

Section 3

Data Collection Process

3.1 TECHNICAL MANAGEMENT TEAM

This Overview Report and the background information for the Secretarial Determination were developed by scientists and engineers from Federal agencies working within the Department of the Interior (DOI), the Department of Commerce (DOC), the Department of Agriculture, and the Environmental Protection Agency (USEPA). These agencies worked collaboratively with state agencies from California and Oregon through nine sub-teams covering broad topical areas of the Secretarial Determination process. The sub-teams developed and carried out scientific, engineering, and other technical studies to fill data gaps and to address the four primary questions identified in the KHSA (as presented in Section 1, *Introduction*). The sidebar shows a listing of the agencies responsible for undertaking and participating in these studies. A technical management team (TMT), composed of a U.S Geological Survey (USGS) program manager, project managers from Bureau of Reclamation (Reclamation) and U.S. Fish and Wildlife Service (USFWS), and the leads and co-leads of each sub-team, managed the overall process for collecting and synthesizing information for the Secretarial Determination. The TMT evaluated the quality of these investigations and final work products of the Secretarial Determination process. The TMT and the nine sub-teams conferred regularly throughout the process to assess existing information, develop new information, and apply this information to the Secretarial Determination process. The nine sub-teams are as follows:

- Economic
- Engineering, Geomorphology, & Constructability
- Environmental Compliance
- Biological
- Water Quality
- Tribal/Cultural
- Real Estate
- Recreation
- Communications

Agencies Supporting Studies for the Secretarial Determination

The following Federal and state agencies worked collaboratively under a technical management team (TMT) in synthesizing existing information and developing new information to inform the Secretary of the Interior on the four questions related to dam removal.

Department of the Interior

- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Reclamation
- U.S. Fish and Wildlife Service
- U.S. Geological Survey

Department of Commerce

- National Oceanic and Atmospheric Administration Fisheries Service

Department of Agriculture

- U.S. Forest Service

U.S. Environmental Protection Agency

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Agencies Supporting Studies for the Secretarial Determination (cont.)

State of California

- California Department of Fish and Game
- North Coast Regional Water Quality Control Board

State of Oregon

- Oregon Department of Environmental Quality
- Oregon Department of Fish and Wildlife
- Oregon Water Resources Department

Appendix I of the KHSa outlines six “key discipline areas that need study and analysis for the Secretarial Determination”. The discipline areas drove the creation of the above sub-teams, to ensure the six discipline areas received adequate attention and review during the Secretarial Determination process. The six areas are as follows:

- Engineering
- Sediment Composition, Fate, and Transport
- Water Quality
- Fisheries
- Economics
- Liability and Risk Management

Appendix I of the KHSa states that the Secretarial Determination study effort should concentrate on these six areas, but if other disciplines are identified during the process, they may be included. Recreation, Real Estate, and Tribal/Cultural were added as sub-teams to ensure these areas were addressed in detail. Liability and risk management issues were addressed by each of the sub-teams, as needed.

The multi-agency TMT brought a broad base of technical experience and expertise to the effort, and worked collaboratively with stakeholders and the public to identify critical information needs, design studies, and avoid duplication of effort with ongoing or completed work by other agencies or entities. As needed, the TMT or individual sub-teams engaged contractors and outside scientists and engineers to obtain individual technical input concerning ongoing studies for the Secretarial Determination. Members of the TMT were invited to a broad range of public and stakeholder meetings to provide updates on the Secretarial Determination process and receive valuable input from individual stakeholders regarding the science process.

The majority of new studies and reports (presented in Section 3.3) underwent peer review consistent with the developing agency’s peer-review policy, the Office of Management and Budget’s (OMB’s) *Final Information Quality Bulletin for Peer Review* (OMB 2004) and the March 2009 White House Memorandum on “Scientific Integrity.” The peer review process and the guiding documents are discussed in Section 3.2.1.2.

The Klamath Basin has been studied extensively for many years, and there were existing scientific reports that were potentially important to the Secretarial Determination process that had not previously undergone outside review. The TMT identified some important studies/reports (such as Stillwater 2009) and obtained an independent review to ensure that these important documents met agency standards for technical quality. This process was intended to critique existing documents and identify any limitations (PBS&J 2010) so they could be used appropriately in the Secretarial Determination process.

3.2 GUIDANCE ON SCIENTIFIC INTEGRITY AND REVIEW PROCESS

Dedication to high quality research and reliable results is an important part of the Secretarial Determination process. The focus on quality research and results was essential to meet the Federal guidelines for scientific integrity articulated in the White House Memorandum on Scientific Integrity (White House Memorandum 2009) as well as to follow the peer review requirements for individual Federal agencies and OMB's 2004 Bulletin on Peer Review (OMB 2004). In addition, the review process complies with the DOI's 2011 Policy on Scientific Integrity and satisfies the requirements for the science process in Appendix I and J of the KHSA.

The KHSA defines the scientific process for the Secretarial Determination as the "essential technical studies undertaken that will support the Secretarial Determination..." The process seeks to make "reasonable, objective, accurate, technically appropriate use of data and analysis, including existing work, and not advocate or otherwise limit the analyses and conclusions of the studies to fit a predetermined outcome. The studies developed or used, or the process used to review existing studies, will be conducted in accordance with the White House Memorandum." The KHSA (Appendix J) also states "that all new studies and analyses undertaken, or any existing data sets or studies relied upon in whole or in part, shall be of high technical quality, scientifically defensible, and of sufficient depth and scope to support fully informed decision-making by the Secretary".

The following sections describe the scientific review processes used during the Secretarial Determination process.

3.2.1 Scientific Review

To meet the standards of the KHSA, the TMT determined that the existing and new scientific information on fish populations in the Klamath Basin should be reviewed and evaluated by independent expert panels of scientists not currently involved with studies in the Klamath Basin. The purpose of the expert panels was to provide another expert review, independent of the Federal scientists, as to whether dam removal and KBRA would advance the restoration of salmonid fisheries and other fish populations. The TMT's goal for the expert panels was that they consist of independent reviewers, be transparent, add to the body of information for decision-making, open the process up to participation by a broad range of scientists and the public, and provide accessible synthesis reports of existing information.

The Secretarial Determination process developed a number of new studies that underwent peer review as specified by each agency. This Overview Report also underwent peer review under the OMB definition as a Highly Influential Scientific Assessment. Both of these peer review processes are further discussed below.

3.2.1.1 Fish Expert Panels

The independent consulting firm of Atkins (formerly PBS&J), was contracted by the USFWS to assemble four groups of experts to evaluate the potential effects of two management scenarios on four groups of anadromous and resident fish species native to the Klamath Basin. The expert panels were asked to review the existing data and to provide an independent analysis of the conditions in the basin and the likely outcome of two management scenarios. The two management scenarios analyzed were 1) dams in and no change from current management, laws, and regulations; and 2) dams out and full implementation of the KBRA. The panel's reviews were captured in four expert panel reports on the following four groups of native fish:

1. Chinook salmon (Goodman et al. 2011)
2. Coho salmon and steelhead (Dunne et al. 2011)
3. Lamprey species (Close et al. 2010)
4. Resident trout and other resident fish (Buchanan et al. 2011)

Atkins was responsible for managing the screening and selection process for the panelists, facilitating their deliberation process, ensuring that the panelists and their work products were not biased, and assisting with the preparation of their final reports. Editorial control of each final report was retained by the expert panels and Atkins to ensure an independent review and to increase the public's confidence in the objectivity and outcome of the process.

Atkins identified almost 60 potential expert panelists, with the goal of four to six experts per panel. These panelists had no working relationship with Atkins prior to the screening process. The panels contained a hydrologist, fish ecologists, population modelers, and experts on the biology of the fish species being reviewed by the panel. In addition to being experts in the field, each of the panelists also had to be able to meet the timeframe of the review process, provide review that was both credible and independent, and be free from potential or perceived conflicts of interest.

There is a large amount of existing research on the Klamath Basin that describes the physical characteristics of the basin, including water quality, temperature, geomorphology, and tributary conditions. The challenge before the panels was to evaluate the existing information and provide logical potential outcomes of the two management scenarios based on their knowledge of the species and their experience and knowledge of other river systems.

The panels did not re-examine original data or re-do analyses conducted by other researchers. The panelist assessed and interpreted the reliability and relevance of the technical information provided, evaluated its relevance to the target species, and estimated the impacts of the two management scenarios. To assist the panels, Atkins held public meetings where scientists and engineers with knowledge of the Klamath Basin could present their scientific views and findings and be available for questioning by the panels to help in their deliberations.

Each panelist was responsible for specific sections for the panel's report. The panel reviewed the individual sections and prepared a draft final report from the individually crafted sections. The draft final reports were submitted to a review panel that provided feedback and suggestions on language, coverage, and analysis to the expert panels. The panelists then responded to these comments and made changes to the draft reports, as appropriate. Each draft expert panel report was made publicly available for written comments that were then considered by the panel before finalizing their reports. All comments on the reports, and all comment responses by the panels, are included in the final reports to maximize the transparency of the process.

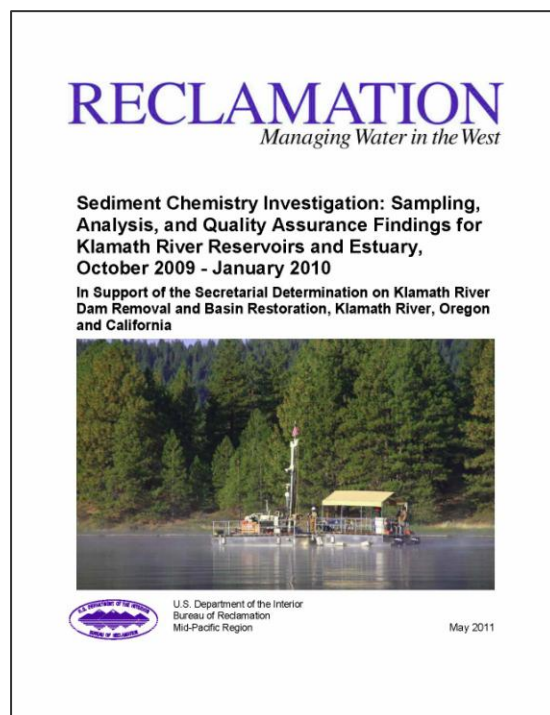
The panelists recognized that analyzing a program like the KBRA at such an early stage in its development was generally inadequate for quantitative scientific assessment. The assessments and the expert panel reports thus combined qualitative and quantitative expert opinions regarding the potential outcomes of the two management scenarios. The four panel reports are available on KlamathRestoration.gov.

3.2.1.2 Peer Review of Reports

The process below outlines the general elements of a peer review for a report prepared for the Secretarial Determination. Each agency has discretion as to what process of peer review is best suited for their reports and their mission, exact processes vary among agencies. The six elements below capture the general guidance each agency uses when obtaining an independent review of a report.

1. Two or more peer reviewers.
2. The lead agency, or the agency contracting for scientific work, will oversee the peer review. In some cases an independent contractor specializing in conducting scientific reviews, assisted in conducting aspects of the peer review process.
3. Peer reviewers were subject-matter technical experts, they were independent of the study, and they did not have a conflict of interest.
4. Peer reviewer's comments, or a summary of their comments, may have been made part of the public record, at the discretion of the lead agency.
5. Author(s) responded to written review comments and make appropriate changes to the report to correct technical errors and improve clarity. At the discretion of the lead agency, these author responses may have been made part of the public record.
6. The agency conducting or overseeing the peer review determined when a report was final and ready for dissemination.

Figure 3-1: The Sediment Chemistry Investigation: Sampling, Analysis, and Quality Assurance Findings for Klamath River Reservoirs and Estuary, October 2009-January 2010 (Reclamation 2011n) was one of the many peer reviewed reports developed for the Secretarial Determination. Two independent experts in reservoir sediment chemistry reviewed the report. These reviewers were not associated with the TMT or the Klamath Basin. The comments were forwarded to the TMT authors without modification, and the authors responded to these reviews independently.



3.2.1.3 Peer Review of the Overview Report

The Overview Report is undergoing peer review as a Highly Influential Scientific Assessment as defined by OMB's Bulletin on peer review. "A scientific assessment is considered 'highly influential' if the agency or the Office of Information and Regulatory Affairs Administrator determines that the dissemination could have a potential impact of more than \$500 million in any one year on either the public or private sector or that the dissemination is novel, controversial, or precedent-setting, or has significant interagency interest" (OMB 2004). The rigor of the peer review process was increased for this Overview Report. A larger number of peer reviewers were selected for the panel. There will be an opportunity for the public to provide written technical comments for the peer reviewers to consider during their deliberations. Elements of the Overview Report peer review process are described below; much of the peer review process was run by an independent contractor (Atkins) specializing in conducting peer reviews.

Reviewers: The TMT nominated potential peer reviewers and Atkins contacted them to determine their availability. Six peer reviewers were selected for the panel based on expertise, experience and skills. The group of reviewers was sufficiently broad and diverse to objectively represent the relevant scientific and technical perspectives in the Overview Report, and they were independent of ongoing work in the basin and have no conflict of interest.

Information Sources: The reviewers were given copies of the Overview Report, all new reports prepared for the Secretarial Determination process, and collated written technical comments obtained from the public during the peer review process.

Peer Review Report: Peer reviewers working on the Overview Report were instructed to only analyze technical matters and avoid policy determinations. In this single report, the peer reviewers are charged with addressing whether the Overview Report accurately reflects cited reports, that it adequately covers major topic areas essential for a Secretarial Determination, that any conclusions it reaches are defensible, and that the reports is clearly presented.

Response to Peer Review Comments: The TMT will respond in writing to each written peer review comment and make changes to the final report as appropriate.

Transparency: Upon completion of the peer review process, the following will be posted on KlamathRestoration.gov: (1) the panel's peer review comments, (2) responses to these comments by the TMT, and (3) the final Overview Report.

3.3 LIST OF TECHNICAL STUDIES DEVELOPED FOR THE SECRETARIAL DETERMINATION PROCESS

Table 3-1 lists new reports prepared to fill information gaps, verify results of earlier studies, and synthesize a large body of information into single reports to inform the Secretarial Determination. These studies represent the collaborative efforts of agencies of the TMT, individual TMT sub-teams, or contractors

overseen by the TMT. The reports below are publicly available at KlamathRestoration.gov.

Table 3-1: List of Studies and Reports Developed or Reviewed for the Secretarial Determination Overview Report

Document Name
Biological Sub-Team
Compilation of Information Relating to Myxozoan Disease Effects to Inform the Klamath Basin Restoration Agreement. (Bartholomew and Foott 2010)
Compilation of Information to Inform USFWS Principals on the Potential Effects of the Proposed Klamath Basin Restoration Agreement (Draft 11) on Fish and Fish Habitat Conditions in the Klamath Basin, with Emphasis on Fall Chinook Salmon. (Hetrick et al. 2009)
Effects of the Klamath Basin Restoration Agreement to Lower Klamath, Tule Lake and Upper Klamath National Wildlife Refuges. (Mauser and Mayer 2011)
Forecasting the Response of Klamath Basin Chinook Populations to Dam Removal and Restoration of Anadromy versus No Action (Hendrix 2011)
Klamath Dam Removal Drawdown Scenario 8: Potential Impacts of Suspended Sediments on Focal Fish Species with and without Mechanical Sediment Removal. (Stillwater Sciences 2011a)
Scientific Assessment of Two Dam Removal Alternatives on Chinook Salmon. Final Report from the Expert Panel. Addendum to Final Report, July 20, 2011. (Goodman et al. 2011)
Scientific Assessment of Two Dam Removal Alternatives on Coho Salmon. Final Report from the Expert Panel. (Dunne et al. 2011)
Scientific Assessment of Two Dam Removal Alternatives on Lamprey. Final Report from the Expert Panel. (Close et al. 2010)
Scientific Assessment of Two Dam Removal Alternatives on Resident Fish. Final Report from the Expert Panel. (Buchanan et al. 2011)
Synthesis of Effects to Fish Species of Two Management Scenarios for the Secretarial Determination on Removal of the Lower Four Dams on the Klamath River. (Hamilton et al. 2011)
Using Model Selection and Model Averaging to Predict the Response of Chinook Salmon to Dam Removal. (Lindley and Davis 2011)
Tribal / Cultural Sub-Team
Current Effects of PacifiCorp Dams on Indian Trust Resources and Cultural Values in the Klamath River Basin. (DOI 2011a)
Potential Effects of Implementing the KHSRA and KBRA on Trust Resources and Cultural Values. (DOI 2011b)
Economics Sub-Team
Benefit Cost and Regional Economic Development (RED) Technical Report for the Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon. Bureau of Reclamation Technical Services Center, Denver CO. (Reclamation 2011a)
Commercial Fishing Economics Technical Report for the Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon. (NOAA Fisheries Service 2011a)
Economics and Tribal Summary Technical Report for the Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon. Bureau of Reclamation Technical Services Center, Denver CO. (Reclamation 2011c)
Hoop Valley Tribe Fishery Socioeconomics Technical Report for the Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon. (NOAA Fisheries Service 2011b)
Hoop Valley Tribe Sociocultural/ Socioeconomic Effects Analysis Technical Report for the Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon. Bureau of Reclamation Technical Services Center, Denver CO. (Reclamation 2011d)
Hydropower Benefits Technical Report for the Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon. EC-2011-02. Bureau of Reclamation Technical Services Center, Denver CO. (Reclamation 2011f)
In-River Sport Fishing Economics Technical Report for the Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon. (NOAA Fisheries Service 2011c)
Irrigated Agriculture Economics Technical Report for the Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon. Bureau of Reclamation Technical Services Center, Denver CO. (Reclamation 2011g)
Karuk Tribe Fishery Socioeconomics Technical Report for the Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon. (NOAA Fisheries Service 2011d)
Karuk Tribe Sociocultural/ Socioeconomic Effects Analysis Technical Report for the Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon. Bureau of Reclamation Technical Services Center, Denver CO. (Reclamation 2011h)
Klamath Tribes Fishery Socioeconomics Technical Report for the Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon. (NOAA Fisheries Service 2011e)
Klamath Tribes Sociocultural/Socioeconomics Effects Analysis Technical Report for the Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon. Bureau of Reclamation Technical Services Center, Denver CO. (Reclamation 2011i)
Ocean Sport Fishing Economics Technical Report for the Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon. (NOAA Fisheries Service 2011f)

Table 3-1: List of Studies and Reports Developed or Reviewed for the Secretarial Determination Overview Report

Document Name
Refuge Recreation Economics Technical Report for the Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon. (Reclamation 2011j)
Reservoir Recreation Economics Technical Report for the Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon. (Reclamation 2011l)
Resighini Rancheria Fishery Socioeconomics Technical Report for the Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon. (NOAA Fisheries Service 2011g)
Resighini Rancheria Tribe Sociocultural/Socioeconomics Effects Analysis Technical Report for the Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon. (Reclamation 2011m)
Whitewater Boating Recreation Economics Technical Report for the Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon. (DOI 2011d)
Yurok Tribe Fishery Socioeconomics Technical Report for the Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon. (NOAA Fisheries Service 2011h)
Yurok Tribe Sociocultural/ Socioeconomic Effects Analysis Technical Report for the Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon. (Reclamation 2011p)
Klamath River Basin Restoration Nonuse Value Survey Final Report (RTI International 2011)
Engineering/ Geomorphology/ Constructability Sub-Team
Detailed Plan for Dam Removal– Klamath River Dams. Klamath Hydroelectric Project FERC License No. 2082, Oregon-California. Public Review Draft (Reclamation 2011b)
Feasibility, Risk, and Uncertainty of Mechanical Sediment Removal with the Proposed Action (Full Facility Removal). (CDM and River Design Group 2011)
Hydrology, Hydraulics and Sediment Transport Studies for the Secretary's Determination on Klamath River Dam Removal and Basin Restoration. Technical Report No. SRH-2011-02. Bureau of Reclamation Technical Services Center, Denver, CO. (Reclamation 2011e)
Klamath Settlement Process: Sediment Management in the Reservoirs (CDM 2011c)
Klamath River Sediment Sampling Program: Phase 1 Geologic Investigations (Volume 1 and 2) (Reclamation 2010)
Qualitative Assessment of Prolonged Facility Removal for the Klamath River Dams (Stillwater Sciences 2011)
Reservoir Area Management Plan for the Secretary's Determination on Dam Removal and Basin Restoration. Technical Report No. SRH - 2011-19, Bureau of Reclamation Technical Services Center, Denver CO. (Reclamation 2011k)
Sediment Mobilization Analysis at Little Bogus Creek and Beaver Creek for Klamath Dam Removal Studies. (Varyu and Greimann 2010)
Real Estate Sub-Team
Dam Removal Real Estate Evaluation for the US Department of the Interior (DOI 2011c)
Real Estate Report for the Secretarial Determination Overview Report (CDM 2011)
Water Quality Sub-Team
Assessment of Long Term Water Quality Changes for the Klamath River Basin Resulting from KHSA, KBRA, and TMDL and NPS Reduction Programs. (Water Quality Sub Team 2011)
Model Development and Estimation of Short-term Impacts of Dam Removal on Dissolved Oxygen in the Klamath River (Stillwater Sciences 2011b)
Quality Assurance Project Plan, Sediment Contaminant Study, Klamath River Sediment Sampling Program (Reclamation 2010)
Screening-Level Evaluation of Contaminants in Sediments from Three Reservoirs and the Estuary of the Klamath River, 2009–2011 (CDM 2011d)
Sediment Chemistry Investigation: Sampling, Analysis, and Quality Assurance Findings for Klamath River Reservoirs and Estuary, October 2009 – January 2010. (Reclamation 2011n)
Simulating Water Temperature of the Klamath River under Dam Removal and Climate Change Scenarios (Perry et al. 2011)