

CMER Projects	25-27 Workplan #	SAG	Status	Rank	Comments	Scientist Comments and Clarifications	Uncertainty Rating Distributions	Risk Rating Distributions	Uncertainty x Risk Rating Distributions
Eastside Type N Riparian Effectiveness Project (ENREP)	5.2.6.9	SAGE	Implementation	1	Two sided 50' riparian buffers and the 20' equipment zone limitations reduce the risk to the FPHCP (and the FMP) protected resources. Uncertainty was high at the time of F&F Negotiations, maybe not so high now in the context of Hardrock and Softrock? The risk to aquatic resources is lowest protection of clean waters. Uncertainty is low due to hard rock/soft rock. Preliminary data show similar increased stream temperature in direct response from shade loss under current eastside rule buffers as westside Type N effectiveness studies (Hard Rock, Soft Rock). There is substantial uncertainty associated with needed protections and its effect on implementation of desired management. With the combination of climate change and over a century of fire suppression, today's eastside forest look very different than the historical condition. We need to better understand what is needed rather than just having landowners walk away from any management after multiple harvests they almost always regretted. No significant concerns reported so far on risk to WQ, fish. Two CMER literature reviews determined there is very little science supporting current rule deactivating forested wetlands.				
Forested Wetlands Chronosequence Study	5.9.4.4.3a	WeSAG	Reporting	2	After multiple harvests they almost always regretted. No significant concerns reported so far on risk to WQ, fish. Two CMER literature reviews determined there is very little science supporting current rule deactivating forested wetlands.				
Eastside Riparian Forest Health Strategy (Program)	5.3.5.6	SAGE	In development	3	Rachael burn severity study does not inform question: will active management reduce burn severity? Rachael said knowledge is limited on this subject. Need to copy Overall Rank formula.	We included this program in this table to highlight that SAGE is currently developing projects for this program that are not yet identified for this prioritization. This program would be ranked if/when CMER decides to do a program ranking as part of this science prioritization exercise.			
Van Dyke's Salamander	5.2.7.5	LWAG		4	New 75-ft buffer will minimize risk to habitat. Both spp are federally unlisted but listed by the state as species of concern and covered under the FP HCP. Life history appear to be not well known let alone the uncertainty of the science underlying the riparian rules, risk to them is thus largely unknown.				
Forested Wetlands Effectiveness Project	5.9.4.4.3b	WeSAG		5	Risk and uncertainty scores considered only the FPHCP L1 Resource Objectives and Functional Targets. These limit the wetland functions to downstream temperature, hydrology, and LWD. The early (date?) CMER wetland regeneration study indicated that harvested forested wetlands were, either naturally or by planting, successfully regenerating. Recent field trips to these sites indicated similar results indicating that these areas remain as wetlands and that functional recovery is underway but may take longer on low productivity (very wet) sites. Chronosequence reduces uncertainty. But effects likely dependent on relative extent (size) and disturbance in forested wetland relative to connectivity influence on WQ, fish. Risk relatively low if not studied. According to the SQ, it is not based on a rule so uncertainty based the science behind the rule is not applicable. Overall risk to the resource is medium given the current rules. Two CMER literature reviews determined there is very little science supporting current rule deactivating forested wetlands. Only an issue in terms of delivery to streams where fish and S&A are found, but wanted a bit further to consider the hydrological risk if reforestation is hindered by high water levels.				
Coastal Tailed Frog Extensive Status Project	5.2.7.7	LWAG/R	Scoping	6	High uncertainty due to the lack of landscape scale data and the small sample sizes of the Hard and Soft Rock studies. Moderate risk due to the conflicting facts that they were apparently abundant after clearcuts without stream buffers but were in decline during the Hard and Soft Rock studies. This should be considered as an extensive and/or intensive monitoring project. High uncertainty - risk is unclear because of this. E-MA add-on eDNA project. The Board's newly adopted (2025) Type Np with full length buffers 50-75W wide substantially lowers risk. Because of observed declines where water temperature was not apparently at cause, we need to understand how management actions are affecting other potential influences of CTF habitat as well as directly affecting CTF.	The E-MA amphibian add-on project is not a complete replacement for this project.			
Road Prescription-Scale Effectiveness Study	5.6.5.3	Roads	Reporting	7	Not rating because in reporting phase. The roads sub-basin scale phase 2 could inform the need for this.				
Deep-Seated Landslide Mapping & Classification Project	5.5.7.6	UPSAG	Implementation	8	WGS is doing this, and "Designed" means the 2007 Scoping. Glacial deep seated mapping and classification should be one project. Mapping risk is low uncertainty is low (lower because there is no rule change yet more uncertainty with the classification project) uncertainty high-classifications will need to be refined at smaller landscape scales, they are broad now. I could use more info about the risk. This project was prioritized by the Board after the 2014 GDS Hazel Landslide killed 43 people in Oso.				
Westside Type F Experimental Buffer Treatment	5.3.7.3	RSAG	Scoping	9	Uncertainty based on not knowing what treatments will be tested and the strength of the supporting science. Risk based on science indicating that continuous buffers may provide too much shade and that they do not provide the needed fine-grain protection due to the coarse grain water typing. Uncertainty is moderate because there's just so much known in the broad sense about buffers, their integrity, and LWD distributions. But the current "total shade" regime appears to have risk to the resource. Uncertainty is slightly higher than the known F buffer information. Risk is low because the default of not implementing proposed alternatives is to return to the current rules. Assume this will be investigation of active riparian management options rather than just passive growth for supply. Restoring desired functions with passive (current rule) is century scale process. Risk high if we don't explore riparian management strategies in the core zone that promote long-term LWD recruitment potential. This study is not linked to a rule, and contingent on the above Type F rule buffers being monitored through time to ensure key functions are being maintained. This will explore multiple management options to meet all of the 4 goals in an efficient and effective manner. Meeting all 4 goals at once is challenging, but maximizing certain functions at the same time is even more challenging e.g., providing light and shade. Extremely little is known about how certain functions can be balanced. There are many substantial risks associated with failure of this effort.	The science is strong on general principles regarding ecological functions such as temperature-shade relationships and LWD recruitment, but less definitive on specific operational prescriptions because site conditions and responses vary widely. Overall uncertainty is moderate - we have substantial knowledge about how buffers function broadly but fewer empirical tests of how different treatments balance multiple functions like shade, light availability, and LWD recruitment. We also have substantial knowledge about how upland timber forests respond to silvicultural treatments like thinning, but less about how riparian stands respond to thinning and other treatments. Current no touch buffers reliably provide shade but may develop very slowly toward DFC, while active management approaches introduce their own uncertainties. Given these trade-offs, evaluating alternative strategies through structured experimentation can help clarify long-term outcomes and reduce uncertainty over time.			
Unstable Slopes Criteria - Empirical Evaluation of Shallow Landslide Susceptibility & Runout	5.5.5.4b	UPSAG	Implementation	10	Low risk based on many studies showing that stream impacts are small and temporary and sometimes beneficial. We understand a lot about where landslides initiate, but could have better regional information, and better understanding about preventing big events and not worrying about small events. from SW storm 2007, planar slope rules pretty good as is except during most extreme storms when you get a lot of landslides in mature forests as well. - lots of science that convergent landforms are at risk of failures. This project was prioritized by the Board after the Dec. 2007 storm that resulted in over 1000 landslides direct delivering to DNR Type waters. Nearly half did not meet current RL in rule. Runout is an aspect of mass failures that has not received enough study for us to know how to address in rules.				
Type N Experimental Buffer Treatment Project in Hard Rock Lithologies (Hard Rock Project) - Phase III	5.2.6.3	LWAG	Implementation	11	Inadequate study design for landscape inferences. This final report was recently approved by arbitration panel and CMER.				
AFF Validation Study	5.1.4.5	ISAG	Scoping	12	Much of AFF lies in its connections to off-channel habitat. This needs to continue to be considered during the data analysis and conclusions portion of the study. Freshwater historic anadromous distribution across WA is generally undocumented, but buffers are same for resident species upstream. The PHB and DFC are already sufficient. We need to focus on protecting the streams on a landscape basis and as long as we are addressing the need to ignore man-made barriers in our considerations, there is little risk or uncertainty at the landscape scale. There is particularly little value in pursuing this effort.				
Physical Modeling of Deep-Seated Landslides	5.5.7.9	UPSAG		13	This is all linked to the same project as groundwater recharge. Could improve utility of mapping project to ID and reduce risk.				
Effectiveness of RMAP Fixes	5.6.5.2	Roads		14	Not rating because in reporting phase. In addition to info from Road Rx Effectiveness study, the DNR Forest Practices Compliance team has information on this. The roads sub-basin scale phase 2 could inform the need for this.				
DFC Assessment Project	5.1.4.4	ISAG	Implementation	15	The Type F, A, water classification is too coarse, graded to be an amphibian habitat needs. Ongoing, important project for Type F - Type N break. See comment from PHB also add that DFC is used more in these landscapes, and the extent of winter inundation and distribution is a major factor in that landscapes where ownership will make it logistically difficult to use anything but DFC. The focus needs to be on these landscapes (or enough locations in these landscapes) to show differences there. The Board/CMER already generated relevant data / information. Default Physical Criteria are set conservatively, but there are some alpha and beta errors as anticipated. We also protect N streams already. At the landscape level the risk here is very small and we will never predict with 100% accuracy where fish will show up.	Clarify these landscapes?			
Wetland Management Zone Effectiveness Monitoring Project	5.9.5.2	WeSAG	Scoping	16	Risk and uncertainty scores considered only the FPHCP L1 Resource Objectives and Functional Targets. These limit the wetland functions to downstream temperature, hydrology, and LWD. Previous program ranking, approved by CMER, TWN Policy and the FSR was 14 in out of 16. Alexander et al.(2003) found over the period of study, shallow and deep groundwater temperature mid-point in the buffer was, on average, 1.0 to 1.7 C and 0.7 to 0.5 C cooler, respectively, than that measured for shallow and deep groundwater in the clearcut? The CMER Type F. Exploratory study indicated that the 60' and 80' buffers provided equal or better shade than all of the larger buffers examined. Our knowledge from stream buffer studies, expect risk to downstream relatively low under current rules. FORMULA IS MISSING FROM CELL B9 SO NOT CALCULATING CORRECTLY. Non-forested WAZ buffers are not well studied. Potential risk to resource is not well known. I am only looking at hydrology concerns to address on downstream fish and S&A.				
Unstable Slopes Criteria - Models to Identify Landforms Most Susceptible to Management	5.5.5.4c	UPSAG	Scoping	17	Low risk based on many studies showing that stream impacts are small and temporary and sometimes beneficial. This project might not be strictly necessary to protect the resource, but it would be a very helpful rule book leveraging data instead of relying on loads of field work. Risk of rule tools is unclear - with there was another way to deal with this. This project was prioritized by the Board after the Dec. 2007 storm that resulted in over 1000 landslides direct delivering to DNR Type waters. Nearly half did not meet current RL in rule. The susceptibility is the most important aspect of this.				
Groundwater Recharge Modeling Project	5.5.7.8	UPSAG	Scoping	18	DGL's have always been studied one-at-a-time; these projects are important to provide a broad context to where real hazard exists. No. 1 unstable slopes issue as far as uncertainty. Risk is high - most issues with ID teams and broadest application/resolution range during FPAs. This project was prioritized by the Board after the 2014 GDS Hazel Landslide killed 43 people in Oso. Modeling this will be very important to avoid harvest on these areas that increase groundwater infiltration.				
Roads Effects on Wetlands	5.9.6.3	WeSAG		19	Roads are rarely built in wetlands. Road crossing culverts occasionally increase "wetness" and ecological functions. Completion of RMAPs greatly reduced road related sedimentation. Effects of roads well studied, but quantification of effects across road network is relatively unknown. Given RMAP most road runoff disconnected, maintenance improved, risk of not studying to WQ, fish, relatively low. The roads sub-basin scale phase 2 could inform the need for this.				
Stream Temperature Status & Trends Monitoring	5.2.8.4	RSAG	Scoping	20	High uncertainty due to the lack of landscape scale data. High risk is because the HCP and pre-HCP treatments may be inhibiting the food chain by maintaining below optimum water temperatures thereby reducing the production of the fish and specific amphibians addressed by the AMP. see above. E-MA study, by design, is not evaluating a specific rule - uncertainty of status and trends at the landscape-level under the HCP is high. Extensive Monitoring is a rule - no cause / effect. Low - no risk to effect. Low - no risk to effect. This would not answer any questions related to management related uncertainty or risk - in fact, it will likely be so confounded it will not answer any questions - though it may raise a few.	The tiered scale scoping for this study will allow us to relate conditions to forest management on sub-watershed scales and answer some of those questions, in addition to providing a vast, landscape-scale assessment of overall conditions.			
Landslide Monitoring Project	5.5.7.10	UPSAG		21	This is all linked to the same project as groundwater recharge. Could be addressed by E-MA.				
Eastside Type F Channel Wood Characterization	5.3.5.5	SAGE	Design Complete	22	Uncertainty with wood dynamics and methods. Results unnecessary as stream performance targets are poor approach for assessing BHP at FPA scale. No risk if not studied. Can this be merged into the amphibian Forest Health Strategy?				

Wetlands Intensive Monitoring	5.9.7.2	WeISAG	23	This program and project, as described in the workplan, should be a subset of Program 5.11 "Intensive Watershed-Scale Monitoring To Assess Cumulative Effects". Additionally, the scope, while within WAC 222-24 and -30, is clearly outside the scope of the FFRHCP and AMP. Isn't this part of overall Intensive Monitoring? The 2014 Adams strategy document divides this into three projects covering the effects of harvest outside of wetlands, the effects of harvest within wetlands and the effects of roads on wetlands. It was originally designed to be scoped after the completion of FFRHCP and WAC effectiveness. However, as these projects were delayed, this project was not pushed back and now appears in the same funding period. It is unclear what questions this would cover that would not be answered by the other two projects. Ecological process study has limited inference value given large diversity of wetlands. Best addressed by Estensive Monitoring. Non-forested WAC buffers are not studied. Potential to resource is not well known. This project will evaluate the full suite of wetland functions per 25-27 workplan. Only a limited number of functions will affect HCP covered species. The study will do little to address the items that are most needed by CMER.				
Water Temperature and Amphibian Use in Type Np Waters with Discontinuous Surface Flow Project (formerly Amphibians in Intermittent Streams Project)	5.2.7.4	LWAG	Study Design	24	High science uncertainty is due to the high program ranking (3rd of 16) and the lack of a current BAS report that should be resolved with Task 1. Uncertainty is likely to change with the BAS suggesting that Task 2 and a possible future study may not be needed. The low risk score is based on the fact that amphibians were absent from the Hard and Soft Rock test sites that were previously cleared without the current FFRHCP stream buffers. The high previous program ranking did not have this information and is now possibly misleading. Hardrock and softrock have broadly demonstrated recovery of these organisms. The DNA studies suggest more mobility than previously understood, which should allow us to lower the Uncertainty Score compared to the state of F&T Negotiations. Because this is more of an info gathering study, risk is not so much. Uncertainty is higher due to little information about the topic in the greater body of literature. Risk is based on findings relative to new 75-ft buffer rule. The Board's newly adopted (2025) Type Np rule sustains/lowers risk with full length buffers 50-75ft wide including intermittent flow below the PP (perennial initiation point). The already completed studies of amphibians indicate declines are common in all managed watersheds that were studied. We have many questions about what functions we have overlooked. This is a foundational knowledge accumulation effort that will help us understand more about these systems so that we can eventually design an effectiveness study. The risk to amphibians of not addressing these other habitat functions is substantial.	Water Temp & Amphibian in Discont Flow	Water Temp & Amphibian in Discont Flow	Water Temp & Amphibian in Discont Flow
PHB Validation Study	5.1.4.3	ISAG	Implementation	25	The Type F, N water classification is too coarse grained to tailor protection to fish or amphibian habitat needs. Ongoing, important project for Type F, N break. Risk lies in underestimating the extent of distribution in depressed populations, in letting data overlook unique geologic regions where the same physical forces don't dictate the end of fish and overlooking winter cut-off distribution patterns. Efforts have been made to consider these things but if they only exist at one or two data points, it will be hard to draw conclusions versus dismissing them as an outlier without continuing to remember to focus here. The Board/CMER already generated relevant data (Information Potential Habitat Breaks are not always black and white. Sometimes we overestimate fish habitat and sometimes we underestimate - it was part of the agreed shared risk in FFR. Some breaks are only breaks at unusually high or low water levels. Because we also protect nonfish streams there is very little risk involved and the uncertainty at landscape levels is also very low. Also need to consider that the concept of an anomalous fish floor already altered the risk balance.	PHB Validation	PHB Validation	PHB Validation
Sensitive Sites and Amphibians Field Project	5.2.5.3b	LWAG		26	After 3a 3b may not be needed. Risk may be mitigated on sideslope seeps by new type N rule. Knowledge of rule defined sensitive site usage limited. Consequently, risk of not doing is relatively high. Validation needed to document need or not for retaining timber. The uncertainty in supporting the rule and risk to amphibians is contingent to the synthesis results above. CMER has data from completed studies (e.g., Hard Rock) that could inform this project.			
Riparian Characteristics and Shade Response Study (RCS)	5.2.8.5	RSAG	Implementation	26	Uncertainty based on the existence of many years of riparian width research. Risk is based less ability to optimize buffer management for the HCP fish and amphibians. Science on this relatively established (e.g. Type F) but potential risk to stream temperature is high Thinning 75-50 ft. will inform Board's newly adopted Type Np rule. This study should share some light (pun intended) on the relationships between tree retention, canopy cover, and effective shade. It is not likely going to answer water temperature questions so I am only answering with respect to riparian conditions and shade.	RCS	RCS	RCS
Riparian Conditions Status & Trends Monitoring	5.2.8.3	RSAG	Scoping	28	High uncertainty due to the lack of landscape scale data. High risk is because the HCP and pre-HCP treatments may be inhibiting the food chain by maintaining below optimum water temperatures thereby reducing the production of the fish and specific amphibians addressed by the AMP. Status and trends averages to a 3 risk of both because of competing factors: low risk to direct rule change, but high risk to delay of other studies while ongoing. Low risk of uncertainty from a general, 10k feet standstill but high risk to small anomalous areas where regional conditions don't behave the same, due to data on these regions being "smoothened out." Safe study by design, is not evaluating a specific rule - uncertainty of status and trends at the landscape-level under the HCP is high. Extensive Monitoring does not directly inform a rule - no cause / effect. Low to no risk to resource. Not in 25-27 workplan - at least not that could find. Ranked 1 and 1 until I get more information. Or is this the Extensive Riparian Status and Trends Monitoring - vegetation etc.?	Safe - Riparian	Safe - Riparian	Safe - Riparian
*Wetlands	5.9.7.2	WeISAG	delayed	29	Duplicate. Probably not the best approach for our program. Influence of groundwater recharge from wetlands on stream low flow and temperature understood, but cumulatively across landscape poorly known. Given buffering of sensitive sites (stream adjacent wetlands) risk of not studying to WQ. Fish relatively low. See 5.1.7.2 above. See above comment.			
Road Surface Erosion Model Validation/Refinement	5.6.4.4	Roads		30	Current road project is covering most of this, probably should delete this project. Findings from Road Prescription-Scale Effectiveness Study will likely inform the COs. Uncertainty of the science supporting the rules requires monitoring to assess; risk to the aquatic environment with BMP is relatively low. The currently active Road's BMP Study will inform the need for this.			
Intensive Watershed Monitoring	5.11.3.1	CMER	delayed	31	Probably not the best approach for our program. Intensive monitoring is a subset of validation monitoring (MD report, Key question 3 in SL1). Direct evaluation of the uncertainty of the science under the rules and assessment of the risk of meeting the overall performance objectives and resource objectives. CMER scoped a cumulative effects study over 10 years ago, but it never got funded. Policy determined it was too expensive and would be more feasible to find an outside AMP cooperater.			
Sensitive Sites and Amphibians Data Synthesis project	5.2.5.3a	LWAG		32	Risk may be mitigated on sideslope seeps by new type N rule. The uncertainty in identifying the 5 types of sensitive sites in rule is low but the risk to amphibians may be moderate if rule-based sites do encompass sites valuable to amphibians. CMER has data from completed studies (e.g., Hard Rock) that could inform this project. Both spps are unlisted by federal and state agencies and their distribution is relatively known. However, there is always room for improvement in habitat preferences and distribution especially on the east side of the state. Uncertainty in the underlying science supporting the rule is modest as is the risk to these populations as healthy. Preliminary data from ENREP study show increased stream temperatures in direct response to shade loss under current eastside Type Np rule buffers. The westside Type Np effectiveness studies (Hard Rock, Soft Rock) showed similar stream temperature increases leading the Board to adopt a more protective buffer rule prescription. HR Phase III results show tailed fog numbers have significantly declined under similar buffers as Eastside Type Np.			
GIS-Based Landslide Stability and Sensitivity Toolkit	5.5.7.7	UPSAG		34	Made obsolete by USC - we should delete this project. Rule tools are tricky to rank as they are not studies and are judged differently. Mapping would improve awareness of potential risks to resources. The uncertainty and risk of forest practice influence on deep-seated landslides is high and this project could potentially reduce both.			
Evapo-Transpiration Model Refinement	5.5.7.11	UPSAG	Scoped	35	Low risk because of the current site limitations. This is all linked to the same project as groundwater recharge. Current ET models have already been updated. Their level of accuracy negates the need for further model refinement. Modeling this will be very important to avoid harvest in a manner that increases groundwater infiltration.	Evapo-Transpiration	Evapo-Transpiration	Evapo-Transpiration
Type F Performance Target Validation	5.3.7.4	RSAG		36	Need to use more current non-CMER science to address the one-size-fits-all fixed metric fallacy. Unsure about long-term issues, especially natural transition from alder to hardwood in riparian corridors if young conifers are not present at point of die-off. Instream performance targets are poor approach for assessing BMPs at FPA scale. Risk of not doing study is low. Validation study (key question 3 in SL1) assess if the existing PT are the appropriate ones. The uncertainty of the underlying PT and risk if it is, are medium.			
Eastside Type Ns Effectiveness	5.2.6.10	SAGE		37	Low uncertainty underlying the science to this rule for Ns streams given the 30 ft equipment exclusion rule and low risk to the aquatic environment, especially during low flow periods. Type Ns streams are cleared to streambanks under current FFR rule prescriptions. CMER has not studied the rule's effect on downstream aquatic species, water quality.			
Road Subbasin-Scale Effectiveness Monitoring - Sampling Event 2	5.6.4.3b	Roads	Delayed	38	Moderate risk because sedimentation from roads has been vastly eliminated but impacts to the HCP amphibians is not well understood. In the context of Road Prescription-Scale Effectiveness, this could help us study understand "Have we done enough?" and if not "Where do we need to do more?" Sampling event 1 was done before RMAPs were completed. Event 2 was supposed to happen once RMAPs were done, which they are. Concerned about risks higher in watershed in Np streams and amphibians.	Road Subbasin - Resurple	Road Subbasin - Resurple	Road Subbasin - Resurple
*Roads	5.6.6.2	Roads	delayed	38	Purposely not ranked. This program and project, as described in the workplan should be a subset of Program 5.11 "Intensive Watershed-Scale Monitoring To Assess Cumulative Effects". Probably not the best approach for our program. I think the results of Road Prescription-Scale Effectiveness and Road Subbasin Monitoring will make this either unnecessary or a modeling exercise - it should remain delayed. Could be combined with 5.11.3.1 CMER scoped a cumulative effects study over 10 years ago, but it never got funded. The impact of forest practices cumulative effects on aquatic resources is currently unknown. Interim rank - not sure I have the right project in G2 folder.			
*Mass Wasting	5.5.6.7		delayed	40	Probably not the best approach for our program. Given landside program unlikely to studies. Need more information to evaluate. See above comment.			
Board Manual Revision Project	5.5.7.4	UPSAG	Intermittent as w.	41	Not ranking as this is board manual updates that will be based on study results and rule changes. Besides the uncertainty and risk associated with deep seated landslides and the ground stability rule, this is an important public safety issue. DNR's Board Manual (Section 16) could be updated as new information is generated by UPSAG.			
Recoverable/Restorable Fish Habitat	5.1.5.2	ISAG	delayed	42	"Recoverable and restorable" is included in the definition of fish habitat in rule (WAC 222-16-010), but CMER has yet to scope a study.			
*Riparian Buffers			delayed	43	Probably not the best approach for our program. This is currently a topic of the extensive monitoring project. See above comment.			
DPC Aquatic Habitat Validation	5.3.4.6	RSAG		44	This project intends to characterize an acceptable range of habitat conditions associated with a DFC. This will address the failure of fixed metric targets. DFC is poorly associated with ecological functions. Risk of not doing study is low. CMER Westside Type F Riparian Effectiveness project was funded with an aquatic habitat validation component. CMER proposed revisiting DFC Validation study field sites, but was not funded. Current Type F buffers consist of "younger" stands that are limited in reaching instream targets of older stands.			

Lidar-Based Water Typing Map	ISAG	delayed	45	<p>Questions about where it works and where it never will. This is important to leverage an era of lidar data and limit field work, but aren't others (DOE) doing a lot of the lift? Uncertainty is lowered due to advances in LIDAR modeling, but risks of implementing a map-only, no field rule is very high in landscapes where water inundates more than 1 score due to low velocity, and in assessing connections of F waters to off-channel habitat, which is a difficult exercise, even in the field. While better maps are always useful as predictive tools, removing the ability to field verify entirely will increase risk to aquatic resources, not improve it. Low risk to resource if current model is not revised. However, over estimates of EOP by current model may be costly in terms of buffer retention. Lidar map will be widely improved "foot-blot" to assist survey start location, but will likely not replace FHAM in rule. Intentionally left blank. Need more information. The value of Lidar in identifying where there are channels and their characteristics is of some positive value. Lidar alone will not determine stream type. There is no mention of this in 25-27 workplan or in the SO folder.</p>	<p>Others (Ecology/USGS) are generating the streamlines from the lidar DTM, but we need to delineate Fish/Non-fish streams on that new layer. That will not be part of the Ecology product. Generating water type classifications of the new hydrography is necessary, whether or not the entire water typing system is modified. This is a topic and project ISAG will be considering later this year in conjunction with the DNR FP GIS team to be ready when the new hydrography and DPC/PBIA/F studies are complete. There are two pieces to consider under this project: revising the hydro layer for Forest Practices and also validating that revised layer. Modeling the beginnings of channels (channel head locations) and channel width based on compilations of existing data is a need for multiple purposes, including water typing. Development of a new water typing map need not necessarily be a complete repeat of the previous effort. Applying the old equations to identify the fish-to-fish could be done using the new DTM and hydrography, or we could simply identify streams that wouldn't meet DFC (resulting map would be for FFA mapping purposes but FN breaks would not be considered regulatory, per May 2017 FPA decision). The original model was developed and applied using a lidar DTM, but it was of much coarser resolution and quality than that available today, so a model developed on the new hydrography could differ from the old one. Transposing modeled FN breakpoints from the lidar line work to the old DNR hydro layer was a massive effort and transposing those points back from the existing hydro layer would be again. Identifying points on the new hydrography analytically would be less effort and more accurate than having DNR by to re-transpose the existing modeled points back onto new hydrography. As was done before and per FPA May 2017 decision, concurred FN breaks from WTMFs would be transposed from the existing hydrography and would provide modeled locations. While that will be an effort, it is a MUCH smaller number of points than all the modeled FN breaks.</p>		
Pathways of Riparian Stand Development to Maturity	5.3.4.7	RSAG	45	<p>This project should be combined with 5.3.4.5. Pathways well known. Risk of not doing study is low. Relatively high uncertainty for mixed young stands reaching maturity (conifer-dominated DFC). Low risk as impacts to aquatic resources provide ecological services unique to HW. The CMER Type F Effectiveness Exploratory field sites provide an opportunity to track DFC development and maturity through time. Most sites continue to meet DFC 5-6 years post harvest, but unknown for longer time frame.</p>			
DFC Site Class Map Validation	5.3.4.4	RSAG	Scoped	47	<p>The current site class maps are unlikely to be off by one site class either way and, on average, are good. Current research is recognizing the higher value of larger trees close to the water and the lower value of trees further away. As such, a site class error of one only affects the outer edge of a riparian buffer with little relative impact the habitat to the fish and amphibians considered in the FPFCP. A BA performance target for DFC is poorly associated with ecological functions. Risk of not doing study is low. Modest uncertainty as could be refined but low risk to aquatic environment as supported by the Type F study. The DFC Validation Study report indicates that DNR's Site Class maps under represent field verified SC nearly half the time resulting in narrower Type F buffers than the rule intended for Type F waters.</p>		
DFC Trajectory Model Validation	5.3.4.5	RSAG	47	<p>Better models that grow mixed species (together), recognize site specific changes in site class and species specific differences in mortality will help provide more accurate assessment of expected future conditions resulting from active riparian management strategies. A BA performance target for DFC is poorly associated with ecological functions. Risk of not doing study is low. Modest uncertainty as could be refined but low risk to aquatic environment as supported by the Type F study. The DFC Model and Manual Report indicates DNR's current growth yield model over-predicts growth for western Hemlock. The model (OGANR) is outdated and could be updated or replaced.</p>			
Use of eDNA in Water Typing	ISAG	delayed	49	<p>The Type F water classification system is too coarse grained to tailor protection to the HCP fish or amphibian habitat needs. Risk of misapplying eDNA is risk inherent to the use of eDNA or the exclusion of eDNA in our program? This is unclear, so difficult to answer. Risk of not using is missing opportunities to look for fish in stream segments where access is not possible for a long enough portion of the stream to do protocol sampling and in areas with very low fish populations. Risk of using is typically voiced in using as a presence tool (which is also a risk voiced about single-pass electrofishing) and in risk of false positives (though having a higher rate of detection overall compared to electrofishing just means a lower percent of error distributed in both directions, not just one direction like electrofishing). eDNA is a newly universal tool used by most agencies and scientific bodies. Like GIS modeling, proper use requires considering limitations. That said, eDNA offers an additional way to check for fish presence in different areas and has been known (Penskins, 2021) to have a higher rate of sensitivity at low population levels than electrofishing and is typically sufficient to reliably find fish and also rule out false positives. CMER completed Pilot study indicating current electrofishing methods frequently underestimated upstream extent of fish habitat. While an interesting idea, especially for looking at amphibians, it again is not necessary at the landscape scale. The classification of streams by fish and no fish is: 1. Overly simplistic. 2. Not indicative of stream functions or condition, and 3. Not an efficient and effective way to protect those streams. Besides, knowing there was a speck of eDNA of a fish found does not say anything about numbers of fish, populations, or importance of habitat.</p>	<p>eDNA can be used for identifying whether fish are present in a stream but has issues in the context of forest practices unit layout. One large issue with using eDNA to identify the FN break points is the lack of real-time results. As a user is walking the stream how do they know when they have reached the end of fish use?</p>		
Tailed Frogs and Parent Geology	5.2.7.3	LWAG	50	<p>New 75-ft buffer will minimize risk to habitat. This relatively abundant species has low uncertainty that the rules negatively affect the population and the risk to the population is minimal. The Board's newly adopted (2025) Type Np rule substantially lowers risk with full length buffers 50-75ft wide.</p>			
Wood Recruitment Volume and Source Distances from Riparian Buffers	5.2.8.6	RSAG	delayed	51	<p>This will be part of ExMo. So no need for separate study. Wood recruitment from riparian stands as a function of source distance is well defined and has very low risk to the aquatic environment. This study could be incorporated in CMER windthrow study.</p>		
Roads Subbasin-Scale Status & Trends Monitoring	5.6.4.3	Roads	Phase 2 delayed	51	<p>Green last survey in 2008 indicated only 11% of road runoff connected to streams/wetlands; expect with RMAPP that conditions have improved, so little need for survey. Phase 1 was conducted before RMAPPs were completed. Phase 2 is planned post RMAPP fixes.</p>		
Windthrow Frequency, Distribution, and Effects	5.2.6.5	RSAG	delayed	53	<p>Uncertainty based on existing British Columbia research. Risk based on infrequent and spatially limited occurrence. Uncertainty based on previous research, risk harder to assess, and probably really hard to measure and understand (but may be a real concern). Numerous papers on this subject. Uncertainty here is difficult to separate from natural variability from rule-based effects and risk to resource is modest. Episodic LW inputs to streams can improve stream habitat. CMER has plenty of windthrow data from decades of Type F and NP RMAPP studies. We could do a meta-analysis with existing CMER data. This study was the outcome of a TW Policy dispute over the Westside Type N DCF study results where several buffer sites had lots of windthrow. Frequency, distribution, and effects are pretty well known. What is needed is a little more information about susceptibility, and practical methods to minimize any nuisance additions to chronic windthrow - episodic windthrow is largely beyond our abilities.</p>	<p>This project is currently envisioned as a meta-analysis of existing CMER data discussed in the context of the wide body of research available, particularly from BC. It will provide useful input to the WS Type F - Experimental Treatments study scoping and design and potentially other future projects. Planned to do with internal staff and include with BAS for the WS Type F project.</p>	
*Fish Passage	5.7.47		delayed	54	<p>Probably not the best approach for our program. Need more information to evaluate. See above comment.</p>		
Slash in Type N Streams	5.2.6.4	LWAG/RSAG/SAGE	55	<p>Timber harvest slash is transient on the west side and mostly happens where there are no stream buffers. Risk score is likely substantially different between the east and west sides and between coastal and non-coastal regions on the west side. New 75-ft buffer will likely eliminate slash input from harvest, thus risk of not studying is low. east OR rules can lead to slash in Np streams - uncertainty of the science underlying the rule is high but risk to the aquatic environment is low. The Board's newly adopted (2025) Type Np rule with full length buffers 50-75ft wide substantially lowers risk.</p>			
Fish Passage Status & Trends Monitoring	5.7.5.1 & 2	ISAG/Road	delayed	56	<p>RMAPP program includes passage fees, so all passage at roads will be restored. CMER scoped this study, but was not funded. While culverts have been replaced via RMAPPs, their effectiveness in passing fish is currently unknown.</p>		
Westside Type F Exploratory Study - Continued Remote Monitoring Add-on	5.3.7.2b	RSAG	Scoping	57	<p>Uncertainty based on the too short time period that is a weak proxy for weather/climate variability. Low risk is based on the many sample sites indicating relatively strong inferences to non-test sites. Seems like low-hanging fruit if people have questions about buffer integrity through time. As with all extensive monitoring, there are competing types of risk that average to a 3 here - this is not a rule change study, so risk is low and preliminary type F has not shown an issue with buffer effectiveness. However, extensive monitoring used to delay other studies while waiting for data can hurt fish populations on a downward trend if there is an effect, and extensive monitoring trying to create one blanket answer can smooth out data points and overlook where issues are in small regions with specific, unusual conditions. This will be part of ExMo, so no need for separate study. ExMo add-on - long-term variability that can't be associated for the variables measured. (overland sediment delivery, shade, DFC, potential LW recruitment) but might capture variability. The Exploratory Report was limited to ~ 5 years post harvest, so buffer condition/function could substantially change through time like Westside Type N DCF study. Not sure how this will fit in to extensive monitoring especially given there will be fewer Tfx sites. Rather than deferring ranking, I am ranking on what I do know.</p>	<p>Yes, we have proposed implementing this as an add-on to the ExMo studies. However, it will be budgeted and decided upon as an itemized piece, and so providing information on the scientific uncertainty/priority to Policy is important to help them decide whether to fund that add-on. Please rate this project on that basis, not just assume it is a one-deal with the ExMo project.</p>	
Consistency and Accuracy of CMZ Boundary Delineations	5.4.4.3	UPSAG	58	<p>DNR Forest Practices Compliance likely has information on this. Risk is low given CMZ has buffers. DNR's CMZ Board Manual (Section 2) is long and highly technical and assumes practitioners (water typing and riparian layout) will use guidance appropriately, but that's currently unknown. A remote sensing effort could address this with minimal cost.</p>			
Westside Type F Riparian Prescription Monitoring	RSAG	delayed	59	<p>This is actually project 5.3.7.2. Given similarity to FPA findings, Type F study, no need to study. ExMo will provide riparian conditions in relation to core, inner, outer zones. This is not a study in the workplan. CMER Type F Effectiveness Exploratory report indicates that a limited sample of Type F buffers are maintaining key riparian function 5-6 years post harvest. Risk could increase over time so need to continue monitoring field sites.</p>			
Eastside Temperature Nomograph	5.3.5.3	SAGE	Retirement record	60	<p>Not ranking because retirement recommended. good study, no new information necessary. CMER conducted a limited nomograph validation study that recommended a follow up study that was not funded. The temperature nomograph could be further validated, but is currently just being used as a regulatory tool.</p>		