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April 16, 2010

TO: Forest Practices Board

FROM: Kelly Susewind, P.E., P.G.
Water Quality Program Manager

SUBJECT: Quarterly Update on Clean Water Act Milestones

Ecology committed to provide the Forest Practices Board (Board) with quarterly updates on the progress made to meet the milestones established for retaining the Clean Water Act (CWA) Assurances for the Forest Practices Rules and associated programs.

This quarterly report is more expansive than prior updates because it provides the Board and other interested parties with a more detailed explanation of progress to date, and a documented basis for changes made to the milestones. The changes are the result of more detailed analyses of the interrelationships between milestone elements. They are the result of updated assessments of the time needed to pass through all the steps to develop the specific Cooperative Monitoring, Evaluation, and Research (CMER) scientific studies. Changes to the CWA milestones do not represent changes in the underlying priorities, nor do they create any relaxation in the programmatic effort required to meet the overall objectives.

After a slow start, due in a large part to the disruption caused by the economic recession and numerous changes in key staff positions within DNR, and the Adaptive Management Program (AMP), work on achieving the milestones is progressing at an admirable pace.

Ecology recognizes and greatly appreciates the additional work these milestones have created for DNR staff who are leading the effort to accomplish many of these milestones. Significant challenges and uncertainties remain. It is not the intention of this memo to minimize these challenges. However, if the current effort and spirit of cooperation continue as they have, Ecology is reasonably confident that the milestones will be accomplished as needed to retain the CWA assurances. The biggest threat to this positive forecast is probably the lack of long-term funding for the AMP.

Ecology hopes program participants will not lose their focus and thereby reduce the effort made to meet the CWA milestones. A lull in effort will predictably cause substantial challenges for meeting the remaining 2009 and 2010 milestones. Critical milestones such as developing a strategy to ensure the Type N rules are effective, have not been started, and are due in only a few months. Issues such as this will require substantial effort to complete. The task will be even more challenging if cooperators are still working on milestones that are past due.

Ecology participated in developing the FY11 budget for the AMP. The proposed budget reflects the CWA priorities to the fullest extent possible given the available funding and the research capacity of the CMER volunteers. Recent actions that secured additional short-term funding from DNR's Aquatic Lands Enhancement Account (ALEA), and from the Forests and Fish Support Account's (FFSA) reserve account are given credit for allowing the program to remain on course for this next year. Efforts by caucus principles to obtain stable long-term funding and efforts by the AMP participants to obtain federal grants to supplement current funding have yet to be successful. Such supplemental or long-term funding will be critical to maintaining an adequate AMP program much beyond 2011.

Two enclosures are attached. The first is a summarized list of the milestones and the status of accomplishing them. In the second enclosure, all of the original CWA milestones are presented with an underline and strikeout font to help identify the specific changes made to the milestones.

I hope this is self-explanatory. Ecology will be available at the May 2010 meeting of the Board to address any questions you may have. If you would like any clarification prior to the Board meeting, please contact me or my coordinator Mark Hicks at (360) 407-6477.

Enclosure

Summary of Clean Water Act Assurances Milestones and Progress as of April 16, 2010

Non-CMER Project Milestones

	Summarized Description of Milestone	Status
2009	July 2009: CMER budget and work plan will reflect CWA priorities.	Milestone Met
	September 2009: Identify a strategy that will be to secure stable, adequate, long-term funding for the AMP.	Milestone Met
	October 2009: Complete Charter for the Compliance Monitoring Stakeholder Guidance Committee	Milestone Met
	December 2009: Complete training sessions on the AMP protocols and standards for CMER, and Policy and offer to provide this training to the Board. Identify and implement changes to improve performance or clarity at the soonest practical time.	Partially Met
	December 2009: Initiate a process for flagging CMER projects that are having trouble with their design or implementation.	No Formal Action
	December 2009: Compliance Monitoring Program to develop plans and timelines for assessing compliance with rule elements such as water typing, shade, wetlands, haul roads, and channel migration zones.	Milestone Met
	December 2009: Evaluate the existing process for resolving field disputes and identify improvements that can be made within existing statutory authorities and review times.	Work Underway
2010	January 2010: Ensure opportunities during regional RMAP annual reviews to obtain input from Ecology, WDFW, and tribes on roadwork priorities.	Work Underway
	February 2010: Develop a prioritization strategy for water type modification review.	Milestone Met
	March 2010: Establish online guidance that clarifies existing policies and procedures pertaining to water typing.	Work Underway
	June 2010: Establish a framework for certification and refresher courses for all participants responsible for regulatory or CMP assessments.	No Formal Action
	June 2010: Review existing procedures and recommended any improvements needed to track compliance at the individual landowner level.	Milestone On-Track
	July 2010: Assess primary issues associated with riparian noncompliance (using the CMP data) and formulate a program of training, guidance, and enforcement believed capable of substantially increasing the compliance rate.	No Formal Action
	July 2010: Develop a plan for evaluating the risk posed by SFL roads for the delivery of sediment to waters of the state.	Work Underway

	Summarized Description of Milestone	Status
	July 2010: Develop a strategy to examine the effectiveness of the Type N rules in protecting water quality at the soonest possible time that includes: a) Rank and fund Type N studies as highest priorities for research, b) resolve issue with identifying the uppermost point of perennial flow by July 2012, and c) completing a comprehensive literature review examining effect of buffering headwater streams by September 2012.	On-Track with Priority Ranking and Literature Review
	October 2010: Conduct an initial assessment of trends in compliance and enforcement actions taken at the individual landowner level.	Milestone On-Track
	October 2010: Design a sampling plan to gather baseline information sufficient to reasonably assess the success of alternate plan process.	No Formal Action
	December 2010: Initiate process of obtaining an independent review of the Adaptive Management Program.	Milestone On-Track for 2010 or 2011
2011	February 2011: Complete an evaluation of the relative success of the water type change review strategy.	Milestone On-Track
	December 2011: Provide more complete summary information on progress of industrial landowner RMAPs.	Milestone On-Track
2012	October 2012: Reassess if the procedures being used to track enforcement actions at the individual landowner's level provides sufficient information to potentially take remove assurances or otherwise take corrective action.	Milestone On-Track
2013	November 2013: Prepare a summary report that assesses the progress of SFLs in bringing their roads into compliance with road best management practices, and any general risk to water quality posed by relying on the checklist RMAP process for SFLs.	No Formal Action

CMER Research Milestones

	Description of Milestone	Status
2009	Complete: Hardwood Conversion – Temperature Case Study	Milestone Met
	Study Design: Wetland Mitigation Effectiveness	Milestone Met
2010	Complete: Mass Wasting Prescription-Scale Monitoring	Milestone On-Track
	Implement: Wetland Mitigation Effectiveness (Pilot)	Uncertain
	Study Design: Type N Experimental in Incompetent Lithology	Milestone On-Track
	Study Design: Testing the Accuracy of Unstable Landform Identification.	Milestone On-Track
	Scope: Mass Wasting Landscape-Scale Effectiveness	Uncertain
	Scope: Eastside Type N Effectiveness (new study needed)	Uncertain
2011	Complete: Bull Trout Overlay Temperature	Milestone On-Track
	Complete: Solar Radiation/Effective Shade	Milestone On-Track
	Implement: Type N Experimental in Incompetent Lithology	Milestone On-Track
	Study Design: Mass Wasting Landscape-Scale Effectiveness	Uncertain
	Scope: Wetland Management Zone Effectiveness Monitoring	Uncertain

	Description of Milestone	Status
2012	Complete: Buffer Integrity-Shade Effectiveness	Milestone On-Track
	Complete: Wetland Mitigation Effectiveness	Uncertain
	Implement: Testing the Accuracy of Unstable Landform Identification.	Uncertain
	Scope: Wetland/Stream Water Temperature Interactions	Uncertain
	Study Design: Amphibians in Intermittent Streams (Phase III)	Uncertain
2013	Scope: Effectiveness of RMAP Fixes	Uncertain
	Scope: Wetland Hydrologic Connectivity	Uncertain
	Implement: Amphibians in Intermittent Streams (Phase III)	Uncertain
	Implement: Eastside Type N Effectiveness	Milestone On-Track
2014	Complete: Type N Experimental in Basalt Lithology	Milestone On-Track
	Study Design: Effectiveness of RMAP Fixes	Uncertain
	Scope: Type F Experimental Buffer Treatment	Uncertain
2015	Complete: First Cycle of Extensive Temperature Monitoring	Uncertain
	Scope: Watershed Scale Assess. of Cumulative Effects	Uncertain
2017	Study Design: Watershed Scale Assess. of Cumulative Effects	Uncertain
2018	Complete: Roads Sub-basin Effectiveness	Uncertain
	Implement: Watershed Scale Assess. of Cumulative Effects	Uncertain
	Complete: Type N Experimental in Incompetent Lithology	Uncertain
2019	Complete: Eastside Type N Effectiveness (new study needed)	Uncertain

Milestones to Retain the Clean Water Act Assurances
Detailed Explanation of Progress and Changes to Milestones
Review Date: April 16, 2010

Changes and updates are shown using underlined and strikeout text

Non-CMER Research Milestones

2009 Milestones:

By July 2009, and in subsequent planning years, the projects identified by Ecology in Table 1 will be reflected in the CMER budget and work plan in a manner that establishes a priority schedule for study development. Failure to meet any of the milestones identified without prior consent by Ecology may be viewed as a basis to revoke the CWA assurances at that point in time.

Update: This annual milestone was met in 2009 and looks likely to be met in 2010 as well. In 2009, as part of the Clean Water Act (CWA) Assurances Review, Ecology established a list of research milestones to support continuation of the assurances (Table 1). This list did not exactly match the budget priorities that came out of the April Cooperative Monitoring, Evaluation, and Research (CMER) budget meeting. Recognizing, however, that the planned projects were based on rough estimates of cost and the time needed to move them into the field, Ecology considered that adequate for meeting the intent of this milestone in year one. This decision, and the language in the milestone, recognizes the planning and budget process requires iterative annual reviews and updates.

Ecology has been working with the Adaptive Management Program (AMP) Administrator to prepare for the upcoming CMER budget meeting to ensure the budget continues to support the CWA priorities. Some minor shifts in timing to Table 1 (described herein) will be made and promoted for inclusion in the upcoming budget. These changes reflect knowledge gained from special meetings with the AMP Manager, CMER Co-Chairs, and CMERs Science Advisory Group for the Eastside (SAGE). A key change involves relationship between the Eastside Type N Forest Hydrology study and two CWA priority studies.

After conducting meetings to discuss the relationship between these studies, Ecology is convinced that the Hydrology study is an important precursor study to the other CWA studies. This makes completing the Hydrology study the highest priority eastside study, since the results will be used to initiate two other CWA priority studies (the Eastside Type N Effectiveness and Eastside Type N Extensive studies). This change is also supported by a closer examination of when these other two priority studies would predictably be able to take place even if the Hydrology study was not conducted first. By Ecology's estimation, with the assistance of the SAGE co-chairs and the AMP Administrator, conducting the Hydrology study first is likely to create an offsetting cost savings to the

Eastside Type N Extensiveness study and create only a one year delay in initiating the Type N Effectiveness study.

Other changes to Table 1 represent refinements to the timeframes based on better recognition of the time required to prepare the final reports and move them through Independent Scientific Peer Review (ISPR) and on unexpected but scientifically appropriate follow-up analysis (such as the decision to evaluate stand age data in the Mass Wasting Prescription Scale study).

By September 2009, the Forest and Fish Policy Budget Committee will identify a strategy that will be implemented with caucus principal support to secure stable, adequate, long-term funding for the AMP.

Update: This milestone has been met. The intent of this milestone was to actively seek adequate funding for the AMP. Ecology recognized that even with such planning and effort the funding needed to continue with a viable AMP might not be found. At this time, short term funding appears to have been secured to sufficiently cover the previously projected AMP budget shortfall in fiscal year 2011. This one-time only funding is coming from the Forests and Fish Support Account reserve fund and from DNR's Aquatic Lands Enhancement Account.

The caucus principals, led by the Commissioner of Public Lands, have committed to take the lead in trying to establish a dedicated and sufficient long-term funding source. Efforts this year led to proposed legislative changes that would shift state accounts sufficient to fund the AMP. AMP participants have also begun the process of applying for federal grants.

Three AMP studies were submitted to the Environmental Protection Agency (EPA) for a potential grant, two of which were CWA priorities. Additionally, Ecology has committed to providing up to 150,000 dollars per year to assist in executing one of the highest CWA priority research projects (the Westside Type N Incompetent Lithologies Effectiveness Study). Although this strategy milestone has been met, future efforts will need to continue to try and secure funding above the ongoing proportional allotments from the State General Fund and the Forests and Fish Support Account, which total just over 1 million dollars per year, in order to maintain a viable AMP and meet other CWA milestones.

By October 2009, DNR will complete the Charter for the Compliance Monitoring Stakeholder Guidance Committee and determine which issues identified herein related to compliance monitoring will be dealt with by the committee. This is intended to help move these issues forward on schedule as well as to flag the items for which an alternative process for resolution is needed.

Update: This milestone was completed in November 2009.

By December 2009, the AMP program administrator, with the assistance of CMER and Policy, will complete the ongoing training sessions on the AMP protocols and standards for CMER, and Policy. This is intended to remind participants of the agreed upon protocols. Opportunity should also be provided to identify portions of the protocols and associated rules that need revision to

improve performance or clarity. Any identified improvements to the Board Manual or regulations should be implemented at the soonest practical time. Subsequent to this effort, the administrator will offer to provide this training to the Board.

Update: This milestone remains incomplete. Training of the Forests and Fish Policy Committee (Policy) and CMER has occurred and training was offered to the Forests Practices Board (Board). Suggestions for clarification and other changes were tracked from these training sessions and Policy put all of the suggestions of Policy and CMER into categories for further resolution. Still remaining for this milestone is the determination of what improvements to the Board Manual or regulations are warranted. Responsibility for this final step resides with the co-chairs of Policy and CMER.

By December 2009, the AMP Manager with the assistance of the co-chairs of Policy and CMER will initiate a process for flagging projects for the attention of Policy that are having trouble with their design or implementation. This process should identify projects not proceeding on a schedule reflecting a realistic but expedient pace (i.e., a normal amount of time to complete scoping, study design, site selection, etc.).

Update: No formal action has occurred on this milestone. Responsibility for leading this effort resides with the AMP Administrator, who has committed to make resolution of this issue a top priority after completing the April 1, 2010, annual CMER Planning and Budget meeting.

By December 2009, DNR in partnership with Ecology and with the aid of the CMP stakeholder guidance committee will develop general plans and timelines for exploring options and data collection methods for assessing compliance with rule elements such as water typing, shade, wetlands, haul roads and channel migration zones. The goal is to initiate these programs by December 2011.

Update: Milestone was completed in March 2010.

By December 2009, DNR with assistance of Ecology and WDFW will evaluate the existing process for resolving field disputes and identify improvements that can be made within existing statutory authorities and review times. Although resolution of the specific issue at hand should be a goal, the overarching purpose of this milestone is to establish a process that will identify the basis for the dispute and to put in place revised guidance, training, reporting pathways, other measures that will minimize the reoccurrence of similar disputes in the future. This process should consider how to best involve the appropriate mix of both policy and technical participants to thoroughly resolve the issue at hand.

Update: Work on this milestone has been initiated. Draft guidance has been developed within DNR that is based generally on the current practice in use to resolve disputes. The current approach remains focused on establishing a decision-chain rather resolving the basis for the dispute. Ecology will be working with DNR to determine what changes may be needed to this draft guidance to accomplish the objectives of the milestone.

010 Milestones:

By January 2010, as part of the regional RMAP annual meeting process, DNR should ensure opportunities are being provided in all the regions to obtain input from Ecology, WDFW, and tribes formally participating in the forests and fish process regarding roadwork priorities.

Update: A draft process was prepared to which Ecology submitted comments.

By February 2010, DNR in consultation with WDFW, Ecology, and the tribes will develop a prioritization strategy for water type modification. The intent of this strategy will be to manage the number of change requests sent to cooperating agencies for 30-day review so it is within the capacity of those cooperators to respond to effectively. The strategy should consider standardizing the current ad hoc process of holding monthly coordination meetings with agency and tribal staff in all the DNR regions. This should allow group knowledge and resources to be more efficiently used to evaluate change requests.

Update: Milestone completed in March 2010.

By March 2010, DNR Forest Practices will establish online guidance that clarifies existing policies and procedures pertaining to water typing. The intention is to ensure regional staff and cooperators remain fully aware of the most current requirements and review processes for changing water type and coordinating the review of multidisciplinary teams.

Update: A first draft of the guidance has been developed and is being readied for broader stakeholder comment. Completion of this milestone is expected in April or May 2010.

By June 2010, DNR with consultation with Ecology and WDFW (or with the CMP stakeholder guidance committee), will establish a framework for certification and refresher courses for all participants responsible for regulatory or CMP assessments. This will be focused on aiding in the application of rules regarding bankfull width, CMZ boundaries, application of road rules, and wetlands. Consideration should be given to including a curriculum of refresher courses on assessing difficult situations.

Update: No formal action has occurred on this Compliance Monitoring Program (CMP) milestone.

~~By June 2010, DNR, Ecology, and WDFW will meet to review existing procedures and recommended improvements needed to more effectively track compliance at the individual landowner level. The goal will be to ensure the compliance pattern of individual landowners can be effectively examined by October 2010. This should consider the types and qualities of enforcement actions that occur (e.g., conference notes, notices of correction, stop work orders, penalties). These procedures and their effectiveness in identifying compliance trends at the landowner level will be reassessed by Ecology by October 2012 to ensure the program provides~~

~~sufficient information to take action where appropriate to remove the CWA assurances and take any other necessary corrective action with landowners having persistent compliance problems.~~

Update: Based on an initial meeting with DNR, WDFW, and Ecology, this milestone has been subdivided herein into three separate dated milestones for tracking in June 2010, October 2010, and October 2012.

By June 2010, DNR, Ecology, and WDFW will meet to review existing procedures and recommend improvements needed to more effectively track compliance at the individual landowner level. The goal will be to ensure the compliance pattern of individual landowners can be effectively examined. This should consider the types and qualities of enforcement actions that occur (e.g., conference notes, notices of correction, stop work orders, penalties).

Update: DNR, Ecology, and WDFW have met and determined that the Existing DNR enforcement database appears to contain sufficient content to support the needed analyses. Test analyses and queries will be developed by June 2010 to support having a first report by October 2010.

By July 2010, DNR with the assistance of Ecology will assess the primary issues associated with riparian noncompliance (using the CMP data) and formulate a program of training, guidance, and enforcement believed capable of substantially increasing the compliance rate – with a goal of getting greater than ninety percent compliance by 2013. Ecology will consider of the rating of noncompliance since not all infractions have the same effect on public resources (e.g., is it predominately at levels within reasonable field method limits or likely to occur even with due diligence) when determining if this compliance target rate milestone has been satisfied.

Update: No formal action has occurred on this milestone.

By July 2010, Ecology in partnership with DNR and in consultation with the SFL Advisory Committee will develop a plan for evaluating the risk posed by SFL roads for the delivery of sediment to waters of the state.

Update: Work on this milestone has begun. This work is being conducted in association with evaluating the overall risk posed by potentially granting an extension to the RMAP 2016 compliance date for large forest landowners. This extension is being considered to offset some of the effects of the current economic recession. The question of the Small Forest Landowner (SFL) roads is an important factor in understanding the overall risk to public resources, and therefore the design and conduct of a study on SFL roads is being taken up by policy and technical subcommittees of the AMP charged with evaluating the effect of granting such an extension.

By July 2010, Policy, in consultation CMER, will develop a strategy to examine the effectiveness of the Type N rules in protecting water quality at the soonest possible time. This strategy needs to include at a minimum:

i. Ranking and funding of the Type N studies as highest priorities for CMER research.
ii. By July 2012, developing a protocol for identifying with reasonable accuracy the uppermost point of perennial flow, or develop documentation demonstrating the spatial and temporal accuracy of the existing practice used to identify this point;
iii. By September 2012, completing a comprehensive literature review examining the effect of buffers on streams physically similar to the Type Np waters in the forest practices rules prior to completion of the Type N basalt effectiveness study. This should be conducted or overseen by CMER (or conducted by an independent research entity).

Update: No formal action has occurred on developing a formal strategy. However, the Type N studies have been established in the 2010 budget as the highest priorities for CMER research. Additionally, the Environmental Protection Agency has hired a contractor and begun the work to develop a comprehensive literature review on the effect of buffering headwater streams. These two elements are critical components to any successful strategy.

By October 2010, DNR, Ecology, and WDFW will conduct an initial assessment of trends in compliance and enforcement actions taken at the individual landowner level.

Update: This is a follow-up step to a related milestone expected to be completed on time in June 2010. Ecology expects this milestone to be met on schedule.

By October 2010, DNR in partnership with Ecology, and in consultation with WDFW, the Tribes, and the SFL advisory committee, will design a sampling plan to gather baseline information sufficient to reasonably assess the success of the alternate plan process. This sampling plan should include how to select sample sites, how to best document the content and assumptions contained in the alternate plan, what to monitor and how frequently to do so, and responsibilities for who will conduct the sampling. The goal of this effort is to initiate data collection in the 2011 field season.

Update: No formal action has occurred on this milestone.

By December 2010, the AMP Program administrator shall initiate the process of obtaining an independent review of the Adaptive Management Program. This review shall be done by representatives of an independent, third party research organization and include:

i. An examination of the structure and function of the program, based on its technical performance, fiscal efficiency, and overall accountability.
ii. An assessment of the performance and efficiency of the consensus-based decision processes.
iii. A review of the rigor of CMER science and whether it productively adds to the body of Pacific Northwest region science to confidently address the L-1 Questions.
iv. An evaluation of the interactions of science and policy within the AMP.
v. Identification of any different approach the AMP could employ to assure a more certain and timely outcome of projects and commensurate changes to rules and guidelines.

Upon completion, the results of this independent review shall be taken to CMER and Policy to develop responses and recommendations for any needed corrections. Within six months of completion, the report along with the responses of the CMER and Policy committees will be provided to the Board. Ecology will be engaged in discussions with cooperators to examine ways to initiate this important task as soon as possible.

Update: DNR has begun discussions with the State Auditor's Office (SAO) on conducting the needed review of the AMP. The SAO has tentatively agreed to conduct the audit within the next two years. Recognizing the importance of the milestone to many cooperators, DNR is working to encourage the SAO to initiate the audit as soon as possible.

2011 Milestones:

By February 2011, DNR in consultation with WDFW, Ecology, and the Tribes will complete an evaluation of the relative success of the water type change review strategy. Results of this review would be used to further refine the strategy.

Update: The new strategy has been developed and is being implemented in all of the DNR regions immediately (March 2010). It should be ready for re-examination on time in early 2011.

By December 2011, DNR with the assistance of large landowners will provide summary information for all industrial landowners having RMAPs. The summary information will include at a minimum: Date RMAP completed, total miles of road covered under the RMAP, total miles of road brought up to standards, total number of fish barriers removed, and a brief statement describing the strategy for bringing all roads into compliance by 2016 that demonstrates even-flow or otherwise provides confidence compliance will be attained by 2016. If reasonable and feasible, the summary will show the annual progress on road and barrier improvement that has occurred since the inception of the RMAP, and DNR will provide a master summary for all industrial landowners combined.

Update: DNR is now reporting most of this information as part of the annual HCP report, and expects to meet this milestone on schedule.

2012 Milestones:

By October 2012, Ecology, in consultation with DNR and WDFW, will reassess if the procedures being used to track enforcement actions at the individual landowners level provides sufficient information to allow action to be taken where appropriate to remove CWA assurances and take any other necessary corrective action with landowners having persistent compliance problems.

Update: The groundwork is being laid on which to meet this milestone.

2013 Milestones:

By November 2013, Ecology in partnership with DNR and in consultation with the SFL advisory committee ,will prepare a summary report that assesses the progress of SFLs in bringing their roads into compliance with road best management practices, and any general risk to water quality posed by relying on the checklist RMAP process for SFLs. If a significant portion of SFL roads is estimated to pose a risk of damage to public resources, then a report will be prepared in time to brief the Legislature in December 2013.

Update: It is too soon to assess the status of this milestone.

CMER Research Milestones (From Table 1 of CWA Assurances):

	Task Description	April 2010 Status/Update
2009	Complete: Hardwood Conversion – Temperature Case Study	**Milestone Satisfied**. Study Report has been completed and is in final preparation for posting on the CMER website.
	Study Design: Wetland Mitigation Effectiveness	**Milestone Satisfied**. Study design developed and incorporates CMER comments.
	~~Study Design: Testing the Accuracy of Unstable Landform Identification.~~	**Change in Milestone**. Study design was through CMER review in 2009. Policy asked to refocus the study on just the question of accuracy in identifying unstable features. UPSAG is at capacity finalizing the Prescription Scale and Road Sub-basin studies. Expect adequate capacity to revise study design after Prescription Scale report is delivered to CMER by July 2010. Unexpected loss of principle investigator, combined with the need to finalize two major projects at the same time caused an acceptable delay in meeting this milestone. Milestone date will be changed to 2010.
2010	Complete: Mass Wasting Prescription-Scale Monitoring	**Expected to Meet Milestone**. Fieldwork complete and study now in SAG review. Final Report expected in early 2011. Finalizing this project has taken longer than initially expected due to the need to obtain stand age data and conduct a reanalysis. This delay was appropriate to respond to new scientific information and produce a more complete final analysis.
	Implement: Wetland Mitigation Effectiveness (Pilot)	**Uncertain**. CMER budget and draft study design will support potential initiation in Fall 2010, however, CMER review may be followed by ISPR review and cause this project to be delayed until the following Fall.

	~~Study Design: Amphibians in Intermittent Streams (Phase III)~~	**Change in Milestone**. This milestone date will be pushed out until 2012 in response to: 1) recognition that the issue may be satisfactorily resolved in the Type N experimental study in Incompetent Lithology, and 2) if needed, the results would be used together with the findings of the Type N experimental study, which is expected for completion in 2014.
	Study Design: Type N Experimental in Incompetent Lithology	**Expected to Meet Milestone**. New SAG formed from interested members of RSAG and UPSAG to complete this study design on time. Ecology is providing additional internal support for this study, and is working with the new SAG to begin sample pool screening work during the Summer of 2010.
	Study Design: Testing the Accuracy of Unstable Landform Identification.	**Expected to Meet Milestone.** Milestone moved from 2009 (see notes above).
	Scope: Mass Wasting Landscape-Scale Effectiveness	**Uncertain**. It is not certain at this time if UPSAG has the capacity to scope this new project. However, lessons learned from the Mass Wasting Prescription Scale study may help streamline this scoping such that it can be completed in late 2010.
	Scope: Eastside Type N Effectiveness (new study needed)	**Uncertain**. SAGE has just started scoping this study. The scoping milestone is in place to ensure the study will be ready to implement on schedule. As noted below, Ecology is pushing out the date for initiating the study phase of this research. Developing a scoping document and study plan is still a high priority to prevent unforeseen complications later that might delay implementation.
2011	Complete: Bull Trout Overlay Temperature	**Expected to Meet Milestone.** Project is on schedule.
	Complete: Solar Radiation/Effective Shade	**Expected to Meet Milestone.** Project is ahead of schedule and a final report is in CMER review.
	~~Implement: Eastside Type N Effectiveness~~	**Change in Milestone**. Ecology in consultation with members of RSAG and SAGE evaluated the role of the Type N Hydrology study and agreed that it was a potentially important precursor study to designing and implementing the Eastside Type N Effectiveness Study. The Hydrology study may identify the test strata most appropriate for investigation as well as establish a model that will make finding perennial Type N waters for inclusion in an effectiveness study less costly and time

		consuming. This milestone has been moved to 2013.
	~~Implement: Amphibians in Intermittent Streams (Phase III)~~	**Change in Milestone**. As discussed above, this project milestone has been moved out to better coordinate project and potential findings with the Type N Effectiveness Study in Basalt Lithology.
	Implement: Type N Experimental in Incompetent Lithology	**Expected to Meet Milestone**. Ecology is providing additional resources to assist in the early implementation of this study.
	Study Design: Mass Wasting Landscape-Scale Effectiveness	**Uncertain**. No formal work has been initiated.
	Scope: Wetland Management Zone Effectiveness Monitoring	**Uncertain**. No formal work has been initiated.
2012	~~Complete: Type N Experimental in Basalt Lithology~~	**Change in Milestone**. Project has been moving ahead effectively, however, prior estimates on completion date did not factor in the additional year of post harvest monitoring for sites harvested late, and did not include the time needed for data analysis and report completion. The new milestone for this project is 2014.
	Complete: Buffer Integrity-Shade Effectiveness	**Expected to Meet Milestone**. Fieldwork is complete and draft report is in preparation.
	Complete: Wetland Mitigation Effectiveness	**Uncertain**. Study is design for a pilot study is being finalized for initiation in Fall 2010. This would then be followed by the actual field study (Phase I). That fieldwork will take potentially two field seasons, instead of one, and 6-12 months of report preparation and review. This makes completing the full study before the end of 2012 uncertain.
	~~Complete: Amphibians in Intermittent Streams (Phase III)~~	**Change in Milestone**. This project milestone is being changed to better coordinate with Westside Type N Experimental Basalt Lithology study.
	Implement: Testing the Accuracy of Unstable Landform Identification.	**Uncertain**. Ability to implement in 2012 depends on content of study design, which has not been finalized.
	Scope: Wetland/Stream Water Temperature Interactions	**Uncertain**. No work has been initiated.
	Study Design: Amphibians in Intermittent Streams (Phase III)	**Uncertain**. Final decision on whether to implement this study will need to await preliminary findings from the Type N Experimental Basalt Lithology study.
2013	~~Complete: First Cycle of Extensive Temperature Monitoring~~	**Change in Milestone**. Three of the four strata have been completed. The fourth strata, the eastside Type N streams, could not be completed due to a significant problem with

		randomly identifying streams that had perennial flows. This fourth stratum will be attempted again after the eastside Type N Hydrology study has been completed and a potential model developed that will better screen for channels having perennial flows.
	Scope: Effectiveness of RMAP Fixes	**Uncertain**. No work has been initiated.
	Scope: Wetland Hydrologic Connectivity	**Uncertain**. No work has been initiated.
	Implement: Amphibians in Intermittent Streams (Phase III)	**Uncertain**. Final decision on whether to implement this study will need to await preliminary findings from the Type N Experimental Basalt Lithology study.
	Implement: Eastside Type N Effectiveness	**Expected to Meet Milestone.** Milestone moved from 2011 (see notes above).
2014	Complete: Type N Experimental in Basalt Lithology	**Expected to Meet Milestone**. Project is currently in post harvest data collection phase.
	Study Design: Effectiveness of RMAP Fixes	**Uncertain**. No work has been initiated.
	Scope: Type F Experimental Buffer Treatment	**Uncertain**. No work has been initiated.
2015	Complete: First Cycle of Extensive Temperature Monitoring	**Uncertain**. The final missing stratum for this project (eastside Type N streams) should be completed by 2015; however, the final decision on how to ensure adequate random samples of perennial streams will await completion of the eastside Type N hydrology study in 2013.
2016	~~Complete: Type N Experimental in Incompetent Lithology~~	**Change in Milestone**. Ecology has provided additional resources to initiate this project in 2010 and it will be completed as soon as possible; however, a more detailed evaluation of the time to conduct all of the phases of this project warrants adjusting the milestone to 2018.
	Scope: Watershed Scale Assess. of Cumulative Effects	**Uncertain**. No work has been initiated.
2017	~~Complete: Eastside Type N Effectiveness (new study needed)~~	**Change in Milestone**. As noted above, Ecology is pushing out the date for initiating the study phase of this research. This change recognizes the potential importance of the eastside Type N hydrology study on identifying test strata and assisting in site selection.
	Study design: Watershed Scale Assess. of Cumulative Effects	**Uncertain**. No work has been initiated.
2018	Complete: Roads Sub-basin Effectiveness	**Uncertain**. No work has been initiated.
	Implement: Watershed Scale Assess. of	**Uncertain**. No work has been initiated.

	Cumulative Effects	
	Complete: Type N Experimental in Incompetent Lithology	**Uncertain**. Work is beginning but the completion date is too far out to speculate on likelihood of success.
2019	Complete: Eastside Type N Effectiveness (new study needed)	**Uncertain**. Work is beginning but the completion date is too far out to speculate on likelihood of success.