Feasibility of obtaining more information to better inform Policy about resource effects.
 - b. Are other relevant studies planned, underway, or recently completed? (If yes, what are they?)
 - c. What are the costs associated with additional studies?
 - d. What will additional studies help us learn?
 - e. When will these additional studies be completed (i.e., when will we learn the information)?

- f. Will additional information from these other studies reduce uncertainty? (Consider recommendations on additional studies that may not be in current CMER work plan.)
6. What is the scientific basis that underlies the rule, numeric target, performance target, or resource objective that the study informs? How much of an incremental gain in understanding do the study results represent? (The specific basis for the current program element may not be known, and in such a case, focus the discussion on the level of confidence in the results, realizing this may be somewhat subjective. Describe any reduction in uncertainty in the science behind the rules as a result of this study, or any changes in level of assessed risk to key aquatic resources processes affected by forest practices (see Schedule L-1) as a result of this study.)
- 3) If not already done so within the answers to the six questions above, provide the technical implications/recommendations resulting from the study-. Examples of areas on which to comment include:
- New rule tools, models, or field methods that should be developed;
 - New research/monitoring for Policy to consider to fill gaps in information and understanding;
 - Suggested rules/board manual sections to review/revise. CMER should not directly state whether or not a rule, guidance, or program procedure should be changed; only the results from using the program component, and where known, the relative merits of other approaches. Deciding whether to make any changes is the purview of Policy or the Forest Practices Board; although, Policy or the Board may request CMER participation in the decision process.
 - Evaluation of whether key aquatic resource objectives (Schedule L-1) are being met.
 - Other areas

Note: The CMER/Policy Interaction Framework Six Questions above come from “Table 1. Questions leading to a Policy adaptive management recommendation to the Forest Practices Board” (Board Manual M22-28).