Forest Planning Watershed Pilot Projects Concept Paper

REVISED Public Review Draft

Timber Regulation and Forest Restoration Program

December 2, 2015

Introduction

This concept paper describes potential approaches to conducting planning-watershed-based pilot projects to identify opportunities to increase efficiencies for timber harvest planning and permitting processes and for forest restoration. This is the second draft of a concept paper, and we continue to solicit public input on its suggested approaches. This version has been revised following public input, including at our October 14 public workshop and written comments received.[1] A second public workshop, which will focus on this new draft concept paper, is scheduled for December 15.

The specific substantive areas to be addressed by the pilot projects include:

- Data collection and characterization;
- Identification of information and methods used for cumulative environmental impacts assessment; and
- Identification of restoration opportunities in forested landscapes.

The work will be based primarily on existing information found in timber harvesting plans (THPs), spatial datasets, and reports. The pilot projects will be collaborative, multi-disciplinary efforts, guided by broad-based Pilot Project Working Groups (PPGWs), that provide opportunity for public participation. Pilot projects for these purposes have been reflected in past Assembly bills considered by the California Legislature (e.g., AB 2575, AB 380, AB 875), but none of these bills ultimately became law.

Many of the comments received on the first draft Concept Paper and from the October 14 workshop were related to the scope of the planning watershed pilot projects. Some commenters felt the scope was not clear, others wanted the pilots to address a larger scope, in either substance or spatial scale, or were unclear on where the pilot projects fit into the larger context of work that the Timber Regulation and Forest Restoration (TRFR) Program is undertaking. Some suggested that the first pilot should be as direct, simple, and "real" as possible. The below section on substantive elements attempts to clarify the intended scope of the project. The last section of this concept paper, "Where Do the Planning Watershed Pilot Projects Fit into the Larger Scope of the TRFR Program?," seeks to address the comments regarding larger scales or program context.

A second area of multiple other comments received was related to the composition, establishment, and responsibilities of the PPWG, as well as compensation for PPG

[1] The written comments received are posted to our website: http://resources.ca.gov/forestry/comments/

members. The topic of PPWG composition and function was one of the areas for which we had specifically requested input. This draft of the concept paper provides more details on these matters in the section on “Process and Collaborative Elements.”

A third area of substantial comment was related to selection of the initial planning watershed pilot, which is another area on which we had requested input. TRFR Program staff conducted a geographic information system (GIS) analysis to help further focus this discussion at the December 15 workshop. Selection of the initial pilot watershed is addressed in the section on “Process and Collaborative Elements.”

The TRFR Program will lead the pilot project effort, with major guidance from the PPWGs. By reviewing existing THPs and other information sources in chosen watersheds, the PPWG will develop an understanding how well existing information sources can inform broader thinking about effects on watersheds. The results of the pilot project have the potential to be beneficial for consistent harvest plan preparation and review, as well as for identifying opportunities for restoration. Products resulting from the pilot project are intended to support the development of improved, standardized information for conducting cumulative impact evaluations at the planning watershed scale. The products produced also are intended to allow restoration practitioners and landowners in the pilot watersheds to make progress in selecting and implementing recovery actions such as those from the National Marine Fisheries Service (NMFS) (2012) Central California Coast coho recovery plan and from the state Recovery Strategy for California Coho Salmon (California Department of Fish and Wildlife, 2004). The pilot project products also aim to include information from which restoration opportunities for terrestrial wildlife habitat can be identified. The identified forest restoration opportunities are anticipated to be appropriate for funding through the forest restoration grant programs administered by the Department of Fish and Wildlife, Department of Forestry and Fire Protection (CAL FIRE), and the State and Regional Water Boards, using monies from the TRFR Fund.

Findings from the pilot projects also have the potential to assist other areas of work related to California forests and forest practices. These other areas include:

- The TRFR Program’s development of ecological performance measures for evaluating the effectiveness and efficiency of forest-related regulatory programs in reaching their environmental goals.
- The Board of Forestry and Fire Protection Effectiveness Monitoring Committee’s work to evaluate the effectiveness of the Forest Practice Rules.

Funding and staffing for these pilot projects was provided as a part of the State’s Fiscal Year 2015-16 budget. Up to four pilot projects are anticipated. An initial pilot project will be conducted to develop the approach, followed by the completion of up to three additional pilots in order to refine or revise the approach and test its application in several, differing planning watersheds. The number of pilot projects eventually completed is dependent upon the ability to answer the critical questions identified in this concept paper, the likelihood that the answers to these questions would be enhanced by implementing the pilot project in a different planning watershed, and the cost and resource commitment associated with conducting the projects.

Substantive Elements

Basic approaches for the conduct of these pilot projects include:

- Establishing a collaborative "pilot project working group" (PPWG), composed of stakeholders and natural resource professionals, to guide the work of each pilot project.
- Assigning an interagency interdisciplinary team to assist the PPWG.
- The PPWG, with the assistance of the interagency team, will develop a scope of work for the pilot project, including the types of information to be collected and the products to be produced;
- The interagency interdisciplinary team (composed of Review Team Agency staff) will play a lead role in gathering existing information sources;
- Establishing a minimum standard for information to describe existing watershed conditions (i.e., producing consistent information);
- Using the PPWG and interagency teams to ground truth preliminary office results and determine if there are significant gaps in existing information.

A set of proposed critical questions has been developed to help frame the focus of the pilot projects and is presented below. If needed, scientific experts may be brought into the process.

As noted above, we received a large number of comments on the proposed scope of the first pilot project. We believe that the process will be best served by a more focused, direct, and simple approach for the first pilot project in particular. This focused scope is reflected below.

We also received comments requesting more specifics about what will be done in the pilot projects. We think that we are providing enough specifics in this revised draft to make it clear to the public what is intended for the pilot projects and to guide the work of the PPWG and interagency team. We believe that there needs to be some flexibility for the scope and approach of the pilot projects to evolve as a specific initial planning watershed is selected and the PPWG and the interagency team begin their work. This evolution will be made clear to the public as it occurs through the transparency of and public involvement in the pilot process.

Proposed Critical Questions

Six potential critical questions are proposed for the pilot projects:

1. What criteria and methods can be employed, at the planning watershed scale, to identify restoration needs and priorities for watershed and biological resources based on available information in THPs and other readily available sources?

2. Do past THPs, collated on a planning watershed basis, contain the information needed to guide restoration at the planning watershed scale?

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3. What are the qualitative and quantitative methods presented in THPs to analyze the potential for THPs to create or add to adverse cumulative effects on watershed and biological resources?

4. Are there major gaps in available information, on a planning watershed scale, that would be useful for THP preparation and review, and assessment of cumulative impacts?

5. If there are gaps, what additional information is needed and what data are available?

6. What restoration needs or cumulative impacts can be identified from the planning watershed scale versus needing a different spatial context?

These critical questions provide an initial level of focus and scope for the pilot projects. The work of the PPWG will help to further focus and refine these questions for the specific initial pilot planning watershed. For example, the focus here is on the planning watershed scale, but results may show that this scale of analysis is not always large enough to understand conditions and processes at the planning watershed scale.

Data Collection and Characterization

Data will be collected and collated in standard spatial format for each of the pilot projects. Information sources include past THPs and other available permitting documents (e.g., habitat conservation plans, watershed- or ownership-wide waste discharge requirements, master agreements for timber operations, erosion control plans), the Department of Forestry and Fire Protection's (CAL FIRE) Forest Practice Watershed Mapper and Cal MAPPER geographic information systems (GIS), and other data sources identified in the course of each pilot project. The intent is to bring together and evaluate ***existing*** available data. There is no intent to collect ***new*** data in the field. The spatial information is to be organized by CalWater 2.2 planning watersheds.

With guidance and participation from the PPWG, an interagency team made up of the Review Team agencies (i.e., CAL FIRE, California Geological Survey, Department of Fish and Wildlife, and the Water Boards) will help to assemble and organize existing data in a logical and useful manner and ground truth preliminary office results to identify significant gaps in existing information. The PPWGs, with assistance from the interagency teams, will evaluate information sources and data covering topics such as geology, fisheries, aquatic and terrestrial habitat, hydrology, and the locations of existing restoration projects, but they will **not** conduct formal watershed assessments or cumulative effects analyses.

Of particular interest is collating and evaluating the information provided in THPs in satisfaction of the Forest Practice Rules at 14 CCR 916.4, which require the registered professional forester to (1) examine and map specified conditions of watercourses and lakes and (2) consider these conditions and those measures needed to maintain and restore, to the extent feasible, specified functions and processes within the watercourse and lake protection zone. We will explore how spatial databases can track the

restoration activities that have been completed on planning watersheds, restoration actions that are identified as needed, and when these latter actions are completed. Reporting on these accomplishments on an annual basis would be valuable to the agencies, Board of Forestry and Fire Protection, and the public.

As part of the process, standardized data symbols will be developed for mapping spatial features. The intent is to produce a standardized symbology that could be used in all THPs, related permitting or planning documents, or other harvesting and forest restoration related maps. This standardization could create efficiency for both harvesting plan preparers and reviewers.

All data developed as a part of the pilot projects will be fully available to the public in as transparent a manner as possible. The availability of spatial data and methods of utilizing it (viewing or analyzing) are critical for the landowners and the forestry professionals who work with them, the review team agencies, and interested stakeholders or members of the public. Thus, as a part of the pilot projects, we intend to experiment with an open, online, collaborative GIS such as DataBasin (http://databasin.org/).

The learnings from the pilot project on data collection and characterization will be valuable to the TRFRF Data and Monitoring Working Group, which in turn has an important role in supporting the data and monitoring needs of the Ecological Performance Measures Working Group.[2]

Cumulative Impacts Assessment Information and Assessment Approaches Used

Following an explicit cumulative impacts assessment process can provide the information necessary to identify potential mitigation measures, improve longer term planning, and to help set priorities for restoration (MacDonald, 2000). Improvements in cumulative impacts assessment methodologies have occurred over the past 25 years (MacDonald et al. 2004; Benda et al. 2007). However, the ability to accurately assess cumulative impact is often limited by the lack of data for characterizing the resources of concern (e.g., listed species; TMDL listings), identifying the key cause-and-effect mechanisms affecting these resources, and data on past disturbances that might be driving these impacts (MacDonald, 2000).

Given these considerations, the information developed in the data collection and characterization phase will be reviewed for its utility for filling these types of data gaps. Since many of the problems associated with cumulative impacts assessment also come from poorly defining the spatial scale of analysis (MacDonald, 2000), assessing the appropriateness of the planning watershed scale for restoration needs analysis also will be a focus of the pilot projects.

Pilot projects could inform processes for the assessment of cumulative impacts, and may result in long-term efficiencies and cost savings to landowners and reviewing agencies, provide meaningful information to the public, and help to ensure the protection and restoration of soil, water, fish, wildlife, timber, and other forest values and

[2] Charters for these two Working Groups are available on our Program website (http://resources.ca.gov/forestry/) under "Organizing to do our Work."

resources. The pilot projects will focus on specific information necessary for evaluating cumulative impacts, developing and recommending standardized requirements for the information, ensuring the information is developed at relevant spatial scales (with consideration of CalWater planning watersheds in particular), and exploring ways to provide electronic public access to the documents and spatial information that assist CAL FIRE, other review team agencies, and public stakeholders in the cumulative impacts assessment. These approaches also mesh with the responsibilities of the TRFRF Program's Data and Monitoring Working Group.

As THPs are reviewed, the interagency team will work with the PPWG to catalog the cumulative effects assessment approaches that are used.

Identification of Restoration Opportunities

To define "restoration" in the context of the pilot projects, we borrow from the Society for Ecological Restoration: "Ecological restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed."[3]

As with cumulative impact assessment, effective restoration planning benefits from following an explicit process that focuses on the causes rather than symptoms of resource degradation (Beechie and Bolton, 1999; Beechie et al., 2008). Effectively implementing this kind of approach to restoration can be data intensive (Beechie and Bolton, 1999), and oftentimes data can be a limiting factor during restoration prioritization (Beechie et al., 2008; Palmer et al., 2007). Additionally, the THP process focuses on Forest Practice Rule and California Environmental Quality Act compliance, rather than finding the root causes of ecosystem degradation. Given this context, it will be necessary to determine if THP information collected for a different objective (i.e., compliance with statute) is of sufficient quality and resolution to drive restoration prioritization and decision-making.

Since a fundamental principle of restoration is to "match the scale of restoration to the scale of the problem" (Beechie et al., 2010), the pilot projects will also assess whether or when the planning watershed is an appropriate scale of analysis for informing restoration planning and prioritization. This information can then be used to inform the development of projects for restoration grant programs and/or for incorporation into future THPs. Restoration grant programs that may be able to provide assistance include the Department of Fish and Wildlife's Fisheries Restoration Grant Program, the State Water Board's 319h grant program, and CAL FIRE's California Forest Improvement Program. All of these programs receive funding from the Timber Regulation and Forest Restoration Fund and other sources.

The information developed in the first two substantive phases of the pilot projects (data assembly and data characterization, and cumulative impacts assessment information) will be used in conjunction with resources such as the federal and state recovery plans for listed fish and wildlife, California Salmon Snapshots, State Wildlife Action Plan, knowledgeable agency staff, and restorationists to identify environmental impacts, their causes, and specific, appropriate restoration actions for a given planning watershed.

[3] http://www.ser.org/resources/resources-detail-view/ser-international-primer-on-ecological-restoration#3

When identifying appropriate restoration actions, it is important to make the distinction between restoration and mitigation. This is particularly important given that Assembly Bill 1492 specified that Timber Regulation and Forest Restoration Funds may not be uses to pay or reimburse requirements, including mitigation, as a condition of any permit [Public Resources Code § 4629.8(b)]. With respect to salmonid and steelhead trout restoration the state policy has been to encourage public participation in publically funded mitigation, restoration, and enhancement programs [Fish and Game Code § 6902 (b)] (Flosi, G. et al, 2010). In addition, when a person with a working forest management plan or a nonindustrial timber management plan applies for state restoration grant funding for a restoration project that has a significant public benefit, the application shall not be summarily denied on the basis that the project is a required condition of the harvesting plan (Public Resource Code § 4597.19).

Process and Collaborative Elements

Overall Process

This concept paper is intended to be an initial step in the process of developing and implementing the pilot projects. Public participation/input will be accomplished during the pilot project process through the PPWG and through collaboration with landowners and relevant stakeholders, including environmental organizations, nongovernmental organizations, federal agencies, timber industry representatives, and restoration practitioners. This public input and the PPWG will guide the development of the specific objectives of each pilot project, guide their implementation, help interpret the results, and develop the recommendations that come out of the process. An interagency interdisciplinary team assigned to the planning watershed also will assist with this. Additional guidance of the process may be provided by the soon-to-be-established TRFR Program Advisory Committee.

The attached Figure 1 shows a flow chart for major steps in the overall pilot project process. The first major step, the TRFR Program inviting forest landowners and the public to attend a public meeting on the pilot project concept, was held on October 14, 2015. At that meeting, which was webcast and recorded, we received input on the overall pilot project concept, development of an objective process for selection of the pilot projects, and what the composition should be of the Pilot Project Working Group (PPWG) that will be formed for each pilot project. Following this initial public workshop, we updated this draft concept paper. This latest draft again will be discussed at a December 15 public workshop, leading to the TRFR Program developing the final pilot project description document that will be used to guide the implementation of the first pilot project.

Selection of the Initial Planning Watershed Pilot

There are many potential criteria or processes that could be applied to select the planning watershed for the initial pilot project. At the outset, the TRFR Program decided to establish the initial pilot project in the North Coast region, given the level of interest there and the presence of a number of listed species on forest lands. The TRFR

Program specifically requested input from stakeholders on the selection process. Their suggested selection criteria include:

- Watersheds with recent harvest activity or other recent data sources so that we are not working with stale data.
- Watersheds with more THP frequency provide more information and better picture of current conditions.
- Listed species are present
- Recovering vs. highly impacted watershed.
- Supportive landowners; willingness to provide access to agencies, PPWG, and public.
- Moderate to high level of data available.
- Select a watershed with an average amount of data.
- Data-rich watersheds with more than just THP data available to avoid skewing results to only that source.
- Availability of monitoring data and scientific studies.
- Good potential to restore conditions for aquatic and terrestrial species.
- Consider doing two pilots to start, with different conditions in each.
- A watershed with multiple landowners will capture different practices and results.
- Need a reference watershed as companion to pilot watershed.

The TRFR Program used a GIS analysis approach to begin the planning watershed selection process. We selected the North Coast as the region for the first pilot project due to the level of interest in that area and the presence of several listed species. Using GIS, staff intersected Coastal CalWater Hydrologic Areas from Humboldt Bay (Eureka Plain) south through the Gualala watershed with CAL FIRE's Forest Practice GIS data representing timber harvesting (1997-present). This primary round of analysis resulted in the selection of 16 individual Hydrologic Areas, which included 68 individual planning watersheds.

Program staff then crafted a preliminary set of criteria in order to be able to compare differences among watersheds being considered for selection in the pilot project. The criteria and results were listed in a spreadsheet, allowing a side-by-side comparison of potential watershed candidates. The criteria categories are intended to provide a way to compare attributes of the watersheds and enable a way to reduce the large number of planning watersheds to a smaller subset that contain preferred qualities that the public has commented on or that the TRFR Program staff have identified. The criteria also provide a preliminary understanding about the types and availability of watershed data that will likely be expanded upon during a pilot project study.

The planning watershed attributes considered include the rate and area of timber harvest in a planning watershed, the silvicultural methods used for those entries, the amount and complexity of available scientific data, the amount of available imagery, and the occurrence of threatened and endangered species. This compilation was not an attempt to be exhaustive in identifying potential watershed attributes, but rather to flesh out a number of significant, relevant categories to foster discussion.

A secondary round of analysis that included a review of the silviculture and landownership pattern resulted in a list of 29 potential planning watersheds. A further review of each planning watershed and its actual topography ruled out those that were not logically delimited planning watersheds. A visual assessment of locations further reduced the number to a target number of 10 planning watersheds. The resulting list of watersheds and a subset of the evaluation criteria are presented in Table 1 at the end of the document. The full spreadsheet of information, a glossary of the information categories contained in the spreadsheet, and a set of maps is available on the TRFRF Program Website at http://resources.ca.gov/forestry/.

As a next step in selecting the initial planning watershed, we request that the public provide input on the short list in writing or at the December 15 public workshop. While a pilot project watershed has not yet been selected, we provide a hypothetical example in the appendix.

Pilot Project Working Group

Membership The specific composition of the PPWG will be tailored to the planning watershed that is eventually selected, with adjustments made by the Timber Regulation and Forest Restoration Program in consultation with interested stakeholders. The proposed composition, based on nine categories of members, is similar to that proposed in AB 875 (Chesbro, 2013), with the addition of categories for persons owning or managing forestland on the pilot watershed and tribal representatives. Some individual appointees may fit under more than one category. The intent is to provide a balanced of representation on the PPWG. The proposed membership categories are:

1. Up to two representatives each from (a) Department of Forestry and Fire Protection, (b) Department of Fish and Wildlife, (c) state or regional Water Boards, and (d) California Geological Survey. To the extent feasible, each agency shall have representatives who, collectively, have expertise in the sciences and art of environmental assessment and the collection and organization of data.
2. If available, up to two qualified representatives from federal agencies involved in forestry issues.
3. Up to two qualified representatives from the environmental community.
4. Up to two qualified representatives from the timber industry.
5. Up to two registered professional foresters, one of whom shall have experience with preparing harvest plans for landowners who are not primarily engaged in the manufacture of forest products.
6. Two scientists, including, but not limited to, qualified fisheries and wildlife biologists.
7. Up to two individuals from the watershed restoration practitioner community.
8. Two persons who own or manage forestland on the pilot project planning watershed.
9. Up to two tribal representatives with a background in tribal and traditional ecological knowledge, forest management, or restoration.

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Once a specific pilot planning watershed is selected, the TRFR Program will solicit member nominations and applications. Selection and appointment of members will be made by the California Natural Resources Agency Assistant Secretary of Forest Resources Management. Members will be appointed for the duration of the life of the pilot project, which is estimated to be approximately 24 months.

Financial Considerations PPWG members may request reimbursement for their actual and necessary expenses incurred in the performance of official business related to the pilot projects, such as travel to attend PPWG meetings. Reimbursement of expenses will be handled by the CNRA in accordance with State reimbursement policies and procedures.

As requested by a number of commenters, the TRFR Program is looking into the possibility of providing PPWG members some compensation for their participation. The feasibility of providing compensation is uncertain at this point.

PPWG Meeting Processes The following processes will be followed for PPWG meetings:

- All meetings of the PPWG will be publicly noticed in advance and members of the public will be welcomed to attend and provided opportunities to make comments.
- To the extent technologically practicable, all PPWG meetings will be webcast.
- PPWG members will use a consensus process to do their work and to make their findings and recommendations. These will be recorded in writing and posted to the Timber Regulation and Forest Restoration Program website.
- If needed, a professional meeting facilitator will be provided by the CNRA.

Additional participation and input opportunities will be provided to the public, as indicated in the pilot project process flow chart in Figure 1.

Expert Consultant Support for the PPWG If the need is identified for specific expertise to assist the PPWG in its work, and that expertise is not otherwise available through agency staff or members of the PPWG, the TRFR Program will attempt to provide this support through resources available at CNRA.

Next Steps

Following the December 15 workshop and close of comment, the TRFR Program will then complete preparation of the final concept paper, finalize the selection of the initial pilot project planning watershed, conduct and complete the process for the establishment of the PPWG, and designate the interagency interdisciplinary team. Then the implementation of the initial pilot will begin. Some period into the implementation of the pilot projects, the TRFR Program will hold a mid-implementation public workshop, at which the PPWG will report out and take public comment on its progress to date. When the PPWG completes its work, it will prepare a draft report of findings, conclusions, and recommendations, including information regarding needed restoration projects on the planning watershed. The draft report will be discussed at a public workshop, comments will be collected, and a final report prepared by the PPWG.

The TRFR Program—including the Leadership Team and the Data and Monitoring Working Groups—will then be responsible for taking the reports of each of the pilot projects and integrating their lessons on efficiencies in data, analysis, restoration, and adaptive management. The Program will then take steps to implement these lessons.

Implementing Lessons from the Pilot Projects

The organized datasets developed as a part of the pilot projects will be made available to stakeholders to (1) improve cumulative impacts assessment for harvesting plans developed in a given planning watershed, (2) inform limiting factors analysis for listed anadromous salmonids and terrestrial wildlife species, (3) quickly and efficiently identify needs and opportunities for restoration, (4) provide a common base set of information for use in future THPs within a given planning watershed, and (5) promote cost-effective and meaningful monitoring strategies. Collaborative approaches have a higher likelihood of success, since several interagency team efforts have proven successful in the past, including the 208 BMP assessment (SWRCB 1987), the Interagency Mitigation Monitoring Project (IMMP) (Longstreth et al. 2008), and the Battle Creek rapid assessment (Battle Creek Task Force 2011).

Project Reporting

Information from the initial pilot project will be summarized in a comprehensive report and compared to future pilot projects in other areas of the State. Summary reports will be expected to include GIS-based spatial information, tables, spreadsheets, plots, figures, maps, etc., possibly using DataBasin as a mapping and analysis platform for recording and presenting standardized information. The findings from the pilot projects will provide further information on the types and robustness of existing available information in forested watersheds, and will be used to develop recommendations to the Board of Forestry and Fire Protection for approaches to standardizing THP data characterization and changes to the cumulative impacts assessment informational requirements. These changes are intended to improve efficiencies in plan preparation and review, reduce future costs for landowners and reviewing agencies, provide improved transparency in the plan review process, and further refine methods of data/information presentation and cumulative impacts assessment in forested watersheds.

We will report to the Legislature on the pilot projects through our regular annual reporting process for the AB 1492 Program.

Where Do the Planning Watershed Pilot Projects Fit Into the Larger Scope of the TRFR Program?

Many of the comments received on the first draft of the Concept Paper and the October 14 public workshop related to the scope of the pilot projects or the TRFR Program more broadly. For example, there were numerous comments suggesting that the pilot projects address a broader scope to more fully embrace matters such as ecological performance measures, large-scale watershed assessments, or development of major new approaches to cumulative effects assessment.

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As described above, the scope of the planning watershed pilots is intentionally limited in order to take a detailed look at a limited set of specific issues on a small enough piece of ground that a deep level of understanding can be constructed. Figure 2 attempts to conceptually place the planning watershed pilots in a larger assessment and policy context. The intent here is to show how the planning watershed pilots fit in with other work that is being done by the TRFR Program or others. Figure 2 is intended as a conceptual piece on levels of environmental performance measurement and is not intended to be rigorous in terms of scales or hierarchies of analysis, administrative or legal processes, or policies.

Figure 2 places individual timber harvesting plans (a process managed by the State review team agencies) at the bottom of the figure, building up toward larger-scale, more general environmental performance measures at the top (the California Environmental Goals and Policy Report, which is developed by the Governor's Office of Planning and Research). In between are the process for studying the effectiveness of the Forest Practice Rules (led by the Board of Forestry and Fire Protection's Effectiveness monitoring Committee); small scale assessments to ecoregion or watershed assessments (where the planning watershed pilots fall; with the TRFR Program the lead); broad sectorial plans or assessments such as the State Wildlife Action Plan (Department of Fish and Wildlife), Forest and Range Assessment (CAL FIRE); and high-level sustainability indicators, such as those developed by the California Biodiversity Council. The heavy, bi-directional arrows emphasize the importance of information and analytical connectivity across the scales of hierarchies of analysis or policy. The heavy dotted line indicates levels or scales of analysis that encompass ecosystem functions; hence these scales are where ecosystem performance potentially can be measured or evaluated. The overall zone of concern for the TRFR Program is defined by the heavy dashed line.

The shaded bubble in Figure 2 is indicative of the primary scope of ecological performance measures that TRFR Program Ecological Performance Measures Working Group will be addressing. The Data and Monitoring Working Group will be addressing environmental data and monitoring across the scope represented by the "zone of concern for TRFR Program in Figure 2, as well as examining how linkages can be made with the higher levels shown in the figure. While development of ecological performance measures is not an explicit component of the pilot project, we anticipate that what we learn from the pilot project will help the Ecological Performance Measures Working Group in their work.

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References

Battle Creek Task Force. 2011. A rapid assessment of sediment delivery from clearcut timber harvest activities in the Battle Creek Watershed, Shasta and Tehama Counties, California. Final report prepared for the California Resources Agency by the Department of Forestry and Fire Protection, Department of Fish and Wildlife, State and Regional Water Quality Control Boards, and the California Geological Survey of the Department of Conservation. Sacramento, CA. 59 p.

Beechie, T., and S. Bolton. 1999. An approach to restoring salmonid habitat-forming processes in Pacific Northwest watersheds. Fisheries. *24*(4): 6-15.

Beechie, T., G. Pess, P. Roni, and G. Giannico. 2008. Setting river restoration priorities: a review of approaches and a general protocol for identifying and prioritizing actions. North American Journal of Fisheries Management. *28*(3): 891-905.

Beechie, T. J., D.A. Sear, J.D. Olden, G.R. Pess, J.M. Buffington, H. Moir, P. Roni, and M.M. Pollock. 2010. Process-based principles for restoring river ecosystems. BioScience. *60*(3): 209-222.

Benda, L., D. Miller, K. Andras, P. Bigelow, G. Reeves, and D. Michael. 2007. NetMap: a new tool in support of watershed science and resource management. Forest Science, *53*(2): 206-219.

California Department of Fish and Wildlife. 2004. Recovery Strategy for California Coho Salmon. Species Recovery Strategy 2004-1. February 2004. Prepared for California Fish and Game Commission. Sacramento, CA. 594 p.

Flosi, G., Downie, S., Hopelain, J., Bird, M., Coey, R., Collins, B. 2010. California Salmonid Stream Habitat Restoration Manual. 4th ed. State of California. The Resources Agency, California Department of Fish and Game Wildlife Fisheries Division.

Longstreth, D., A. Lukacic, J. Croteau, A. Wilson, D. Hall, P. Cafferata, and S. Cunningham. 2008. Interagency Mitigation Monitoring Program pilot project final report. California Resources Agency, California Environmental Protection Agency, Central Valley Regional Water Quality Control Board, North Coast Regional Water Quality Control Board, California Department of Fish and Game, California Department of Forestry and Fire Protection, California Geological Survey. Sacramento, CA. 38 p. plus Appendices.

MacDonald, L. H. 2000. Evaluating and managing cumulative effects: process and constraints. Environmental management. *26*(3): 299-315.

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MacDonald, L. H., D.B. Coe, and S.E. Litschert. 2004. Assessing cumulative watershed effects in the central Sierra Nevada: hillslope measurements and catchment-scale modeling. pp 149-157. In: Murphy, D. D. and P. A. Stine, Editors. 2004. Proceedings of the Sierra Nevada Science Symposium; 2002 October 7-10; Kings Beach, CA; Gen. Tech. Rep. PSW_GTR-193. Albany, CA. Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture; 287 p.

NMFS (National Marine Fisheries Service). 2012. Final recovery plan for central California coast coho salmon Evolutionary Significant Unit. National Marine Fisheries Service, Southwest Region. Santa Rosa, CA.

Palmer, M., J.D. Allan, J. Meyer, E.S. Bernhardt. 2007. River restoration in the twenty-first century: Data and experiential knowledge to inform future efforts. Restoration Ecology Vol. *15(3)*: 472–481.

State Water Resources Control Board (SWRCB). 1987. Final report of the Forest Practice Rules assessment team to the State Water Resources Control Board (the “208 Report”). Sacramento, CA. 200 p.

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Table 1. Subset of Criteria for Selection of the Initial Planning Watershed Pilot Project.

Calwater 2.2 Classification					*Timber Harvesting 1997-2015*			*Primary Timberland Owners*
Hydrologic Area	**Hydrologic Sub Area**	**PWS Name**	**PWS Number**	**PWS Acres**	**THP Acres Approved for Harvesting 1997-2015**	**# of THPs 1997-2015**	**% of PWS (includes re-entry)**	
Van Duzen	Bridgeville	Stevens Creek	1111.220603	4,963	2,848.7	37	57.4%	Green Diamond Industries, Humboldt Redwood Co, Sierra Pacific Industries
Rockport	Usal Creek	Upper Usal Creek	1113.110102	10,611	1,681.5	15	15.8%	Usal Redwood Forest
Rockport	Ten Mile	Booth Gulch	1113.130201	3,260	2,683.4	23	82.3%	Humboldt Redwood Co
Rockport	Ten Mile	Campbell Creek	1113.130303	7,904	4,291.4	29	54.3%	Humboldt Redwood Co
Rockport	Ten Mile	Upper South Fork Ten Mile River	1113.130304	5,239	3,900.5	34	74.5%	Humboldt Redwood Co
Big River	Big River	Two Log Creek	1113.300406	11,432	8,180.1	59	71.6%	Mendocino Redwood Co, Humboldt Redwood Co, Conservation Fund, Jackson Demonstration State Forest, Soper
Albion River	Albion River	Middle Albion River	1113.400001	4,878	3,629.6	33	74.4%	Mendocino Redwood Co
Albion River	Albion River	Upper Albion River	1113.400006	8,739	3,213.9	45	36.8%	Mendocino Redwood Co, Soper, Conservation Fund, Small Landowners
Gualala River	North Fork	Robinson Creek	1113.810002	8,793	2,607.4	23	29.7%	Gualala Redwood Timber, Conservation Fund
Gualala River	Rockpile Creek	Lower Rockpile Creek	1113.820003	2947	471.9	6	16.0%	Gualala Redwood Timber

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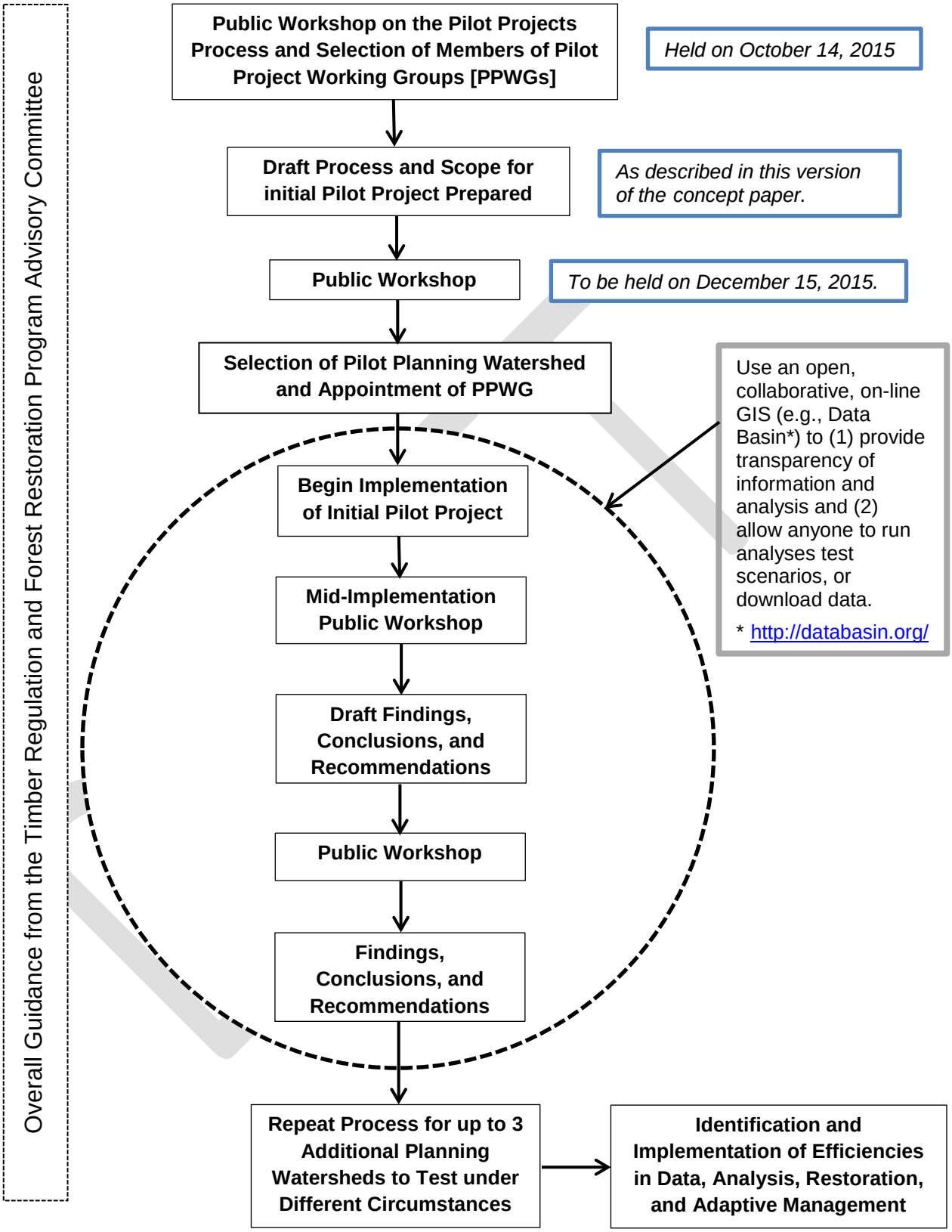

Figure 1. Flow Chart for Pilot Projects Process.

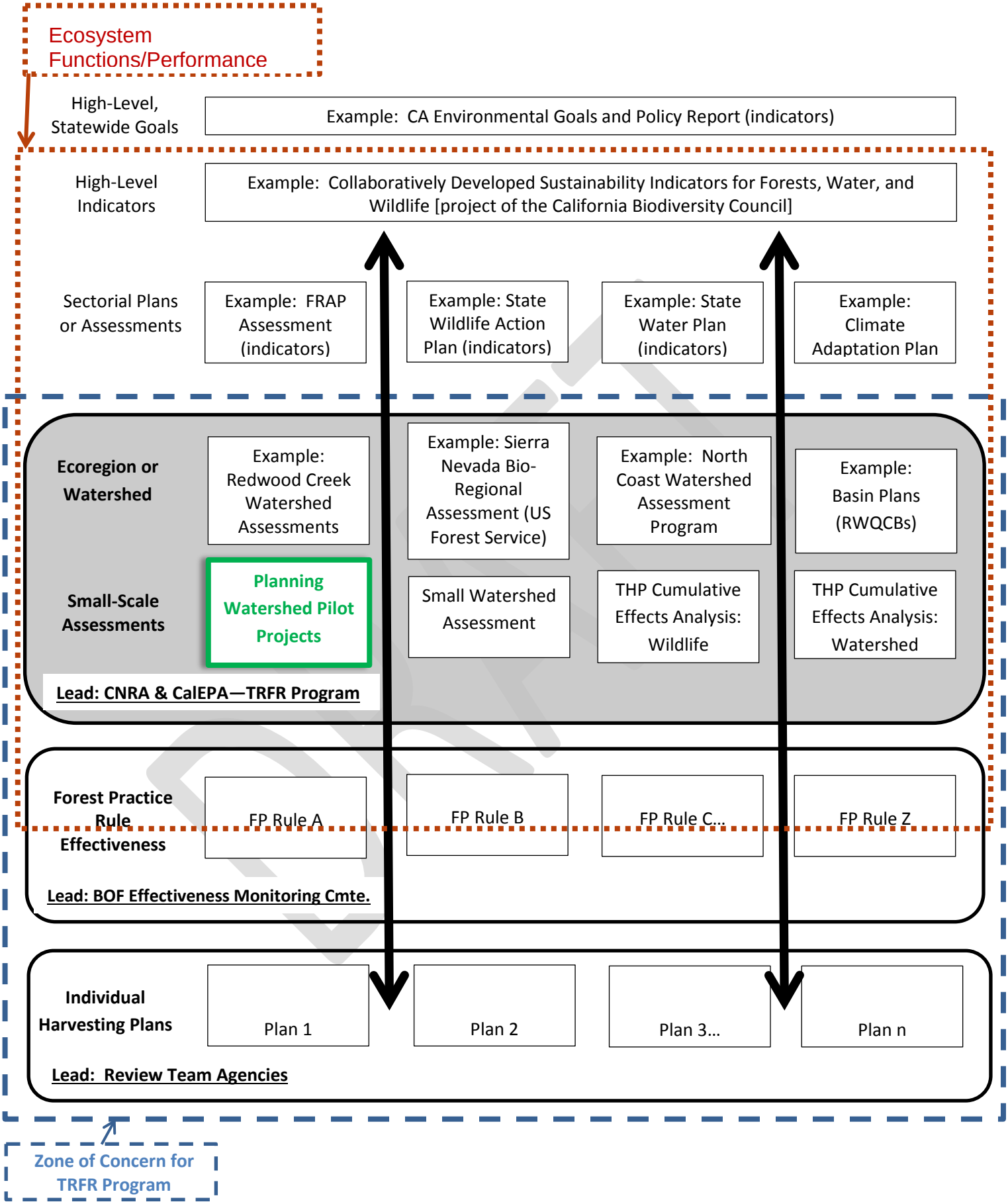

Figure 2. Conceptualizing Levels of Environmental Performance Measurement for AB 1492.

Appendix

Potential Pilot Project Example

While no pilot project watersheds have been selected, nor has a selection process been developed, we provide a hypothetical example here. Of course, for any pilot project, landowner support and participation is critical. We illustrate how a pilot project could be beneficial to a landowner with a hypothetical pilot project in either the Upper or Lower Usal Creek planning watersheds, located along the Mendocino Coast (Figures A-1 and A-2). We suggest that this type of pilot project can be beneficial to the Redwood Forest Foundation, Inc. (RFFI) in preparing future harvesting plans in these planning watersheds, in submitting grant applications for restoration work (e.g., to the Department of Fish and Wildlife's Fisheries Restoration Grant Program), and for submitting site-specific riparian management proposals (such as was done as part of the recent Campbell Global Mill-Smith THP).

While the Usal Creek planning watersheds are used as an example, it is envisioned that up to four pilot projects will be undertaken—two in the Coast Ranges (Coast Forest Practice District), one in the Northern Sierra Nevada/Cascade Range (Northern Forest Practice District), and one in the central or southern Sierra Nevada (Southern Forest Practice District). At least some of these pilot projects will be in mixed (primarily private) ownership planning watersheds, and all will have had at least a moderate amount of timber harvesting conducted in the past 10-15 years.

Several existing sources of information are available for the Usal Creek planning watersheds, including (1) NMFS (2012) CCC Coho Recovery Plan Volume II, Usal Creek, (2) Campbell Global's North Fork Usal Creek Instream Habitat Enhancement Project Grant Proposal, (3) TNC's California Salmon Snapshots website for Usal Creek, (4) DFW's 2006 Stream Inventory Report for Usal Creek, (5) CAL FIRE's Watershed Mapper timber harvesting plan information (Figure A-3), (6) CAL FIRE's digital THP library available on the internet, (7) existing sets of aerial photographs and Google Earth imagery, (8) NetMap coverage, (9) THP 1-14-140 MEN and the CGS Engineering Geology Report for this plan, (10) Kelly 1984 Geology and Geomorphic Features Related to Landsliding, Hales Grove 7/5' Quadrangle, Kelly 1984 Geology and Geomorphic Features Related to Landsliding, Piercy 7/5' Quadrangle, (11) RFFI's Forest Management Template, (12) information included in past THPs for the requirements of 14 CCR § 916.4(a)(1), and (13) historic photos (Figures A-4 and A-5). Also, publicly available LiDAR covers the upper portions of the Upper Usal Creek Planning watershed (headwaters of Bear Creek and Chimney Rock Creek).Similar types of information and data are expected to be available for numerous planning watersheds located in the northern California Coast Ranges, but areas outside this area will generally have less information available. The PPWG will supply the organized datasets to the landowner/manager (Campbell Global in this case) to evaluate its usefulness to facilitate restoration work and improve cumulative impacts assessment in future plans.

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Figure A-1. Map of the Usal Redwood Forest, located in coastal Mendocino County.

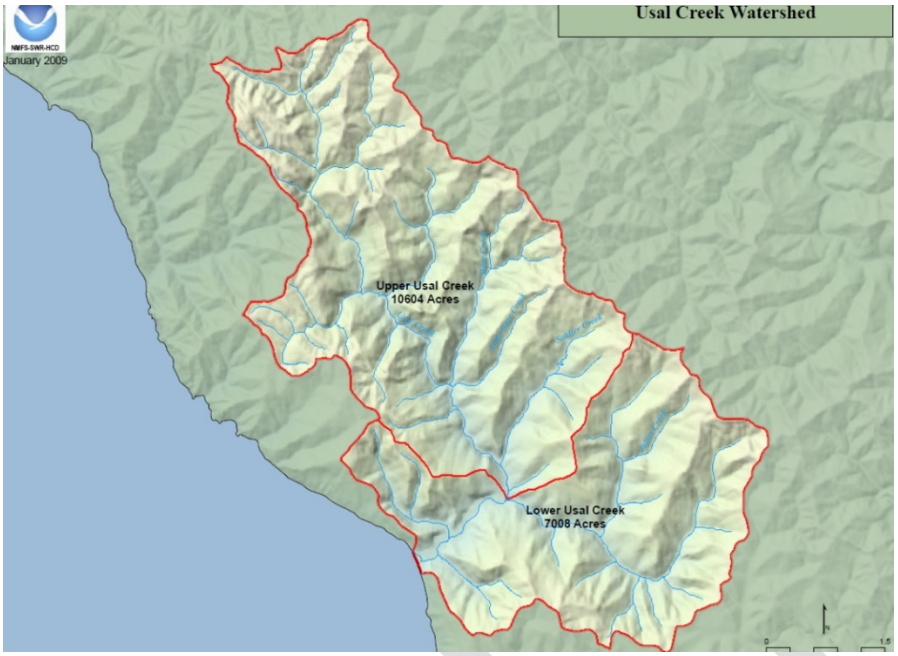

Figure A-2. Map of the Upper Usal Creek and Lower Usal Creek planning watersheds.

Figure A-3. Map of the two planning watershed with harvest history from CAL FIRE's Watershed Mapper.

Figure A-4. The Usal Creek watershed in 1977 (R. Gienger photo).

Figure A-5. The Usal Creek watershed in 1980 (R. Gienger/DFW photo).